



# Connecting minds for global solutions

Join the leaders in adaptive structures and mechanisms research and applications.

## Technical Program

---

Conferences and Courses: 7–11 March 2010

Exhibition: 9–10 March 2010

Town and Country Resort & Convention Center  
San Diego, California, USA





# Welcome to Smart Structures and Materials + Nondestructive Evaluation and Health Monitoring 2010

## Technical Program

---

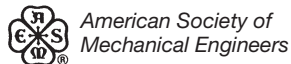
Conferences and Courses: 7–11 March 2010  
Exhibition: 9–10 March 2010  
Town and Country Resort & Convention Center  
San Diego, California, USA

# Contents

Sponsored by



Co-sponsored by



Cooperating Organizations

**Intelligent Materials Forum (Japan)**  
**Jet Propulsion Lab.**  
**National Science Foundation**

Promotional Partners

**IOP Publishing**  
**Photonics Media**

SPIE would like to express its deepest appreciation to the symposium chairs, conference chairs, program committees, and session chairs who have so generously given of their time and advice to make this symposium possible. The symposium, like our other conferences and activities, would not be possible without the dedicated contribution of our participants and members.

This program is based on commitments received up to the time of publication and is subject to change without notice.

Invitation from the Chairs . . . . .	2
Daily Program Schedule . . . . .	3
Plenary Presentations . . . . .	4-5
Special Events . . . . .	6
Awards . . . . .	7
Course Overview . . . . .	8
EAP-in-Action Special Event . . . . .	9
Hotel Floorplan . . . . .	10
Exhibition . . . . .	11
Session Schedule . . . . .	12-13
Technical Conferences . . . . .	14-49
Index of Authors, Chairs, and Committee Members . . . . .	50-59
General Information . . . . .	60-61
SPIE Proceedings . . . . .	63
Publication Order Form . . . . .	64

## Technical Conferences

<b>7642 Electroactive Polymer Actuators and Devices (EAPAD) XII (Bar-Cohen) . . . . .</b>	<b>14-48</b>
<b>7643 Active and Passive Smart Structures and Integrated Systems IV (Ghasemi-Nejhad) . . . . .</b>	<b>14-44</b>
<b>7644 Behavior and Mechanics of Multifunctional Materials and Composites IV (Ounaies) . . . . .</b>	<b>14-48</b>
<b>7645 Industrial and Commercial Applications of Smart Structures Technologies IV (McMickell) . . . . .</b>	<b>14-28</b>
<b>7646 Nano-, Bio-, Info-Tech Sensors and Systems (Varadan) . . . . .</b>	<b>14-45</b>
<b>7647 Sensors and Smart Structures Technologies for Civil, Mechanical, and Aerospace Systems (Tomizuka) . . . . .</b>	<b>15-49</b>
<b>7648 Smart Sensor Phenomena, Technology, Networks, and Systems III (Peters) . . . . .</b>	<b>15-39</b>
<b>7649 Nondestructive Characterization for Composite Materials, Aerospace Engineering, Civil Infrastructure, and Homeland Security IV (Shull) . . . . .</b>	<b>15-49</b>
<b>7650 Health Monitoring of Structural and Biological Systems IV (Kundu) . . . . .</b>	<b>15-47</b>

#### Executive Committee

**Yoseph Bar-Cohen,**  
Jet Propulsion Lab.

**Sang Choi,**  
NASA Langley Research Ctr.

**Aaron A. Diaz,**  
Pacific Northwest National Lab.

**Wolfgang Ecke,**  
Institut für Physikalische  
Hochtechnologie e.V.

**Mohammad Elahinia,**  
The Univ. of Toledo

**Kevin Farinholt,**  
Los Alamos National Lab.

**Mehrdad N. Ghasemi-Nejhad,**  
Univ. of Hawai'i at Manoa

**Victor Giurgiutiu,**  
Univ. of South Carolina

**Kumar V. Jata,**  
Air Force Research Lab.

**Jaehwan Kim,**  
Inha Univ.

**Tribikram Kundu,**  
The Univ. of Arizona

**Jinsong Leng,**  
Harbin Institute of  
Technology

**Donald J. Leo,**  
Virginia Polytechnic Institute  
and State Univ.

**Jiangyu Li,**  
Univ. of Washington

**Jerome Lynch,**  
Univ. of Michigan

**Theodore Matikas,**  
Univ. of Ioannina

**Norbert Meyendorf,**  
Fraunhofer-Institut für  
Zerstörungsfreie Prüfverfahren  
and Univ. of Dayton

**M. Brett McMickell,**  
Honeywell, Inc.

**Zoubeida Ounaies,**  
Texas A&M Univ.

**Kara J. Peters,**  
North Carolina State Univ.

**Peter J. Shull,**  
The Pennsylvania State Univ.

**Henry Sodano,**  
Arizona State Univ.

**Kyo D. Song,**  
Norfolk State Univ.

**Masayoshi Tomizuka,**  
Univ. of California, Berkeley

**Vijay K. Varadan,**  
Univ. of Arkansas

**Norman Wereley,**  
Univ. of Maryland, College Park

**H. Felix Wu,**  
National Institute of Standards  
and Technology

**Chung-Bang Yun,**  
Korea Advanced Institute of  
Science and Technology

## Plan to attend!

The Organizing Committee of the SPIE 17th Annual International Symposium on Smart Structures and Materials + Nondestructive Evaluation and Health Monitoring invites you to what promises to be an exciting meeting. This unique symposium offers many opportunities to network with colleagues from a variety of disciplines in academia, industry, and government from all over the world. Over the last two decades, this meeting has grown from small beginnings in the then-emerging field of smart systems into a premier symposium. This symposium has been the incubator for the emergence of the field of electroactive polymers, also known as artificial muscles, for which the armwrestling contest is now one of its exciting annual events.

Complementary techniques and application of smart structures and materials have been discussed in the joint symposium with NDE and Health Monitoring for the past four years. This event has developed into one of the world's most important events discussing the monitoring of structural integrity and adaptive/intelligent structures. Now, both symposia are integrated into a single event. This integration offers new avenues for collaboration and interaction opportunities to bring more advances and address greater challenges that lie ahead. Such challenges include areas of homeland security, and benefiting from exciting fields of biomimetics, nanotechnologies, and others.

The symposium covers all aspects of the evolving fields of materials, enabling technologies, sensor/actuator design and fabrication, MEMS, NEMS, and other micro-, nano- and bio-electronic devices, biomimetics, signal processing and control, systems concepts, wireless sensors and sensor networks, modeling and simulation. Applications of these technologies cover the whole spectrum of life in the 21st century including commercial, medical, aerospace, military uses and many others. Also included are several parallel conferences on a range of topics related to NDE, health monitoring, safety, security, civil infrastructure, characterization of materials, and detection of materials defects and degradation, application of micro- and nanomaterial systems, health monitoring of structural and biological systems, NDE for aerospace materials and applications, and NDE technologies for homeland security.

The symposium is organized in nine parallel conferences. It will bring together emerging technologies and advanced research in instrumentation, sensing, and measurement science with progressive management and diagnostic approaches and smart systems. Engineers and researchers from government, military, academia and the commercial sector will discuss the current status and future directions of smart structures and materials, NDE, and health monitoring. Case studies, emerging research agendas, and innovative new technologies will be presented.

We look forward to seeing you in San Diego!

#### Symposium Chairs



**Donald J. Leo,** Virginia  
Polytechnic Institute and  
State Univ.



**Kara J. Peters,** North  
Carolina State Univ.

#### Symposium Cochairs



**Norbert Meyendorf,**  
Fraunhofer-Institut für  
Zerstörungsfreie Prüfverfahren  
and Univ. of Dayton



**Norman Wereley,** Univ. of  
Maryland, College Park

Sunday	Monday	Tuesday	Wednesday	Thursday	
<b>Special Events</b>					
<p>SC634 <b>Electroactive Polymer Actuators and Devices</b> (<i>Bar-Cohen, Madden, Pei</i>) 8:30 am to 5:30 pm, p. 6</p>	<p><i>Awards and Announcements: 2010 SSM Lifetime Achievement Award presentation and 2010 NDE Lifetime Achievement Award presentation, 8:15 to 8:30 am, p. 7</i></p>	<p><i>Awards and Announcements: ASME Gary Anderson Early Achievement Award and Smart Structures Product Implementation Award, 8:00 to 8:05 am, p. 7</i></p>	<p><i>Awards and Announcements: ASME/SPIE Best Student Paper Award and ASME Best Paper Award, 8:00 to 8:05 am, p. 7</i></p>	<p><i>Announcements: 8:00 to 8:05 am</i></p>	
	<p><i>Plenary Presentation: Can We LEAP Tall Buildings?— Electroactive Polymers: An Alternative Platform for Bionic Devices</i> (<i>Wallace</i>), 8:30 to 9:15 am, p. 4</p>	<p><i>ONR Funding Agency Talk: Current and Future Programs and Initiatives</i> (<i>Perez</i>), 8:05 to 8:20 am, p. 5</p>	<p><i>Clean Sky Funding Agency Talk: Current and Future Programs and Initiatives</i> (<i>Simpson</i>), 8:05 to 8:20 am, p. 5</p>	<p><i>Funding Agency Talk: Current and Future Programs and Initiatives, 8:05 to 8:20 am, p. 5</i></p>	<p><i>Plenary Presentation: Ways and Options for Getting Structural Health Monitoring into Engineering Applications</i> (<i>Boller</i>), 8:20 to 9:05 am, p. 5</p>
	<p><i>Plenary Presentation: Structural Health Monitoring: A Stepping Stone to Design of Smart Structures</i> (<i>Chang</i>), 9:15 to 10:00 am, p. 4</p>	<p><i>Plenary Presentation: Technology Opportunities for Wind Energy Systems</i> (<i>Zayas</i>), 8:20 to 9:05 am, p. 4</p>	<p><i>Plenary Presentation: Photonic Sensing for Structural Monitoring</i> (<i>Tatam</i>), 8:20 to 9:05 am, p. 5</p>	<p><i>Poster Viewing, 10:00 am to 4:00 pm, p. 5</i></p>	
	<p><b>Twelfth Annual EAP-in-Action Session and Demonstrations</b>, (<i>Yoseph Bar-Cohen</i>), p. 7</p>	<p><b>Student Lunch with the Experts—A Networking Event</b>, 12:30 to 1:30 pm, p. 5</p>	<p><b>Poster Viewing, 10:00 am to 4:00 pm, p. 5</b></p>	<p><b>Poster Viewing, 10:00 am to 4:00 pm, p. 5</b></p>	
	<p><b>Welcome Reception, 6:00 to 7:30 pm, p. 5</b></p>	<p><b>SPIE/ASME Best Student Paper Session, 1:30 to 5:00 pm, p. 5</b></p>	<p><b>Posters/Exhibition Reception, 6:00 to 7:30 pm, p. 5</b></p>		
		<p><b>Exhibition, p. 11</b> 10:00 am to 4:00 pm; and 6:00 to 7:30 pm</p>	<p><b>Exhibition, p. 11</b> 10:00 am to 4:00 pm</p>		
<b>Conferences</b>					



Conf. 7642 <b>Electroactive Polymer Actuators and Devices (EAPAD) XII</b> ( <i>Bar-Cohen</i> ) p. 14–48
Conf. 7643 <b>Active and Passive Smart Structures and Integrated Systems IV</b> ( <i>Ghasemi-Nejhad</i> ) p. 14-44
Conf. 7644 <b>Behavior and Mechanics of Multifunctional Materials and Composites IV</b> ( <i>Ounaies</i> ) p. 14-48
Conf. 7645 <b>Industrial and Commercial Applications of Smart Structures Technologies IV</b> ( <i>McMickell</i> ) p. 14-28
Conf. 7646 <b>Nano-, Bio-, Info-Tech Sensors and Systems</b> ( <i>Varadan</i> ) p. 14-45
Conf. 7647 <b>Sensors and Smart Structures Technologies for Civil, Mechanical, and Aerospace Systems</b> ( <i>Tomizuka</i> ) p. 15-49
Conf. 7648 <b>Smart Sensor Phenomena, Technology, Networks, and Systems III</b> ( <i>Peters</i> ) p. 15-39
Conf. 7649 <b>Nondestructive Characterization for Composite Materials, Aerospace Engineering, Civil Infrastructure, and Homeland Security IV</b> ( <i>Shull</i> ) p. 15-49
Conf. 7650 <b>Health Monitoring of Structural and Biological Systems IV</b> ( <i>Kundu</i> ) p. 15-47

Monday–Thursday daily sessions will consist of opening remarks, award presentations, funding talks, and plenary presentations.

Monday 8 March · 8:30 to 9:15 am

## Can we LEAP tall buildings? Electroactive Polymers: An Alternative Platform for Bionic Devices



**Gordon G. Wallace**, Univ. of Wollongong (Australia)

*Abstract:* Medical bionic devices require the design and development of electronically conducting materials that effectively bridge the divide between biology and electronics. The demands on such materials are onerous and consequently the number used to date has been limited and exclusively involved in organic

materials, such as inert metals.

To be considered worthy of inclusion in devices requiring the substantial investment needed to realise medical bionic devices new candidates must bring to bear a quantum leap in performance and capabilities.

Perhaps organic conducting electroactive polymers can provide that LEAP?

They provide:

- An electronically conducting element wherein a significant proportion of the composition can be biological in nature, the remainder being organic.
- An electronically conducting element capable of delivering appropriate amounts of bioactive molecules localised at the critically important conducting material – biological interface.
- An electronically conducting element wherein surface energy and even mechanical properties can be manipulated in-situ by the imposition of an appropriate electrical potential.
- An electronically conducting element capable of providing electromechanical stimulation.

For example, in the pursuit of materials capable of creating a more affective electrode-cellular interface for the bionic ear, the conducting polymer polypyrrole has been investigated.

The incorporation and release of a nerve growth factor, neurotrophin 3 (NT3) into/from polypyrrole (PPy) has been shown to be beneficial when considering neurite outgrowth on a conducting polymer platform. In recent in-vivo experiments the advantages of the NT3 impregnated electrode in terms of lower electrically - evoked auditory brain stem response thresholds and greater nerve cell densities have been realised. The NT3 containing electrode did not exacerbate fibrous tissue formation and did not affect electrode impedance. Building on these findings, recent studies have shown that additional topographical cues can be used to control the direction of neurite outgrowth from nerve cell bodies.

*Biography:* **Gordon Wallace** is currently Director of the Intelligent Polymer Research Institute and Executive Research Director of the ARC Centre of Excellence for Electromaterials Science. His research interests include organic conductors, nanomaterials and electrochemical probe methods of analysis and the use of these in the development of Intelligent Polymer Systems. A current focus involves the use of these tools and materials in developing biocommunications from the molecular to skeletal domains in order to improve human performance via medical Bionics. He was elected as a Fellow of the Australian Academy of Science in 2007 and the Australian Academy of Technological Sciences and Engineering in 2003. He was elected as a Fellow of the Institute of Physics (UK) in 2004. He is a Fellow of the Royal Australian Chemical Institute (RACI). In 2009 he was awarded a Lifetime Achievement Award by SPIE in recognition of his sustained contributions to the development of smart materials. He received the RACI HG Smith Prize in 2008 and was named as NSW Scientist of the Year (Chemistry Category). He has published more than 500 refereed publications and a monograph (3rd Edition published in 2009) on Conductive Electroactive Polymers: Intelligent Polymer Systems. He has supervised 55 PhD students to completion.

Monday 8 March · 9:15 to 10:00 am

## Structural Health Monitoring: A Stepping Stone to Design of Smart Structures



**Dr. Fu-Kuo Chang**, Stanford Univ. (United States)

*Abstract:* Structural health monitoring (SHM) involves not only multi-disciplinary engineering from sensors/actuators, materials, structures, and diagnostics to system integration, but may also result in a paradigm change in design, manufacturing, and maintenance practice for structures. Recent advancements in SHM

technology have demonstrated a significant progress in the technology toward practical applications. The formation of worldwide Aerospace Industry Steering committee for SHM (AISC-SHM) further indicates an industry-wide commitment to the SHM development and implementation.

It is anticipated that with adequate SHM technology, structural conditions could be monitored automatically and residual life could be predicted while the structures are in service. Optimal structural performance could be achieved in operation because the actual structural conditions are better known in real time and because the structures are better designed to account for uncertainties. These structures shall only be maintained when needed, thus significantly reducing maintenance costs.

This presentation will review recent highlights in SHM technology with which the PI has been involved, with an emphasis on quantification and validation that are new challenges that still deserve much needed attention from the SHM community. It will also give a review of recent focus on transferring the SHM technology to the development of bio-inspired autonomous flying vehicles.

*Biography:* **Fu-Kuo Chang** is the Director of Structures and Composites Laboratory at Stanford University. His primary research interest is in the area of structural health monitoring, design and analysis of multifunctional materials as well as advanced composite structures. He is the editor in chief of International Journal of Structural Health Monitoring, a recipient of the SHM Lifetime Achievement Award by Boeing Company in 2004, A fellow of AIAA and ASME.

Tuesday 9 March · 8:20 to 9:05 am

## Technology Opportunities for Wind Energy Systems



**Jose Zayas**, Sandia National Labs. (United States)

*Abstract:* Wind Energy is one of the fastest-growing sources of utility-scale power generation in the US today, representing nearly 40% of the total new capacity added in 2008 (second only to natural gas). Through the 3rd quarter of 2009, wind power provides approximately 31GW of the electricity generating capacity in the U.S. or just

over 2.0% of the nation's electricity. The installed capacity makes the US the world leader in wind electricity generation; generating enough electricity to serve approximately 5.3 million American homes. As the technology continues to move forward, increases in efficiency, performance, and reliability must continue to be in the forefront of the research activities that will facilitate the sustained growth of the industry. This presentation will outline the history of the technology, the trends and challenges faced by the industry, and describe the ongoing and future technical research activities that are targeted at enhancing current wind generation.

*Biography:* **Jose Zayas** is the program manager of the Wind and Water Power Technologies Department at Sandia National Laboratories. His responsibilities include establishing strategy and priorities, defining technical and programmatic roles, business development, and performing management assurance for the wind and water power related activities of the laboratory. He joined Sandia National Labs in 1996 and spent the first ten years of his career in the field of wind energy as a senior member of the technical staff in the wind energy technology department, where he had responsibilities for several programmatic research agendas for the program. During his career he performed research in a variety of areas which include active aerodynamic flow control, sensors, dynamic modeling, data acquisition systems, and component testing. Jose holds a bachelors degree in Mechanical Engineering from the University of New Mexico, and a Masters degree in Mechanical and Aeronautical Engineering from the University of California at Davis.

Wednesday 10 March · 8:20 to 9:05 am

## Photonic Sensing for Structural Monitoring



**Ralph P. Tatam**, Cranfield University (United Kingdom)

*Abstract:* Photonic technologies are playing an ever increasing role in structural monitoring applications driven by a need to maximise the service life, thus reducing costs, and to provide information on the behaviour of complex structures in environments difficult, or impossible, to obtain using conventional

measuring techniques. This talk will present recent examples of the use of photonic instrumentation technology in process and subsequent structural monitoring of composite materials used in applications spanning superconducting magnets to aerospace, and implementation of the technology in geotechnical and aerodynamic applications.

*Biography:* **Ralph Tatam** holds a personal chair in Engineering Photonics and is currently the Dean for the Faculty of Engineering and Aerospace at Cranfield University. He graduated with a degree in Physics and Chemistry, a PhD in Physics and was awarded a DSc in 2005 for his research contributions. His research interests for more than 20 years have been focussed in the development and application of optical and optical fibre instrumentation to solve challenging measurement problems. He has published extensively in the areas of optical fibre sensors, speckle metrology, laser anemometry and optical gas sensing and the application of these technologies in aerospace, aerodynamics, medical and structural health monitoring in composite materials. He serves on several Editorial Boards, many scientific and professional committees and he is a member of the Board of Directors and a Fellow of the SPIE and a Fellow of the IOP.

Thursday 11 March · 8:20 to 9:05 am

## Ways and Options for Getting Structural Health Monitoring into Engineering Applications



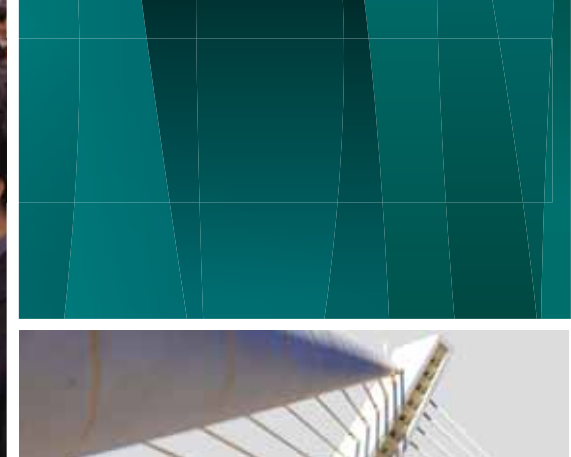
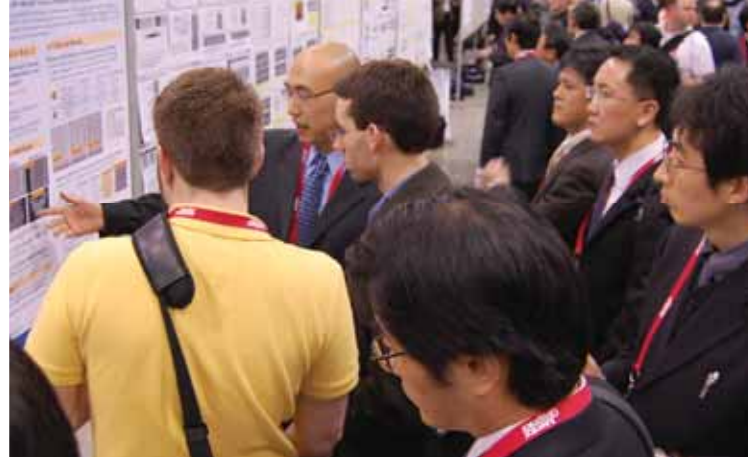
**Christian Boller**, et al., Fraunhofer Institute of Non-Destructive Testing, Saarbrücken/Dresden (Germany) and Saarland Univ., Saarbrücken (Germany)

*Abstract:* Research and development in structural health monitoring (SHM) is now around for roughly two decades. Much work has been done with regard to sensors and signal processing but still very little application is seen so far. Reasons

for this include a lack of understanding the lateral integration of the numerous disciplines being involved in SHM as well as the economic impacts SHM will have to provide. The presentation will start from analysing maintenance processes and describing maintenance requirements and scenarios for various applications such as civil engineering, aviation, wind energy, nuclear power generation, railway and pipelines. The maintenance applications will be linked to advanced NDT inspection methodology and further discussing robotics based solutions for NDT before moving into the area where NDT becomes inherent to a structure and material, the area where SHM has its home. The presentation will try to answer the question how far latest NDT technology applied in engineering application might thus help of moving SHM further ahead.

*Biography:* **Christian Boller** holds a chair in Non-Destructive Testing (NDT) and Quality Assurance at Saarland University in Saarbrücken/Germany and is also the Director of the Fraunhofer Institute of Non-Destructive Testing based in Saarbrücken and Dresden/Germany since 2008. He received an engineering diploma in structural engineering from Darmstadt Technical University as well as an engineering doctoral degree in material mechanics from the same institution. He held various posts in research and development with Battelle, MBB, Daimler-Benz and EADS in Frankfurt/Main, Ottobunn/Munich and Stuttgart respectively, before being appointed a chair in smart structural design at the University of Sheffield/UK in 2003, where he is currently still a visiting professor. Professor Boller is a member of various scientific committees and societies and has published and edited a multitude of articles and books in the area of fatigue and fracture, smart structures, structural health monitoring and micro aerial vehicles, including the recently published Encyclopedia on Structural Health Monitoring.

# Special Events



## All Symposium Welcome Reception

Monday 8 March . . . . . 6:00 to 7:30 pm

All attendees are invited to relax, socialize, and enjoy refreshments at the Trellises Poolside.

Please remember to wear your conference registration badges. Dress is casual.

## EAP-In-Action Session and Demonstrations

Monday 8 March . . . . . 4:30 to 5:45 pm

See page 9 for complete details.

*EAPAD Keynote Presentation*

## Biomimetics: lessons from nature

Paper No. 7642-1

Room: Pacific Salon I-III

Monday 8 March . . . . . 10:30 to 11:10 am



**Bharat Bhushan**, The Ohio State Univ.

Nature has developed materials, objects, and processes which function from the macroscale to the nanoscale. These have gone through evolution over 3.8 billion years. The emerging field of biomimetics allows one to mimic biology or nature to develop nanomaterials, nanodevices, and processes. Properties of biological materials and surfaces result from a complex interplay between

surface morphology and physical and chemical properties. Hierarchical structures with dimensions of features ranging from macroscale to the nanoscale are extremely common in nature to provide properties of interest. Molecular scale devices, superhydrophobicity, self-cleaning, drag reduction in fluid flow, energy conversion and conservation, high adhesion, reversible adhesion, aerodynamic lift, materials and fibers with high mechanical strength, biological self-assembly, anti-reflection, structural coloration, thermal insulation, self-healing, and sensory aid mechanisms are some of the examples found in nature which are of commercial interest. This talk will provide a broad overview of various

objects and processes of interest found in nature and applications under development or available in the marketplace. The recent research on superhydrophobicity, self-cleaning, low adhesion/stiction, and drag reduction in fluid flow will be highlighted.

**Bharat Bhushan** is an Ohio Eminent Scholar and The Howard D. Winbigger Professor in the Professor in the College of Engineering, and the Director of the Nanoprobe Laboratory for Bio- & Nanotechnology and Biomimetics (NLB2) at the Ohio State University, Columbus, Ohio. He holds two M.S., a Ph.D. in mechanical engineering/mechanics, an MBA, and three semi-honorary and honorary doctorates. His research interests include fundamental studies with a focus on scanning probe techniques in the interdisciplinary areas of bio/nanotribology, bio/nanomechanics and bio/nanomaterials characterization, and applications to bio/nanotechnology and biomimetics. He has authored 6 scientific books, more than 90 handbook chapters, more than 700 scientific papers (h factor - 42+), and more than 60 scientific reports, edited more than 45 books, and holds 17 U.S. and foreign patents. He is co-editor of Springer NanoScience and Technology Series and Microsystem Technologies. He has organized various international conferences and workshops. He is the recipient of numerous prestigious awards and international fellowships including the Alexander von Humboldt Research Prize for Senior Scientists, Max Planck Foundation Research Award for Outstanding Foreign Scientists, and the Fulbright Senior Scholar Award. He is a member of various professional societies, including the International Academy of Engineering (Russia). He has previously worked for various research labs including IBM Almaden Research Center, San Jose, CA. He has held visiting professor appointments at University of California at Berkeley, University of Cambridge, UK, Technical University Vienna, Austria, University of Paris, Orsay, ETH Zurich and EPFL Lausanne.

## Funding Agency Talks

Tuesday-Thursday . . . . . 8:05 to 8:20 am

Representatives from funding agencies, including will discuss current and future programs and initiatives. Organizations include: Office of Naval Research, and the European Clean Sky Initiative.

## Student Lunch with the Experts— A Networking Event

Tuesday 9 March . . . . . 12:30 to 1:30 pm

See *Ticket for Location*. Seating is Limited.

Combine food, fun, and valuable networking opportunities at this complimentary event hosted by SPIE Student Services. Join experts willing to share their collective wisdom and experience at this casual and lively event. *Students receive one complimentary ticket with registration.*

## SPIE/ASME Best Student Paper Session

Room: Towne

Tuesday 9 March . . . . . 1:30 to 5:00 pm

Finalists for the SPIE/ASME Best Student Paper Awards will present their papers in this special session. Awards will be announced on Wednesday morning before the plenary session.

## Posters/Exhibition Reception

Room: Golden Ballroom/Exhibition Hall

Tuesday 9 March . . . . . 6:00 to 7:30 pm

### Poster Viewing

Tuesday & Wednesday . . . . . 10:00 am to 4:00 pm

Conference attendees are invited to attend the poster session on Tuesday evening. Come view the posters, ask questions, and enjoy the refreshments. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster sessions. Posters will also be available for viewing on Wednesday during Exhibition Hours.

### Poster Setup

Poster presenters may set up between 10:00 am and 4:00 pm on Tuesday 9 March. Poster presenters who have not set up by 4:00 pm on Tuesday will be considered a “no show” and their manuscript will not be published. Presenters must remove their posters on Wednesday by 4:00 pm. Posters not removed will be considered unwanted and will be discarded. SPIE assumes no responsibility for posters left up after 4:00 pm on Wednesday 10 March.



**Award presentations are part of the Plenary Session.**

**Monday 8 March**

*Room: Golden Ballroom/Exhibition Hall*

Monday 8 March . . . . . 8:15 to 8:30 am

**2010 SSM Lifetime Achievement Award**  
*presented to*



**Dr. Alison B. Flatau**, Univ. of Maryland, College Park (United States)

**Alison B. Flatau**, Professor of Aerospace Engineering, at the University of Maryland is the recipient of the 2010 SPIE Smart Structures and Materials Lifetime Achievement Award that recognizes outstanding contributions to research in smart structures and materials as well as exemplary service to SPIE. Dr. Flatau is

also Interim Associate Dean for Research of the Clark School of Engineering at Maryland. She began her professorial career at Iowa State University (1990-1998), and subsequently joined the NSF where she served as Program Director for Dynamic Systems and Control (1998-2002), and administered the CAREER program across the entire NSF. In 2002, Dr. Flatau joined the faculty of Aerospace Engineering at Maryland. She served as Chair of the Undergraduate Affairs Committee, Director of the Honors Program, and Faculty advisor for the AIAA Student Chapter. Her research accomplishments include the characterization, modeling and application of magnetostrictive materials as sensors and actuators to control noise, vibration and external flows in aerospace systems, and she holds several patents on these applications. Dr. Flatau is a Fellow of the ASME and an Associate Fellow of AIAA, and has co-authored over 50 archival journal articles and book chapters and over 100 conference papers. Dr. Flatau's extensive service to the SPIE Smart Structures and Materials / NDE Symposium includes chair of the student paper competition (1999-2003), co-Chair (2003) and Chair (2004, 2005) of the SPIE Smart Structures and Integrated Systems Conference, and most as co-Chair (2006 and 2007) and Chair (2008 and 2009) of the SPIE Symposium. She also served as the Chair of the ASME Adaptive Structures and Materials Technical Committee that coordinates five SPIE conferences.

**2010 NDE Lifetime Achievement Award**  
*presented to*



**Dr. Fu-Kuo Chang**, Stanford Univ. (United States)

**Fu-Kuo Chang** Director of Structures and Composites Laboratory at Stanford University is the recipient of the 2010 NDE Lifetime Achievement Award that recognizes outstanding achievement in the field of Nondestructive Evaluation and Health Monitoring, as well as his contribution to SPIE. His primary research

interest is in the area of structural health monitoring, design and analysis of multifunctional materials as well as advanced composite structures. He is the editor in chief of International Journal of Structural Health Monitoring, a recipient of the SHM Lifetime Achievement Award by Boeing Company in 2004, A fellow of AIAA and ASME.

**SPIE Fellow Recognition**



**Jinsong Leng**, Harbin Institute of Technology (China)

**Tuesday 9 March**

*Room: Golden Ballroom/Exhibition Hall*

Tuesday 9 March . . . . . 8:00 to 8:05 am

**ASME Gary Anderson Early Achievement Award**

This award is given for notable contributions to the field of Adaptive Structures and Material Systems.

**Smart Structures Product Implementation Award**

**Wednesday 10 March**

*Room: Golden Ballroom/Exhibition Hall*

Wednesday 10 March . . . . . 8:00 to 8:05 am

**SPIE/ASME Best Student Paper Award**

SPIE and the ASME Adaptive Structures and Material Technical Committee are sponsoring the best student paper presentation contest. Entrants will be judged by a committee of the ASME Adaptive Structures and Materials Technical Committee. The finalists will present their papers at a special session on Tuesday afternoon of the meeting. The committee will then vote to determine the top three finalists. The top three finalist student authors and/or student co-authors will receive certificates and cash awards.

**ASME Best Paper Award**

The ASME Technical Committee presents two awards annually: Best Paper in Structures and Best Paper in Materials.

# SPIE COURSES

800+ Courses, relevant training, proven instructors.

The Society has hand picked some of the top minds from academia and industry to lead a variety of SPIE courses.

## Register for a course:

- ▶ Take advantage of the industry's best instructors
- ▶ Further your career through ongoing education
- ▶ Earn CEUs for your continuing education

### Money-back Guarantee

We are confident that once you experience an SPIE course for yourself you will look to SPIE for your future education needs. However, if for any reason you are dissatisfied, SPIE will gladly refund your money. We just ask that you tell us what you did not like; suggestions for improvement are always welcome.



### Continuing Education Units

SPIE has been approved as an authorized provider of CEUs by IACET, The International Association for Continuing Education and Training (Provider #1002091). In obtaining this approval, SPIE has demonstrated that it complies with the ANSI/IACET Standards which are widely recognized as standards of good practice.

[spie.org/education](http://spie.org/education)



## Electroactive Polymer Actuators and Devices

SC634

**Course level: Introductory**  
**CEU .65 \$500 / \$590 USD**  
**Sunday 8:30 am to 5:30 pm**

This course will provide an overview of the field of EAP covering the state of the art, challenges and potential. Two general classes of polymer materials are described, namely those that involve ionic mechanisms (Ionic EAP), and field activated materials (Electronic EAP). The basic mechanisms responsible for the electroactive behavior of EAP materials will be covered and compared with natural muscles. Analytical models, fabrication processes and methods of characterizing these materials will be described. Moreover, the currently considered applications will be reviewed including actuators, robotics, animatronics, medical, and biologically inspired mechanisms, so called biomimetics. The course begins with an overview of the field, current capabilities, potential and challenges. The course follows with a description of the currently available EAP materials and principles of operating them as actuators and artificial muscles. The course ends with a review of the future prospect of EAP as actuators in systems, mechanisms and smart structures for space, industrial and medical applications.

### LEARNING OUTCOMES

This course will enable you to:

- identify EAP based available and emerging actuators
- learn the fundamentals of electroactive behavior in leading EAP materials
- describe the capabilities, limitations and benefits of electroactive polymers
- assess the applicability of current EAP actuators while accounting for their limitations
- understand mechanical analysis and design principles associated with EAP
- describe the future prospects of EAP materials as actuators and their applications

### INTENDED AUDIENCE

Engineers, scientists and managers who need to understand the basic concepts of EAP, or are interested in learning, applying or engineering mechanisms or devices using EAP materials. Also those who wish to discover the excitement of research and development in EAP materials and their applications - present and future.

**Register for this course onsite.**



**SPIE** Connecting minds.  
Advancing light.

## Twelfth Annual EAP-in-Action Session and Demonstrations

Room: Pacific Salon I-III

Monday 8 March . . . . . 4:30 to 5:45 pm

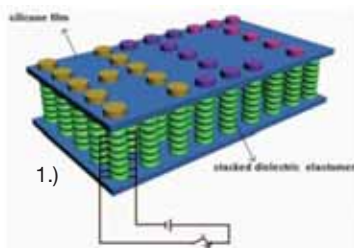
Session Chair: **Yoseph Bar-Cohen**, Jet Propulsion Lab.

This Session highlights some of the latest capabilities and applications of Electroactive Polymers (EAP) materials where the attendees are shown demonstrations of these materials in action. Also, the attendees interact directly with technology developers and given "hands-on" experience with this emerging technology. The first Human/EAP-Robot Armwrestling Contest was held during this session of the 2005 EAPAD conference.

## Tentative Demonstrations

### Tactile display using stacked dielectric elastomer

8x8 matrix tactile display cells actuated by stacked dielectric elastomer with mechanical load-transmitting and voltage control systems.



1.)

### Braille printer using refreshable shape-memory polymer (SMP) paper

Using thermosetting SMP paper Braille text is printed in refreshable form.

**Jinsong Leng, Zhen Zhang, Liwu Liu, Xin Lan**, Harbin Institute of Technology (China)



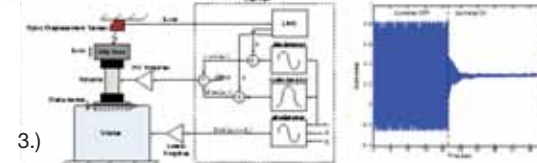
2.)

### Commercial active Braille displays

**Deane Blazie and Noel Runyan**, National Braille Press (United States)



### Demos actuated by PolyPower dielectric EAP films: HansErik Kiil and Mike Tryson, Danfoss PolyPower A/S (Denmark)

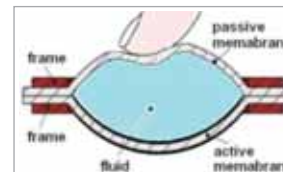


- 1.) High Strain PolyPower Films (>100%)
- 2.) fluid control system using EAP actuators
- 3.) vibration isolation
- 4.) force sensor array.

### Hydrostatically coupled dielectric elastomer actuators

**Federico Carpi**, Univ. of Pisa, Research Centre "E. Piaggio" (Italy)

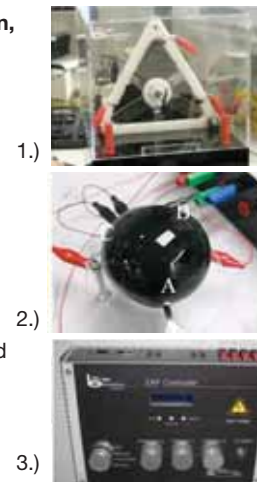
A fluid is used to hydrostatically transfer forces to a load without direct contact with active elements offering improved safety and higher versatility.



### Dielectric elastomer actuator (DEA): demonstrations of actuation, sensing, and control

**Iain Anderson Emilio Calius, Todd Gisby, Thomas McKay and Ben O'Brien**, The Auckland Bioengineering Institute's Biomimetics Lab. (New Zealand)

- 1) Capacitive, high specific torque rotary motor
- 2) Biomimetic multi-segment DEA spherical rotor
- 3) 4-channel EAP controller
- 4) Other self-sensing and DEA-based demonstrations focusing on bio-inspired DEA



1.)

2.)

3.)

### Reflex haptic feedback technology

Platforms for consumer electronics including touch screen devices and gaming controllers driven by dielectric elastomer EPAM



**Marcus Rosenthal, James Biggs and Al Zarrabi**, Artificial Muscle, Inc. (AMI) (United States)

### Contractile EAPs

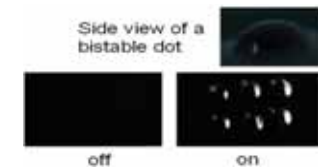
**Lenore Rasmussen**, Ras Labs. LLC (United States)

- 1) Contractile EAPs with low electric input
- 2) EAPs capable of contraction-expansion cycles.



### Bi-stable electroactive polymers (BSEP)

**Qibing Pei, Zhibin Yu, Paul Brochu, Xiaofan Niu, Wei Yuan, and Huafeng Li**, Univ. of California, Los Angeles (United States)

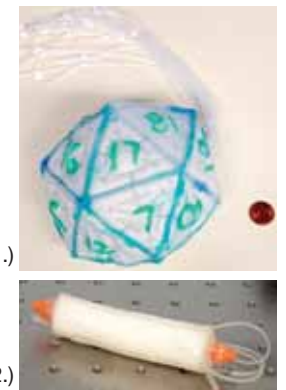


### Jamming as an enabling technology for soft robotics

1) Jamming Skin Enabled Locomotion prototype  
A completely soft, approximately six inch robot capable of both dramatic self-induced shape change and a rolling gait.

2) Jamming Modulated Unimorph A new actuator concept in which a central actuator (in this case a pneumatic McKibben actuator) is modulated by jamming chambers to make a controlled, multi-DOF unimorph actuator.

**Erik Steltz and Annan Mozeika**, iRobot G&I Research (United States)



1.)

2.)





# Don't miss the EXHIBITION



### Exhibition Hours:

Tuesday 9 March · 10:00 am to 4:00 pm; 6:00 pm to 7:30 pm  
Wednesday 10 March · 10:00 am to 4:00 pm

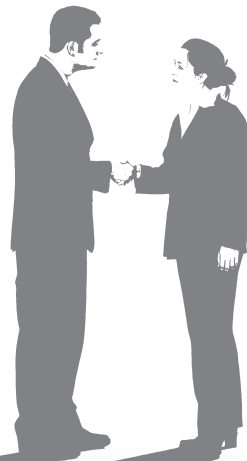
**SPIE**  
Smart Structures/NDE

**POSTER RECEPTION**  
in the Exhibition Hall  
Tuesday 9 March  
6:00 to 7:30 pm

## MOVING TECHNOLOGY TO MARKET™

- Meet suppliers working on solutions relevant to your work
- Network and see new products
- See the latest technology

Thank you to the  
Conference Bag Sponsor



# Conference Daily Schedule

Conf. 7642		Conf. 7643		Conf. 7644	Conf. 7645	Conf. 7646	Conf. 7647		Conf. 7648	Conf. 7649	Conf. 7650	
<b>Monday</b>												
<b>Plenary Session</b>												
8:00 to 10:00 am												
10:30 am to 12:30 pm	EAP as Emerging Actuators and Biomimetic Technologies	Passive and Active Vibration Isolation Systems I	SMA- and Piezo-based Materials and Systems I: SMAs and SMPs I	Phase Field Modeling of Ferroelectrics	Product Ready Energy Harvesting Solutions	Keynote Session Nanowire, Nanotube, and Nano-structures I	Opening Remarks Keynote Session		Fiber Bragg Grating Sensors I	Optical Methods for Composite and Civil Structures I	Guided Waves I: Signal Generation and Analysis	Bridge Monitoring
1:30 to 3:10 pm	Haptic/Tactile Interfaces and Braille Displays I	Energy Harvesting and Scavenging I: Piezoelectric Systems I	SMA- and Piezo-based Materials and Systems II: SMAs and SMPs II	Modeling of Constitutive Behavior Of Smart Materials	Engineering with Shape Memory Polymer for Industrial Applications (SMP) I	Keynote Session Nanowire, Nanotube, and Nano-structures II	Wireless Sensors for SHM	Damage Detection	Fiber Bragg Grating Sensors II	Optical Methods for Composite and Civil Structures II	Guided Waves II: Signal Generation and Analysis	Signal Processing and Modeling
3:30 to 6:00 pm	EAP-in-Action Session and Demonstrations	Energy Harvesting and Scavenging II: Piezoelectric Systems II	Passive and Active Vibration Isolation Systems II	Piezoelectric Single Crystals	Engineering with Shape Memory Polymer for Industrial Applications (SMP) II	Nano Devices and Sensors I	Next-Generation Wireless Sensing Devices and Techniques	Structural Control	Applications of Fiber Optic Sensors in Composites	Health Monitoring of Aerospace Composites	Guided Waves III: Damage Detection	Civil Structure and Pipe Monitoring

<b>Tuesday</b>												
<b>Plenary Session</b>												
8:00 to 9:05 am												
9:10 to 10:10 am	Haptic/Tactile Interfaces and Braille Displays II	Energy Harvesting and Scavenging III: General	Magneto Rheological Systems	Shape Memory Materials I	Smart Materials and Devices for Vehicle Applications I	Keynote Session	Innovative Excitation and Sensing Technologies	Sensors I	Electromagnetic Sensors	NIST Technology Innovation Program on Civil Infrastructure Critical National Need: Advanced Sensing Technologies for the Infrastructure: Bridges, Roads, Highways, and Water Systems I	Energy Harvesting and Low-powered Systems	Novel Sensing for SHM
10:30 to 12:30 pm					Smart Materials and Devices for Vehicle Applications II	Nano Devices and Sensors II	Smart Sensors and Materials I	Sensors II	Sensors for SHM		Guided Waves IV: Signal Generation and Analysis	Complete SHM System and Related Issues
1:30 to 3:10 pm	Dielectric EAP Actuators I	Energy Harvesting and Scavenging IV: Piezoelectric Systems III			Smart Materials and Devices for Vehicle Applications III	Smart Electronics	Embedded Data Processing in Sensor Networks for Structural Health Monitoring I	Sensors III	Micro- and Nano-Sensors	NIST Technology Innovation Program on Civil Infrastructure Critical National Need: Advanced Sensing Technologies for the Infrastructure: Bridges, Roads, Highways, and Water Systems II	Guided Waves V: Modeling	Fatigue Damage Monitoring
3:30 to 6:00 pm	Dielectric EAP Actuators II	Energy Harvesting and Scavenging V: Renewable Energy		Magneto-Active Materials I: Magnetostriction	Aerospace Applications of Smart Structure Technologies	Wireless Sensor Systems	SHM/Damage Detection Method I	Signal Processing	Civil Infrastructure Applications of Fiber Optic Sensors		Sensor Development	Optical Techniques for SHM

Conf. 7642

Conf. 7643

Conf. 7644

Conf. 7646

Conf. 7647

Conf. 7648

Conf. 7649

Conf. 7650

## Wednesday

### Plenary Session

8:00 to 9:05 am													
9:10 to 10:10 am	Ionic EAP I	Dielectric EAP Actuators III	Optimization and Design of Integrated Systems	Biological-Inspired Systems and Bio-MEMS I: Flappers and Swimmers	Magneto-Active Materials II: Magnetic Shape Memory Effect	Nano Sensors and Actuators	Signal Processing and Damage Detection I	Nano and MEMS		Guided Wave Sensors I	Acoustic/ Ultrasound Characterization I	Guided Waves VI: Stress Measurement	Neural Network for SHM
10:00 am to 12:20 pm					Magneto-Active Materials III: Magneto-electric Effect	Applications I	Piezo Sensors and Applications	Structural Life Prognosis		Guided Wave Sensors II		Novel Devices and Techniques	Vibration-based SHM
1:30 to 3:10 pm	Ionic EAP II	Other Types of EAP Materials I	Micro and Nano Integrated Systems	Biological-Inspired Systems and Bio-MEMS II: General	Active Polymers I	Applications II	Embedded Data Processing in Sensor Networks for Structural Health Monitoring II	Smart Materials		Sensor Signal Processing and Optimization	Acoustic/ Ultrasound Characterization II	Guided Waves VII: Modeling	Bridge Monitoring II
3:30 to 6:00 pm	Modeling and Analysis of EAP	Ionic EAP III	Modeling, Simulations, Signal Processing, and Controls I	Aircraft, MAV/ UAV, and Morphing Systems	Active Nano-composites	Modeling and Characterization	Fiber Optic Sensors and Applications I	Multi-domain Modeling			Thermo-graphic Imaging	Guided Waves VIII: Damage Detection	Medical and Biological Applications

## Thursday

### Plenary Session

8:00 to 9:05 am													
9:10 to 10:00 am	Application of EAP I	Control of EAP Actuators I	SMA- and Piezo-based Materials and Systems III: Piezoelectrics	Modeling, Simulations, Signal Processing, and Controls II	Active Composites I	Applications III	Energy Harvesting	Smart Sensors and Materials II	Modeling and Mechanics		Wireless Radar NDE Technologies	Nonlinear Analysis and Techniques I	
10:30 to 12:15 pm	Application of EAP II	Other Types of EAP Materials II			Active Composites II	Applications IV	Signal Processing and Damage Detection II	Actuators	Fiber Optic Sensors and Applications II		Civil Infrastructure Health Monitoring I	Nonlinear Analysis and Techniques II	
1:00 to 3:10 pm	Control of EAP Actuators II	Application of EAP III			Active Polymers II		Bridge Inspection and Monitoring Systems	Image-based Sensing	Wave Propagation and Damage Detection		Civil Infrastructure Health Monitoring II	Sensor Network and Array	
3:30 to 6:00 pm					Mechanics of Composites		Damping and Response Modification	Wireless Sensors and Energy Harvesting	SHM/Damage Detection Methods II				

# Technical Conferences

## Conference 7642

Monday-Thursday 8-11 March 2010  
Proceedings of SPIE Vol. 7642

### Electroactive Polymer Actuators and Devices (EAPAD) XII

*Conference Chair:* **Yoseph Bar-Cohen**, Jet Propulsion Lab.

*Conference Co-Chair:* **Jinsong Leng**, Harbin Institute of Technology (China)

*Program Committee:* **Barbar J. Akle**, Lebanese American Univ. (Lebanon); **Ray Henry Baughman**, The Univ. of Texas at Dallas; **Václav Bouda**, Czech Technical Univ. in Prague (Czech Republic); **Emilio P. Calius**, Industrial Research Ltd. (New Zealand); **Federico Carpi**, Univ. di Pisa (Italy); **Toribio Fernandez-Otero**, Univ. Politécnic de Cartagena (Spain); **Edwin Jager**, Linköping Univ. (Sweden); **Keiichi Kaneto**, Kyushu Institute of Technology (Japan); **Jaehwan Kim**, Inha Univ. (Korea, Republic of); **Kwang J. Kim**, Univ. of Nevada, Reno; **Gabor K. Kovacs**, EMPA (Switzerland); **Roy D. Kornbluh**, SRI International; **Maarja Kruusmaa**, Univ. of Tartu (Estonia); **Wen-Liang Liu**, Industrial Technology Research Institute (Taiwan); **John David W. Madden**, The Univ. of British Columbia (Canada); **Jae-Do Nam**, Sungkyunkwan Univ. (Korea, Republic of); **Siavouche Nemat-Nasser**, Univ. of California, San Diego; **Qibing Pei**, Univ. of California, Los Angeles; **Subramaniam Radhakrishnan**, National Chemical Lab. (India); **Mehdi Razzaghi-Kashani**, Tarbiat Modarres Univ. (Iran, Islamic Republic of); **Jonathan M. Rossiter**, Univ. of Bristol (United Kingdom); **Anuvat Sirivat**, Chulalongkorn Univ. (Thailand); **Peter Sommer-Larsen**, Technical Univ. of Denmark (Denmark); **Elisabeth Smela**, Univ. of Maryland, College Park; **Ji Su**, NASA Langley Research Ctr.; **Minoru Taya**, Univ. of Washington; **Gordon G. Wallace**, Univ. of Wollongong (Australia); **Thomas Wallmersperger**, Univ. Stuttgart (Germany); **Gary Zaiats**, Rafael Advanced Defense Systems Ltd. (Israel); **Qiming Zhang**, The Pennsylvania State Univ.

## Conference 7643

Monday-Thursday 8-11 March 2010  
Proceedings of SPIE Vol. 7643

### Active and Passive Smart Structures and Integrated Systems IV

*Conference Chair:* **Mehrdad N. Ghasemi-Nejhad**, Univ. of Hawaii'i at Manoa

*Conference Co-Chairs:* **Mohammad H. Elahinia**, The Univ. of Toledo; **Henry A. Sodano**, Arizona State Univ.

*Program Committee:* **Gregory S. Agnes**, Jet Propulsion Lab.; **Mehdi Ahmadian**, Virginia Polytechnic Institute and State Univ.; **Eric H. Anderson**, CSA Engineering, Inc.; **Hiroshi Asanuma**, Chiba Univ. (Japan); **Amr M. Baz**, Univ. of Maryland, College Park; **Diann E. Brei**, Univ. of Michigan; **Gregory P. Carman**, Univ. of California, Los Angeles; **Aditi Chattopadhyay**, Arizona State Univ.; **Seung-Bok Choi**, Inha Univ. (Korea, Republic of); **William W. Clark**, Univ. of Pittsburgh; **Alison B. Flatau**, Univ. of Maryland, College Park; **Farhan Gandhi**, The Pennsylvania State Univ.; **Ephraim Garcia**, Cornell Univ.; **Victor Giurgiutiu**, Univ. of South Carolina; **Fernando D. Goncalves**, Lord Corp.; **Faramarz Gordaninejad**, Univ. of Nevada, Reno; **Nakhiah C. Goulbourne**, Virginia Polytechnic Institute and State Univ.; **Tristram T. Hyde**, NASA Goddard Space Flight Ctr.; **Daniel J. Inman**, Virginia Polytechnic Institute and State Univ.; **Conor D. Johnson**, CSA Engineering, Inc.; **Seung Jo Kim**, Seoul National Univ. (Korea, Republic of); **Jeong-Hoi Koo**, Miami Univ.; **Wei-Hsin Liao**, The Chinese Univ. of Hong Kong (Hong Kong, China); **Yuji Matsuzaki**, Nagoya Univ. (Japan); **Roger Ohayon**, Conservatoire National des Arts et Métiers (France); **Gyuhae Park**, Los Alamos National Lab.; **Mohammad Rastgaar Aagaah**, Massachusetts Institute of Technology; **Norbert Schwesinger**, Technische Univ. München (Germany); **Steve C. Southward**, Virginia Polytechnic Institute and State Univ.; **Roger Stanway**, The Univ. of Sheffield (United Kingdom); **Kon-Well Wang**, Univ. of Michigan; **Norman M. Wereley**, Univ. of Maryland, College Park

## Conference 7644

Monday-Thursday 8-11 March 2010  
Proceedings of SPIE Vol. 7644

### Behavior and Mechanics of Multifunctional Materials and Composites IV

*Conference Chair:* **Zoubeida Ounaies**, Texas A&M Univ.

*Conference Co-Chair:* **Jiangyu Li**, Univ. of Washington

*Program Committee:* **Abhijit Bhattacharyya**, Univ. of Arkansas at Little Rock; **Gregory P. Carman**, Univ. of California, Los Angeles; **Pavel M. Chaplya**, Sandia National Labs.; **Constantin Ciocanel**, Northern Arizona Univ.; **Marcelo J. Dapino**, The Ohio State Univ.; **Christopher P. Henry**, HRL Labs., LLC; **Daniel J. Inman**, Virginia Polytechnic Institute and State Univ.; **Marc Kamlah**, Forschungszentrum Karlsruhe GmbH (Germany); **Ibrahim Karaman**, Texas A&M Univ.; **Dimitris C. Lagoudas**, Texas A&M Univ.; **Chad M. Landis**, The Univ. of Texas at Austin; **Kam K. Leang**, Virginia Commonwealth Univ.; **Donald J. Leo**, Virginia Polytechnic Institute and State Univ.; **Sergio Luis dos Santos e Lucato**, Teledyne Scientific Co.; **Christopher S. Lynch**, Univ. of California, Los Angeles; **Karla M. Mossi**, Virginia Commonwealth Univ.; **Robert C. O'Handley**, Massachusetts Institute of Technology; **Etienne Patoor**, Ecole Nationale Supérieure d'Arts et Métiers (France); **Stefan S. Seelecke**, North Carolina State Univ.; **Ralph C. Smith**, North Carolina State Univ.; **Jonghwan Suhr**, Univ. of Nevada, Reno

## Conference 7645

Monday-Tuesday 8-9 March 2010  
Proceedings of SPIE Vol. 7645

### Industrial and Commercial Applications of Smart Structures Technologies IV

*Conference Chair:* **M. Brett McMickell**, Honeywell, Inc.

*Conference Co-Chair:* **Kevin M. Farinholt**, Los Alamos National Lab.

*Program Committee:* **Eric Anderson**, CSA Engineering, Inc.; **Emil V. Ardelean**, Schafer Corp.; **Brandon J. Arritt**, Air Force Research Lab.; **Christian Boller**, Fraunhofer-Institut für Zerstörungsfreie Prüfverfahren (Germany); **Diann E. Brei**, Univ. of Michigan; **Alan L. Browne**, General Motors Corp.; **Peter C. Chen**, Composite Mirror Applications, Inc.; **Marcelo J. Dapino**, The Ohio State Univ.; **L. Porter Davis**, Honeywell Defense and Space Electronic Systems; **Kevin M. Farinholt**, Los Alamos National Lab.; **Xiao-Yan Gong**, Medical Implant Mechanics LLC; **Steve Griffin**, Boeing-SVS, Inc.; **Holger Hanselka**, Fraunhofer-Institut für Betriebsfestigkeit und Systemzuverlässigkeit (Germany); **Ernie Havens**, Cornerstone Research Group, Inc.; **Benjamin K. Henderson**, Air Force Research Lab.; **Nancy L. Johnson**, General Motors Corp.; **Chad H. Joshi**, Energen, Inc.; **Jayanth N. Kudva**, NextGen Aeronautics, Inc.; **Amrita Kumar**, Florida State Univ.; **Ou Ma**, New Mexico State Univ.; **Geoffrey P. McKnight**, HRL Labs., LLC; **Gyuhae Park**, Los Alamos National Lab.; **Marc E. Regelbrugge**, Rhombus Consultants Group; **W. Lance Richards**, NASA Dryden Flight Research Ctr.; **Janet M. Sater**, Institute for Defense Analyses; **Henry A. Sodano**, Arizona State Univ.; **Edward V. White**, The Boeing Co.

## Conference 7646

Monday-Thursday 8-11 March 2010  
Proceedings of SPIE Vol. 7646

### Nano-, Bio-, Info-Tech Sensors and Systems

*Conference Chair:* **Vijay K. Varadan**, Univ. of Arkansas

*Conference Co-Chairs:* **Jaehwan Kim**, Inha Univ. (Korea, Republic of); **Kyo D. Song**, Norfolk State Univ.; **Sang H. Choi**, NASA Langley Research Ctr.

*Program Committee:* **Pratul K. Ajmera**, Louisiana State Univ.; **William C. Edwards**, NASA Langley Research Ctr.; **Sean Jones**, National Science Foundation; **Ravindra P. Joshi**, Old Dominion Univ.; **Kimiya Komurasaki**, The Univ. of Tokyo (Japan); **Kunik Lee**, Federal Highway Administration; **Uhn Lee**, Gachon Univ. Gil Medical Ctr. (Korea, Republic of); **Xinxin Li**, Shanghai Institute of Microsystem and Information Technology (China); **N. Manoharan**, Sathyabama Deemed Univ. (India); **Seshadri X. Mohan**, Univ. of Arkansas at Little Rock; **Yeonjoon Park**, NASA Langley Research Ctr.; **Aswini K. Pradhan**, Norfolk State Univ.; **Yongrae Roh**, Kyungpook National Univ. (Korea, Republic of); **Paul B. Ruffin**, U.S. Army Aviation and Missile Research, Development and Engineering Ctr.; **Ashok Srivastava**, Louisiana State Univ.; **Malathi Srivatsan**, Arkansas State Univ.; **Richard K. Watt**, Brigham Young Univ.; **Frances Williams**, Norfolk State Univ.; **Tian-Bing Xu**, National Institute of Aerospace; **T. C. Yih**, Oakland Univ.; **Ming Zhou**, Suzhou Institute of Nano-Tech and Nano-Bionics (China)



## Conference 7647

Monday–Thursday 8–11 March 2010  
Proceedings of SPIE Vol. 7647

### Sensors and Smart Structures Technologies for Civil, Mechanical, and Aerospace Systems

*Conference Cosponsored by* **SISTeC, KAIST**, (Korea, Republic of)

*Conference Chair:* **Masayoshi Tomizuka**, Univ. of California, Berkeley

*Conference Co-Chairs:* **Chung-Bang Yun**, Korea Advanced Institute of Science and Technology (Korea, Republic of); **Victor Giurgiutiu**, Univ. of South Carolina; **Jerome P. Lynch**, Univ. of Michigan

*Program Committee:* **H. Harry Asada**, Massachusetts Institute of Technology; **Sourav Banerjee**, Acellent Technologies, Inc.; **Amr M. Baz**, Univ. of Maryland, College Park; **Fabio Casciati**, Univ. degli Studi di Pavia (Italy); **Chih-Chen Chang**, Hong Kong Univ. of Science and Technology (Hong Kong, China); **Shirley J. Dyke**, Washington Univ. in St. Louis; **Silvia Ferrari**, Duke Univ.; **Alison B. Flatau**, Univ. of Maryland, College Park; **Yozo Fujino**, The Univ. of Tokyo (Japan); **Robert X. Gao**, Univ. of Massachusetts Amherst; **Steven D. Glaser**, Univ. of California, Berkeley; **Faramarz Gordanejad**, Univ. of Nevada, Reno; **Xiaoyan Han**, Wayne State Univ.; **Benjamin K. Henderson**, Air Force Research Lab.; **Haiying Huang**, The Univ. of Texas at Arlington; **Jerry Q. Huang**, The Boeing Co.; **Kumar V. Jata**, Air Force Office of Scientific Research (Japan); **Jeong-Tae Kim**, Pukyong National Univ. (Korea, Republic of); **Ki-Soo Kim**, Hongik Univ. (Korea, Republic of); **Jan-Ming Ko**, The Hong Kong Polytechnic Univ. (Hong Kong, China); **Francesco Lanza di Scalea**, Univ. of California, San Diego; **Shih-Chi Liu**, National Science Foundation; **Chin-Hsiung Loh**, National Taiwan Univ. (Taiwan); **Stephen A. Mahin**, Univ. of California, Berkeley; **Sami F. Masri**, Univ. of Southern California; **Theodore E. Matikas**, Univ. of Ioannina (Greece); **Eduardo Misawa**, National Science Foundation; **Akira Mita**, Keio Univ. (Japan); **Satish Nagarajaiah**, Rice Univ.; **Siavouche Nemat-Nasser**, Univ. of California, San Diego; **Irving J. Oppenheim**, Carnegie Mellon Univ.; **Jinping Ou**, Dalian Univ. (China); **Ser-Tong Quek**, National Univ. of Singapore (Singapore); **Rahmat A. Shoureshi**, Univ. of Denver; **Gangbing Song**, Univ. of Houston; **Andrew W. Smyth**, Columbia Univ.; **Hoon Sohn**, Korea Advanced Institute of Science and Technology (Korea, Republic of); **Billie F. Spencer, Jr.**, Univ. of Illinois at Urbana-Champaign; **Lizhi Sun**, Univ. of California, Irvine; **Tsu-Chin Tsao**, Univ. of California, Los Angeles; **Ming L. Wang**, Northeastern Univ.; **Jin Wen**, Drexel Univ.; **Zhishen Wu**, Ibaraki Univ. (Japan); **Youlin Xu**, The Hong Kong Polytechnic Univ. (Hong Kong, China); **Hiroyuki Yamanouchi**, Building Research Institute (Japan); **Jian Zhang**, Drexel Univ.; **Li Zhou**, Nanjing Univ. of Aeronautics and Astronautics (China)

## Conference 7648

Monday–Wednesday 8–10 March 2010  
Proceedings of SPIE Vol. 7648

### Smart Sensor Phenomena, Technology, Networks, and Systems III

*Conference Chair:* **Kara J. Peters**, North Carolina State Univ.

*Conference Co-Chairs:* **Wolfgang Ecke**, IPHT Jena (Germany); **Theodore E. Matikas**, Univ. of Ioannina (Greece)

*Program Committee:* **Grigory Adamovsky**, NASA Glenn Research Ctr.; **Farhad Ansari**, Univ. of Illinois at Chicago; **George Y. Baaklini**, NASA Glenn Research Ctr.; **Horst J. Baier**, Technische Univ. München (Germany); **Xiaoyi Bao**, Univ. of Ottawa (Canada); **Hartmut Bartelt**, IPHT Jena (Germany); **James L. Blackshire**, Air Force Research Lab.; **Rolf Brönnimann**, EMPA (Switzerland); **Brian Culshaw**, Univ. of Strathclyde (United Kingdom); **Richard David Finlayson**, Physical Acoustics Corp.; **Gerald U. Gerlach**, Technische Univ. Dresden (Germany); **Joseph Grant**, NASA Stennis Space Ctr.; **Wolfgang R. Habel**, Bundesanstalt für Materialforschung und -prüfung (Germany); **Daniele Inaudi**, Smartec S.A. (Switzerland); **Kerop D. Janoyan**, Clarkson Univ.; **YeonWan Koh**, FIBERPRO, Inc. (Korea, Republic of); **David A. Krohn**, Light Wave Venture Consulting, LLC; **Silvio Kruger**, National Research Council Canada (Canada); **Jinsong Leng**, Harbin Institute of Technology (China); **Alexis Mendez**, MCH Engineering LLC; **Norbert G. Meyendorf**, Fraunhofer-Institut für Zerstörungsfreie Prüfverfahren (Germany); **Bernd Michel**, Fraunhofer-Institut für Zuverlässigkeit und Mikrointegration (Germany); **Jeff W. Miller**, Micron Optics, Inc.; **Marc Nikles**, Omnisens S.A. (Switzerland); **Richard H. Selfridge**, Brigham Young Univ.; **Holger Speckmann**, Airbus Deutschland GmbH (Germany); **Nobuo Takeda**, The Univ. of Tokyo Graduate School of Frontier Sciences (Japan); **Roderick C. Tennyson**, Fiber Optic Systems Technology, Inc. (Canada); **Michael D. Todd**, Univ. of California, San Diego; **Eric Udd**, Columbia Gorge Research; **Zhishen Wu**, Ibaraki Univ. (Japan); **Chung-Bang Yun**, Korea Advanced Institute of Science and Technology (Korea, Republic of); **Zhi Zhou**, Harbin Institute of Technology (China)

## Conference 7649

Monday–Thursday 8–11 March 2010  
Proceedings of SPIE Vol. 7649

### Nondestructive Characterization for Composite Materials, Aerospace Engineering, Civil Infrastructure, and Homeland Security IV

*Conference Chair:* **Peter J. Shull**, The Pennsylvania State Univ.

*Conference Co-Chairs:* **Aaron A. Diaz**, Pacific Northwest National Lab.; **H. Felix Wu**, National Institute of Standards and Technology

*Program Committee:* **A. Emin Aktan**, Drexel Univ.; **IPHT Jena** (Germany); **James L. Blackshire**, Air Force Research Lab.; **Rolf Brönnimann**, EMPA (Switzerland); **Brian Culshaw**, Univ. of Strathclyde (United Kingdom); **Richard David Finlayson**, Physical Acoustics Corp.; **Gerald U. Gerlach**, Technische Univ. Dresden (Germany); **Joseph Grant**, NASA Stennis Space Ctr.; **Wolfgang R. Habel**, Bundesanstalt für Materialforschung und -prüfung (Germany); **Daniele Inaudi**, Smartec S.A. (Switzerland); **Kerop D. Janoyan**, Clarkson Univ.; **YeonWan Koh**, FIBERPRO, Inc. (Korea, Republic of); **David A. Krohn**, Light Wave Venture Consulting, LLC; **Silvio Kruger**, National Research Council Canada (Canada); **Jinsong Leng**, Harbin Institute of Technology (China); **Alexis Mendez**, MCH Engineering LLC; **Norbert G. Meyendorf**, Fraunhofer-Institut für Zerstörungsfreie Prüfverfahren (Germany); **Bernd Michel**, Fraunhofer-Institut für Zuverlässigkeit und Mikrointegration (Germany); **Jeff W. Miller**, Micron Optics, Inc.; **Marc Nikles**, Omnisens S.A. (Switzerland); **Richard H. Selfridge**, Brigham Young Univ.; **Holger Speckmann**, Airbus Deutschland GmbH (Germany); **Nobuo Takeda**, The Univ. of Tokyo Graduate School of Frontier Sciences (Japan); **Roderick C. Tennyson**, Fiber Optic Systems Technology, Inc. (Canada); **Michael D. Todd**, Univ. of California, San Diego; **Eric Udd**, Columbia Gorge Research; **Zhishen Wu**, Ibaraki Univ. (Japan); **Chung-Bang Yun**, Korea Advanced Institute of Science and Technology (Korea, Republic of); **Zhi Zhou**, Harbin Institute of Technology (China)

## Conference 7650

Monday–Thursday 8–11 March 2010  
Proceedings of SPIE Vol. 7650

### Health Monitoring of Structural and Biological Systems IV

*Conference Chair:* **Tribikram Kundu**, The Univ. of Arizona

*Conference Co-Chair:* **Kumar V. Jata**, Air Force Office of Scientific Research (Japan)

*Program Committee:* **Douglas E. Adams**, Purdue Univ.; **Sourav Banerjee**, Acellent Technologies, Inc.; **Yoseph Bar-Cohen**, Jet Propulsion Lab.; **Fu-Kuo Chang**, Stanford Univ.; **Victor Giurgiutiu**, Univ. of South Carolina; **Olivier Giraudo**, ONERA (France); **Wolfgang Grill**, Univ. Leipzig (Germany); **Shivan Haran**, Arkansas State Univ.; **Guoliang Huang**, Univ. of Arkansas at Little Rock; **Sridhar Krishnaswamy**, Northwestern Univ.; **Francesco Lanza di Scalea**, Univ. of California, San Diego; **Jerome P. Lynch**, Univ. of Michigan; **Jennifer E. Michaels**, Georgia Institute of Technology; **Won-Bae Na**, Pukyong National Univ. (Korea, Republic of); **Pengjin F. Pai**, Univ. of Missouri, Columbia; **Paul D. Panetta**, Applied Research Associates, Inc.; **Dominique Placko**, École Normale Supérieure de Cachan (France); **Henrique L. Reis**, Univ. of Illinois at Urbana-Champaign; **Hoon Sohn**, Korea Advanced Institute of Science and Technology (Korea, Republic of); **Michael D. Todd**, Univ. of California, San Diego; **Wei-Chih Wang**, Univ. of Washington; **Paul D. Wilcox**, Univ. of Bristol (United Kingdom); **Hwai-Chung Wu**, Wayne State Univ.; **Andrej N. Zagrai**, New Mexico Institute of Mining and Technology; **George Zentai**, Varian Medical Systems, Inc.

Conference 7642

Conference 7643

Conference 7644

Conference 7645

**Room: Pacific Salon I-III · 8:15 to 8:30 am**  
**Announcements, Awards, Funding and Plenary Presentations**

**2010 SSM Lifetime Achievement Award**  
 presented to **Dr. Alison B. Flatau**, Univ. of Maryland, College Park (USA)

**2010 NDE Lifetime Achievement Award**  
 presented to **Dr. Fu-Kuo Chang**, Stanford Univ. (USA)

**Plenary Presentation ······ 8:30 to 9:15 am**



**Can We LEAP Tall Buildings? Electroactive Polymers: An Alternative Platform for Bionic Devices**  
 Gordon Wallace, Univ. of Wollongong (Australia)

**Plenary Presentation ······ 9:15 to 10:00 am**



**Structural Health Monitoring: A Stepping Stone to Design of Smart Structures**  
 Dr. Fu-Kuo Chang, Stanford Univ. (USA)  
 Please see page 4 for more information.

**SESSION 1**

**Room: Pacific Salon I-III**  
**Mon. 10:30 am to 12:10 pm**

**EAP as Emerging Actuators and Biomimetic Technologies**

*Session Chairs:* **Yoseph Bar-Cohen**, Jet Propulsion Lab.; **Jinsong Leng**, Harbin Institute of Technology (China)

*Keynote Presentation:*

**Biomimetics: lessons from nature**  
**Bharat Bhushan**, The Ohio State Univ.



*Abstract:* The emerging field of biomimetics allows one to mimic biology or nature to develop nanomaterials, nanodevices, and processes. The recent research on superhydrophobicity, self-cleaning,

low adhesion/stiction, and drag reduction in fluid flow will be highlighted.

See page 6 for full description.

10:30 am: **Biomimetics: lessons from nature**, Bharat Bhushan, The Ohio State Univ. (United States) ······ [7642-01]

11:10 am: **Ionic liquid-based ionic polymer transducers: a review**, Donald J. Leo, Virginia Polytechnic Institute and State Univ. (United States); Barbar J. Akle, Lebanese American Univ. (Lebanon); Andrew J. Duncan, Virginia Polytechnic Institute and State Univ. (United States) ······ [7642-02]

11:30 am: **Carbon nanotube yarn as a microscale rotational actuator (Invited Paper)**, Javad Foroughi, Univ. of Wollongong (Australia); Tissaphern Mirfakhrai, The Univ. of British Columbia (Canada); Ray H. Baughman, Shaoli Fang, Mikhail E. Kozlov, The Univ. of Texas at Dallas (United States); John D. W. Madden, The Univ. of British Columbia (Canada); Geoffrey M. Spinks, Gordon G. Wallace, Univ. of Wollongong (Australia) ······ [7642-03]

Lunch Break ······ 12:10 to 1:30 pm

**SESSION 1a**

**Room: Sunrise**  
**Mon. 10:30 to 11:50 am**

**Passive and Active Vibration Isolation Systems I**

*Session Chair:* **Mehrdad N. Ghasemi-Nejhad**, Univ. of Hawai'i

10:30 am: **Study of a tuned vibration absorber using piezoelectric patches with active shunt circuits**, Mike Fontaine, Miles A. Wickersham, Umesh A. Korde, South Dakota School of Mines and Technology (United States) ······ [7643-01]

10:50 am: **Optimizing switching algorithm of synchronized switch damping for multimodal excitation**, Sebastian M. Schwarzendahl, Xu Han, Marcus Neubauer, Leibniz Univ. Hannover (Germany) ······ [7643-02]

11:10 am: **Seismic performance of a novel 3D isolation bearing**, Junfeng Jia, Harbin Institute of Technology (China); Jinping Ou, Harbin Institute of Technology (China) and Dalian Univ. of Technology (China) ······ [7643-03]

11:30 am: **Twist control of airfoils using a 'reactive' method**, Jean-Baptiste Runge, Daniel R. Osmont, ONERA (France); Roger Ohayon, Conservatoire National des Arts et Métiers (France) ······ [7643-04]

**SESSION 1b**

**Room: Towne**  
**Mon. 10:30 am to 12:10 pm**

**SMA- and Piezo-based Materials and Systems I: SMAs and SMPs I**

*Session Chair:* **Mehrdad N. Ghasemi-Nejhad**, Univ. of Hawai'i

10:30 am: **Optimum design of bridges with superelastic-friction base isolators against near-field earthquakes**, Osman E. Ozbulut, Stefan Hurlebaus, Texas A&M Univ. (United States) ······ [7643-05]

10:50 am: **Laguerre model based adaptive control of antagonistic shape memory alloy (SMA) actuator**, Somasundar Kannan, Univ. Metz (France) and Arts et Metiers ParisTech-Metz (France); Christophe Giraud-Audine, Univ. Metz (France) and Arts et Metiers ParisTech-Metz (France); Etienne Patoor, Univ. Metz (France) and Arts et Metiers ParisTech-Metz (France) ······ [7643-06]

11:10 am: **Shape memory alloy post buckled precompressed (SAPBP) actuator concepts and theory**, Ronald M. Barrett, Thomas Sinn, The Univ. of Kansas (United States) ······ [7643-07]

11:30 am: **Compressive and tensile deformation behaviors of a Ti-Mo based shape memory alloy**, Chao-Ying Xie, Jie Song, Xiaoning Zhang, Weiming Zhou, Shanghai Jiao Tong Univ. (China); Ming H. Wu, Edwards Lifesciences LLC (United States) [7643-08]

11:50 am: **Modeling and optimization of shape memory-superelastic antagonistic beam assembly**, Majid Tabesh, Mohammad H. Elahinia, The Univ. of Toledo (United States) ······ [7643-125]

Lunch Break ······ 11:50 am to 1:20 pm

**SESSION 1**

**Room: Royal Palm II**  
**Mon. 10:30 to 11:50 am**

**Phase Field Modeling of Ferroelectrics**

*Session Chairs:* **Marc Kamlah**, Forschungszentrum Karlsruhe GmbH (Germany); **Chad M. Landis**, The Univ. of Texas at Austin

10:30 am: **Phasefield modeling of switching of polarization vortex in ferroelectric nanotubes**, Jie Wang, Marc Kamlah, Forschungszentrum Karlsruhe GmbH (Germany) ······ [7644-01]

10:50 am: **The structure of the paraelectric: ferroelectric phase boundary interface**, Chad M. Landis, Antonios Kontsos, The Univ. of Texas at Austin (United States) ······ [7644-02]

11:10 am: **A finite deformation phase-field theory for ferroelectrics**, Wenyuan Li, Chad M. Landis, The Univ. of Texas at Austin (United States) ······ [7644-03]

11:30 am: **Phase-field model with phase transformations of rhombohedral 95/5 PZT**, Wen Dong, Carlos Valadez, Christopher S. Lynch, Univ. of California, Los Angeles (United States) ······ [7644-04]

Lunch Break ······ 11:50 am to 1:40 pm

**SESSION 1**

**Room: Sunset**  
**Mon. 10:40 am to 12:00 pm**

**Product Ready Energy Harvesting Solutions**

*Session Chairs:* **Kevin M. Farinholt**, Los Alamos National Lab.; **Gyuhae Park**, Los Alamos National Lab.

10:40 am: **Development and commercialization strategy for piezoelectric energy-harvesting power sources for gun-fired munitions**, Jahangir S. Rastegar, Richard T. Murray, Omnitek Partners, LLC (United States); Carlos M. Pereira, Hai-Long Nguyen, U.S. Army Armament Research, Development and Engineering Ctr. (United States) ······ [7645-01]

11:00 am: **Multi-source energy harvester to power sensing hardware on rotating structures**, Alexander D. Schlichting, Scott A. Ouellette, Clinton Carlson, Kevin M. Farinholt, Gyuhae Park, Charles R. Farrar, Los Alamos National Lab. (United States) ······ [7645-02]

11:20 am: **A mechanical battery for powering wireless sensor nodes in harsh environments energy harvesting session**, Peter Constantinou, Chris Aird, Phil H. Mellor, David Smith, Julian D. Booker, Peter Flewitt, Chris E. Truman, Univ. of Bristol (United Kingdom) ······ [7645-03]

11:40 am: **Wireless energy transmission to supplement energy harvesters in sensor network applications**, Kevin M. Farinholt, Gyuhae Park, Charles R. Farrar, Los Alamos National Lab. (United States) ······ [7645-04]

Lunch Break ······ 12:00 to 1:30 pm

Conference 7646

Conference 7647

Conference 7648

Conference 7649

Conference 7650

**Room: Pacific Salon I-III · 8:15 to 8:30 am**  
**Announcements, Awards, Funding and Plenary Presentations**

**2010 SSM Lifetime Achievement Award**  
 presented to **Dr. Alison B. Flatau**, Univ. of Maryland, College Park (USA)

**2010 NDE Lifetime Achievement Award**  
 presented to **Dr. Fu-Kuo Chang**, Stanford Univ. (USA)

**Plenary Presentation ..... 8:30 to 9:15 am**



**Can We LEAP Tall Buildings? Electroactive Polymers: An Alternative Platform for Bionic Devices**  
**Gordon Wallace**, Univ. of Wollongong (Australia)

**Plenary Presentation ..... 9:15 to 10:00 am**



**Structural Health Monitoring: A Stepping Stone to Design of Smart Structures**  
**Dr. Fu-Kuo Chang**, Stanford Univ. (USA)  
 Please see page 4 for more information.

**Keynote Session**

*Session Chair: Vijay K. Varadan*, Univ. of Arkansas

10:30 am: **Exploratory procedures with carbon nanotube-based sensors for propellant degradation determinations**, Paul B. Ruffin, Eugene Edwards, U.S. Army Aviation and Missile Research, Development and Engineering Ctr. (United States); Christina L. Brantley, Brian A. McDonald, U.S. Army Research, Development and Engineering Command (United States) ..... [7646-01]

**SESSION 2**

**Room: Royal Palm III**  
**Mon. 11:10 am to 12:10 pm**

**Nanowire, Nanotube, and Nanostructures I**

*Session Chair: Kwang Sun Kang*, Inha Univ. (Korea, Republic of)

11:10 am: **Iron oxide nanotubes: syntheses, characterizations, and magnetic behaviors**, Jining Xie, Linfeng Chen, Vijay K. Varadan, Univ. of Arkansas (United States) [7646-02]

11:30 am: **Photoreduction of Au(III) to form Au(0) nanoparticles using ferritin as a photocatalyst**, Richard K. Watt, Robert J. Hilton, Jeremiah Keyes, Brigham Young Univ. (United States) ..... [7646-03]

11:50 am: **Slow phase transformation of TiO<sub>2</sub> nanorods**, Yi Chen, Kwang Sun Kang, Kyung Ho Yoo, Jyoti Nayak, Jaehwan Kim, Inha Univ. (Korea, Republic of) . . [7646-04]

Lunch Break ..... 12:10 to 1:30 pm

**Room: Pacific Salon IV-VII**  
**Mon. 10:30 to 10:40 am**

**Opening Remarks**

**Room: Pacific Salon IV-V**  
**Mon. 10:40 am to 12:00 pm**

**Keynote Session**

*Session Chairs: Chung-Bang Yun*, Korea Advanced Institute of Science and Technology (Korea, Republic of); **Victor Giurgiutiu**, Univ. of South Carolina; **Jerome P. Lynch**, Univ. of Michigan

10:40 am: **Bio-informed framework enabling multimetric infrastructure monitoring**, Billie F. Spencer, Jr., Univ. of Illinois at Urbana-Champaign (United States) ..... [7647-01]

11:20 am: **Learning from plants: bio-inspired multifunctional adaptive structural systems**, Kon-Well Wang, Univ. of Michigan (United States) .... [7647-02]

Lunch Break ..... 12:00 to 1:30 pm

**SESSION 1**

**Room: Royal Palm IV**  
**Mon. 10:30 to 11:50 am**

**Fiber Bragg Grating Sensors I**

*Session Chair: Wolfgang Ecke*, IPHT Jena (Germany)

10:30 am: **Interrogation of a wavelength tunable fiber Bragg grating based ring laser for dynamic strain monitoring**, Oluwaseyi Balogun, Sridhar Krishnaswamy, Yinian Zhu, Northwestern Univ. (United States) ..... [7648-01]

10:50 am: **High-speed full-spectrum interrogation of fiber Bragg gratings for composite impact sensing**, Spencer L. Chadderdon, Tyrie Vella, Richard H. Selfridge, Steve M. Schultz, Brigham Young Univ. (United States); Chun Myung Park, Kara J. Peters, Mohammed A. Zikry, North Carolina State Univ. (United States)[7648-02]

11:10 am: **Impact induced damage assessment in composite laminates through embedded fiber Bragg gratings**, Chun Myung Park, Kara J. Peters, Mohammed A. Zikry, North Carolina State Univ. (United States); Tyrie Vella, Spencer L. Chadderdon, Richard H. Selfridge, Stephen M. Schultz, Brigham Young Univ. (United States) ..... [7648-03]

11:30 am: **Long range multiplexed sensors based on identical Bragg gratings with ultra-low reflectivity**, Mikhail G. Shlyagin, Luis Antonio Arias Castro, Rodolfo Martinez Manuel, Serguei V. Miridonov, Ctr. de Investigación Científica y de Educación Superior de Ensenada (Mexico) . [7648-04]

Lunch Break ..... 11:50 am to 1:20 pm

**SESSION 1**

**Room: Royal Palm V**  
**Mon. 10:30 to 11:50 am**

**Optical Methods for Composite and Civil Structures I**

*Session Chairs: Amrita Kumar*, Florida State Univ.

10:30 am: **Simultaneous strain and temperature monitoring of a small-scale steel column in harsh environment with long-period fiber grating sensors**, Genda Chen, Hai Xiao, Ying Huang, Yinan Zhang, Zhi Zhou, Missouri Univ. of Science and Technology (United States) .... [7649-01]

10:50 am: **Damage localization on a composite wing using FBG strain amplitude information**, Cristobal Hiche, Clyde K. Coelho, Aditi Chattopadhyay, Arizona State Univ. (United States); Mark E. Seaver, U.S. Naval Research Lab. (United States) ..... [7649-02]

11:10 am: **Fiber optic acoustic emission sensor for damage monitoring in composite tube**, An-Dien Nguyen, Los Gatos Research, Inc. (United States); Alexi S. Rakow, Exponent, Inc. (United States) ..... [7649-03]

11:30 am: **Risk of infrastructure performance failures**, A. Emin Aktan, Franklin L. Moon, David S. Lowdermilk, Intelligent Infrastructure Systems, LLC (United States) ..... [7649-04]

Lunch Break ..... 11:50 am to 1:20 pm

**SESSION 1a**

**Room: Royal Palm I**  
**Mon. 10:30 to 11:50 am**

**Guided Waves I: Signal Generation and Analysis**

*Session Chairs: Tribikram Kundu*, The Univ. of Arizona; **Wolfgang Grill**, Univ. Leipzig (Germany)

10:50 am: **Comparison of 1D and 3D laser vibrometry measurements of Lamb waves**, Eric D. Swenson, Air Force Institute of Technology (United States); Hoon Sohn, Korea Advanced Institute of Science and Technology (Korea, Democratic Peoples Republic of); Steven E. Olson, Martin P. Desimio, Univ. of Dayton Research Institute (United States) ..... [7650-01]

11:10 am: **Time series analysis of piezoelectric active-sensing for SHM applications**, Gyuhae Park, Eloi F. Figueiredo, Kevin M. Farinholt, Charles R. Farrar, Los Alamos National Lab. (United States) ..... [7650-02]

11:30 am: **Detection of delamination defects in carbon fiber reinforced polymer components: miniaturized hardware design for the smart material actuation of ultrasound guided waves**, Helmut Wernick, Andreas Dantele, Johannes Korak, Thomas Rittenschober, PROFACTOR GmbH (Austria)..... [7650-03]

10:30 am: **Lamb wave sensing with metal-core piezoelectric fiber for structural health monitoring**, Jinhao Qiu, Jian Liu, Nanjing Univ. of Aeronautics and Astronautics (China) ..... [7650-04]

**SESSION 1b**

**Room: Royal Palm VI**  
**Mon. 10:30 to 11:50 am**

**Bridge Monitoring**

*Session Chairs: Won-Bae Na*, Pukyong National Univ. (Korea, Republic of); **Henrique L. Reis**, Univ. of Illinois at Urbana-Champaign

10:30 am: **Health monitoring of prestressing tendons in post-tensioned concrete structures**, Salvatore Salamone, Ivan Bartoli, Ankit Srivastava, Robert Phillips, Claudio Nucera, Francesco Lanza di Scalea, Univ. of California, San Diego (United States); Charles Sikorsky, California State Dept. of Transportation (United States) . . [7650-05]

10:50 am: **Bridge monitoring using heterogeneous wireless sensor network**, Shivan Haran, Shubhalaxmi Kher, Arkansas State Univ. (United States) . . . . . [7650-06]

11:10 am: **Multi input-single output (MISO) models identification of tower bridge movements using GPS monitoring system**, Mosbeh Kaloop, Hui Li, Harbin Institute of Technology (China) . . . . . [7650-07]

11:30 am: **Correlation analysis and application of the bridge structural health monitoring system**, Shunren Hu, Weimin Chen, Xiaoxia Gao, Chongqing Univ. (China) ..... [7650-08]

Lunch Break ..... 11:50 am to 1:20 pm

Conference 7642	Conference 7643	Conference 7644	Conference 7645	Conference 7646	
<p style="text-align: center;"><b>SESSION 2</b></p> <p style="text-align: center;"><b>Room: Pacific Salon I-III Mon. 1:30 to 3:10 pm</b></p> <p style="text-align: center;"><b>Haptic/Tactile Interfaces and Braille Displays I</b></p> <p><i>Session Chairs: Qibing Pei, Univ. of California, Los Angeles; Deane B. Blazie, National Braille Press</i></p> <p>1:30 pm: <b>Refreshable Braille displays using electroactive polymer (EAP) actuators</b>, Yoseph Bar-Cohen, Jet Propulsion Lab. (United States) . . . [7642-04]</p> <p>1:50 pm: <b>EAP actuators aid the quest for the 'Holy Braille' of tactile displays</b>, Noel H. Runyan, National Braille Press (United States) and Personal Data Systems, Inc. (United States); Deane B. Blazie, National Braille Press (United States) and Blazie Engineering, Inc. (United States) [7642-05]</p> <p>2:10 pm: <b>PVDF actuators for Braille displays</b>, Thomas Levard, Paul J. Diglio, Christopher D. Rahn, Lee J. Gorny, Qiming M. Zhang, The Pennsylvania State Univ. (United States) . . . . . [7642-06]</p> <p>2:30 pm: <b>The integration of novel EAP-based Braille cells for use in a refreshable tactile display</b>, Neil H. Di Spigna, Parthasarathi Chakraborti, David A. Winick, Peichun Yang, Tushar K. Ghosh, Paul D. Franzon, North Carolina State Univ. (United States) . . . . . [7642-07]</p> <p>2:50 pm: <b>Compact electroactive polymer actuators suitable for Braille display</b>, Lee J. Gorny, Minren Lin, Sheng Liu, Qiming M. Zhang, The Pennsylvania State Univ. (United States) . . . . . [7642-08]</p> <p>Coffee Break. . . . . 3:10 to 3:40 pm</p>	<p style="text-align: center;"><b>SESSION 2a</b></p> <p style="text-align: center;"><b>Room: Sunrise Mon. 1:20 to 3:00 pm</b></p> <p style="text-align: center;"><b>Energy Harvesting and Scavenging I: Piezoelectric Systems I</b></p> <p><i>Session Chair: Mehrdad N. Ghasemi-Nejhad, Univ. of Hawai'i</i></p> <p>1:20 pm: <b>Long term transducer performance for human motion energy harvesting</b>, Sam Behrens, Scott A. McGarry, Commonwealth Scientific and Industrial Research Organisation (Australia) . . . . . [7643-09]</p> <p>2:00 pm: <b>Novel two-stage piezoelectric-based electrical energy generators for low and variable speed rotary machinery</b>, Richard T. Murray, Jahangir S. Rastegar, Omnitek Partners, LLC (United States) . . . . . [7643-11]</p> <p>2:20 pm: <b>Energy-harvesting power sources for very-high-G gun-fired munitions</b>, Jahangir S. Rastegar, Richard T. Murray, Omnitek Partners, LLC (United States); Carlos M. Pereira, Hai-Long Nguyen, U.S. Army Armament Research, Development and Engineering Ctr. (United States) . . . . . [7643-12]</p> <p>2:40 pm: <b>Strength analysis of piezoceramic materials for structural considerations in energy harvesting for UAVs</b>, Steven R. Anton, Alper Erturk, Daniel J. Inman, Virginia Polytechnic Institute and State Univ. (United States) . . . . . [7643-13]</p> <p>Coffee Break. . . . . 3:00 to 3:30 pm</p>	<p style="text-align: center;"><b>SESSION 2b</b></p> <p style="text-align: center;"><b>Room: Towne Mon. 1:30 to 3:10 pm</b></p> <p style="text-align: center;"><b>SMA- and Piezo-based Materials and Systems II: SMAs and SMPs II</b></p> <p><i>Session Chair: Mehrdad N. Ghasemi-Nejhad, Univ. of Hawai'i</i></p> <p>1:30 pm: <b>A one-dimensional rate-dependent constitutive model for superelastic shape memory alloys</b>, Hui Qian, Zhengzhou Univ. (China); Hong-Nan Li, Dalian Univ. of Technology (China); Gangbing Song, Univ. of Houston (United States); Huai Chen, Zhengzhou Univ. (China); Renjie Wen, Hebei Univ. of Technology (China) . . . . . [7643-14]</p> <p>1:50 pm: <b>Shape memory effect and mechanical properties of short fiber reinforced SMP composite</b>, Kai Yu, Yanju Liu, Jinsong Leng, Harbin Institute of Technology (China) . . . . . [7643-15]</p> <p>2:10 pm: <b>Experimental investigation of active rib stitch knitted architecture for flow control applications</b>, Benjamin Pascoe, Julianna M. Abel, Jonathan E. Luntz, Diann E. Brei, Univ. of Michigan (United States) . . . . . [7643-16]</p> <p>2:30 pm: <b>Ferromagnetic shape memory flapper</b>, Yaniv Ganor, Univ. of Minnesota (United States); Oren Kanner, Doron Shilo, Technion-Israel Institute of Technology (Israel); Richard D. James, Univ. of Minnesota (United States) . . . . . [7643-17]</p> <p>2:50 pm: <b>Development, assembly, and validation of an SMA-actuated two-joint nozzle and six-channel power supply for use in a smart inhaler system</b>, Stephen J. Furst, Rohan Hangekar, Stefan S. Seelecke, North Carolina State Univ. (United States) . . . . . [7643-18]</p> <p>Coffee Break. . . . . 3:00 to 3:30 pm</p>	<p style="text-align: center;"><b>SESSION 2</b></p> <p style="text-align: center;"><b>Room: Royal Palm II Mon. 1:40 to 3:00 pm</b></p> <p style="text-align: center;"><b>Modeling of Constitutive Behavior of Smart Materials</b></p> <p><i>Session Chairs: William S. Oates, The Florida State Univ.; Ralph C. Smith, North Carolina State Univ.</i></p> <p>1:40 pm: <b>New unifying concepts for modeling smart materials</b>, William S. Oates, Florida State Univ. (United States) . . . . . [7644-05]</p> <p>2:00 pm: <b>Reduced-order model development for high-order smart systems</b>, Stephen F. May, Ralph C. Smith, North Carolina State Univ. (United States) . . . . . [7644-06]</p> <p>2:20 pm: <b>Adaptive nonlinear control design for hysteretic smart systems</b>, Xiang Fan, Ralph C. Smith, North Carolina State Univ. (United States) . . . . . [7644-07]</p> <p>2:40 pm: <b>Finite element analysis of ferroelastic/ferroelectric strain incompatibility in radially poled thick walled ferroelectric cylinders</b>, Sike Liu, Christopher S. Lynch, Univ. of California, Los Angeles (United States) . . . . . [7644-08]</p> <p>Coffee Break. . . . . 3:00 to 3:30 pm</p>	<p style="text-align: center;"><b>SESSION 2</b></p> <p style="text-align: center;"><b>Room: Sunset Mon. 1:30 to 3:10 pm</b></p> <p style="text-align: center;"><b>Engineering with Shape Memory Polymer for Industrial Applications (SMP) I</b></p> <p><i>Session Chair: William W. Clark, Univ. of Pittsburgh</i></p> <p>1:30 pm: <b>Next generation control system for reflexive aerostructures (SMP session)</b>, Michael Maddux, Cornerstone Research Group, Inc. (United States) . . . . . [7645-05]</p> <p>1:50 pm: <b>Analysis of a large-deformation shape memory polymer locking link (SMP session)</b>, William W. Clark, John C. Brigham, Changki Mo, Univ. of Pittsburgh (United States); Shiv Joshi, NextGen Aeronautics, Inc. (United States) [7645-06]</p> <p>2:10 pm: <b>Fabrication and testing of a shape memory polymer active rigidity 'smart joint' for wing morphing on a bat-inspired MAV</b>, Franklin Geeng, Justin E. Manzo, Ephraim Garcia, Cornell Univ. (United States) . . . . . [7645-07]</p> <p>2:30 pm: <b>Shape memory polymer (SMP) venting mechanism for munitions</b>, Michael J. Fisher, Cornerstone Research Group, Inc. (United States) . . . . . [7645-08]</p> <p>2:50 pm: <b>Reflexive marine systems for autonomous structural repair</b>, Michael Maddux, Cornerstone Research Group, Inc. (United States) . . . . . [7645-09]</p> <p>Coffee Break. . . . . 3:10 to 3:40 pm</p>	<p style="text-align: center;"><b>Room: Royal Palm III Mon. 1:30 to 2:10 pm</b></p> <p style="text-align: center;"><b>Keynote Session</b></p> <p><i>Session Chair: Sang H. Choi, NASA Langley Research Ctr.</i></p> <p>1:30 pm: <b>Nanoscale research in a strategy for the transportation system to meet a new era</b>, Kunik Lee, Federal Highway Administration (United States) . . . [7646-05]</p> <p style="text-align: center;"><b>SESSION 4</b></p> <p style="text-align: center;"><b>Room: Royal Palm III Mon. 2:10 to 3:10 pm</b></p> <p style="text-align: center;"><b>Nanowire, Nanotube, and Nanostructures II</b></p> <p><i>Session Chair: Sang H. Choi, NASA Langley Research Ctr.</i></p> <p>2:10 pm: <b>Nanotechnology for condition-based maintenance (Invited Paper)</b>, Jaret Riddick, Army Research Lab. (United States); Sang H. Choi, NASA Langley Research Ctr. (United States) . . . [7646-06]</p> <p>2:50 pm: <b>A systems engineering approach to designing, modeling, and networking wireless nano sensors and systems</b>, Seshadri X. Mohan, Univ. of Arkansas at Little Rock (United States) . . . . . [7646-07]</p> <p>Coffee Break. . . . . 3:10 to 3:40 pm</p>

Conference 7647		Conference 7648		Conference 7649		Conference 7650		
<b>SESSION 2a</b>	<b>SESSION 2b</b>	<b>SESSION 2</b>	<b>SESSION 2</b>	<b>SESSION 2a</b>	<b>SESSION 2b</b>	<b>SESSION 2a</b>	<b>SESSION 2b</b>	
<b>Room: Pacific Salon IV-V Mon. 1:30 to 3:10 pm</b>	<b>Room: Pacific Salon VI-VII Mon. 1:30 to 3:10 pm</b>	<b>Room: Royal Palm IV Mon. 1:40 to 3:00 pm</b>	<b>Room: Royal Palm V Mon. 1:20 to 3:00 pm</b>	<b>Room: Royal Palm I Mon. 1:20 to 3:00 pm</b>	<b>Room: Royal Palm VI Mon. 1:20 to 3:00 pm</b>	<b>Room: Royal Palm I Mon. 1:20 to 3:00 pm</b>	<b>Room: Royal Palm VI Mon. 1:20 to 3:00 pm</b>	
<b>Wireless Sensors for SHM</b> <i>Session Chairs: Jeong-Tae Kim, Pukyong National Univ. (Korea, Republic of); Lindsey S. Bryson, Univ. of Kentucky</i>	<b>Damage Detection</b> <i>Session Chairs: Li Zhou, Nanjing Univ. of Aeronautics and Astronautics (China); Paul Fromme, Univ. College London (United Kingdom)</i>	<b>Fiber Bragg Grating Sensors II</b> <i>Session Chair: Sridhar Krishnaswamy, Northwestern Univ.</i>	<b>Optical Methods for Composite and Civil Structures II</b> <i>Session Chairs: Jerome P. Lynch, Univ. of Michigan; Amrita Kumar, Florida State Univ.</i>	<b>Guided Waves II: Signal Generation and Analysis</b> <i>Session Chairs: Jennifer E. Michaels, Georgia Institute of Technology; Anthony J. Croxford, Univ. of Bristol (United Kingdom)</i>	<b>Signal Processing and Modeling</b> <i>Session Chairs: Andrei N. Zagrai, New Mexico Institute of Mining and Technology; Samik Das, Accent Technologies, Inc.</i>	<b>Guided Waves II: Signal Generation and Analysis</b> <i>Session Chairs: Jennifer E. Michaels, Georgia Institute of Technology; Anthony J. Croxford, Univ. of Bristol (United Kingdom)</i>	<b>Signal Processing and Modeling</b> <i>Session Chairs: Andrei N. Zagrai, New Mexico Institute of Mining and Technology; Samik Das, Accent Technologies, Inc.</i>	
1:30 pm: <b>Feasibility of embedded wireless sensors for monitoring of concrete curing and structural health</b> , William Quinn, Gerard Kelly, Cork Institute of Technology (Ireland) . . . . . [7647-03]	1:30 pm: <b>An experimental study on AEKF method for damage detection of base-isolated structures</b> , Qiang Yin, Li Zhou, Nanjing Univ. of Aeronautics and Astronautics (China); Jann N. Yang, Univ. of California, Irvine (United States) . . . . . [7647-08]	1:40 pm: <b>Acoustic emission measurement with fiber Bragg gratings for structure health monitoring</b> , Curtis E. Banks, NASA Marshall Space Flight Ctr. (United States); Nehemiah J. Mabry, The Univ. of Alabama in Huntsville (United States); Melissa Wilson, Georgia Institute of Technology (United States); Donald J. Roth, NASA Glenn Research Ctr. (United States); James L. Walker II, Samuel S. Russell, NASA Marshall Space Flight Ctr. (United States) [7648-05]	1:20 pm: <b>Development of visibly active titania-CNT films for low-light sensors</b> , Tarik J. Dickens, Okenwa O. Okoli, Florida State Univ. (United States) . . . . . [7649-05]	1:20 pm: <b>Use of anisotropy to guide acoustic waves along desired trajectories</b> , Aref Tehrani, Alireza V. Amirkhizi, Siavouche Nemat-Nasser, Univ. of California, San Diego (United States) . . . . . [7650-09]	1:20 pm: <b>A statistical confidence model for noise-contaminated structural transmissibility measurements used in damage detection</b> , Zhu Mao, Michael D. Todd, Univ. of California, San Diego (United States) . . . . . [7650-14]	1:40 pm: <b>A new algorithm for detecting impact points in anisotropic plates by the acoustic emission technique</b> , Talieh Hajzargarbashi, Tribikram Kundu, The Univ. of Arizona (United States) . . . . . [7650-10]	1:40 pm: <b>Damage inspection and health monitoring of dynamical systems by advanced time-frequency analysis</b> , Pengjin F. Pai, Univ. of Missouri-Columbia (United States) . . . . . [7650-15]	
1:50 pm: <b>The Smartbrick wireless sensor node for high-resolution structural health monitoring</b> , Bentley O. Banks, David A. Lecko, Sahra Sedigh, Missouri Univ. of Science and Technology (United States) . . . . . [7647-04]	1:50 pm: <b>Applications of a structural damage detection method to experimental results</b> , Rui Li, Li Zhou, Nanjing Univ. of Aeronautics and Astronautics (China); Jann N. Yang, Univ. of California, Irvine (United States); Qiang Yin, Nanjing Univ. of Aeronautics and Astronautics (China) . . . . . [7647-09]	2:00 pm: <b>High-precision thermal strain measurements using surface-mounted fiber Bragg grating sensors</b> , Uwe C. Mueller, Jan Both, Technische Univ. München (Germany); Johannes Roths, Hochschule München (Germany); Horst J. Baier, Technische Univ. München (Germany) . . . . . [7648-06]	1:40 pm: <b>Field investigation on casing pipe damage for pumping well pipelines using optical fiber sensors</b> , Zhi Zhou, Harbin Institute of Technology (China); Genda Chen, Missouri Univ. of Science and Technology (United States) . . . . . [7649-06]	1:40 pm: <b>A new algorithm for detecting impact points in anisotropic plates by the acoustic emission technique</b> , Talieh Hajzargarbashi, Tribikram Kundu, The Univ. of Arizona (United States) . . . . . [7650-10]	1:40 pm: <b>Damage inspection and health monitoring of dynamical systems by advanced time-frequency analysis</b> , Pengjin F. Pai, Univ. of Missouri-Columbia (United States) . . . . . [7650-15]	2:00 pm: <b>Mode elective excitation and detection of Lamb waves</b> , K. Hahn, U. Amjad, K. S. Tarar, W. Grill, Univ. Leipzig (Germany) . . . . . [7650-09]	2:00 pm: <b>Lumped circuit mechanical models and lattice dynamics approach to the dependence of the time-of-flight of bulk and guided acoustical modes on elongation</b> , Khurram S. Tarar, U. Amjad, W. Grill, Univ. Leipzig (Germany) . . . . . [7650-16]	
2:10 pm: <b>Development of high-sensitivity sensor for structural health monitoring</b> , Hongki Jo, Univ. of Illinois at Urbana-Champaign (United States); Jennifer A. Rice, Texas Tech Univ. (United States); Billie F. Spencer, Jr., Univ. of Illinois at Urbana-Champaign (United States) . . . . . [7647-05]	2:10 pm: <b>Coupling coefficient analysis in damage detection using magnetic impedance approach</b> , Xin Wang, Jiong Tang, Univ. of Connecticut (United States) . . . . . [7647-10]	2:20 pm: <b>Fiber optic thermal health monitoring of composites</b> , Meng-Chou Wu, William P. Winfree, NASA Langley Research Ctr. (United States) . . . . . [7648-07]	2:00 pm: <b>In-situ monitoring of curing and ageing effects in FRP plates using embedded FBG sensors</b> , Guijun Xian, Chuan Wang, Hui Li, Harbin Institute of Technology (China); Jinping Ou, Dalian Univ. of Technology (China) . . . . . [7649-07]	2:20 pm: <b>Active loose bolt detection in a complex satellite structure</b> , Whitney D. Reynolds, CSA Engineering, Inc. (United States); Derek T. Doyle, Air Force Research Lab. (United States) . . . . . [7650-12]	2:20 pm: <b>Characterization of acoustic emission signals generated during fretting</b> , Mannur J. Sundaresan, Md. Tariq Alam, North Carolina Agricultural and Technical State Univ. (United States) . . . . . [7650-17]	2:20 pm: <b>Smart fiber reinforced plastic composites based on fiber optic sensing</b> , Caiqian Yang, Zhishen Wu, Yongsheng Tang, Southeast Univ. (China) . . . . . [7649-08]	2:40 pm: <b>Warped frequency transform for damage detection using Lamb waves</b> , Luca De Marchi, Univ. di Bologna (Italy); Massimo Ruzzene, Buli Xu, Georgia Institute of Technology (United States); Emanuele Baravelli, Alessandro Marzani, Nicolò Speciale, Univ. di Bologna (Italy) [7650-13]	2:40 pm: <b>Electromagnetic wave modeling in a coaxial cable with multiple apertures</b> , Genda Chen, Mei Wang, Marina Koledintseva, David Pommerenke, Missouri Univ. of Science and Technology (United States) . . . . . [7650-18]
2:30 pm: <b>Structural health monitoring system of a cable-stayed bridge using a dense array of scalable smart sensor network</b> , Soojin Cho, Korea Advanced Institute of Science and Technology (Korea, Republic of); Shin Ae Jang, Hongki Jo, Kirill Mechitov, Univ. of Illinois at Urbana-Champaign (United States); Jennifer A. Rice, Texas Tech Univ. (United States); Hyung-Jo Jung, Chung-Bang Yun, Korea Advanced Institute of Science and Technology (Korea, Republic of); Billie F. Spencer, Jr., Univ. of Illinois at Urbana-Champaign (United States); Tomonori Nagayama, The Univ. of Tokyo (Japan); Juwon Seo, Hyundai Motor Co. (Korea, Republic of) . . . . . [7647-06]	2:30 pm: <b>Delamination detection using embedded BOCDA optical fiber sensor</b> , Satoshi Hasegawa, Takashi Yari, Motoshi Toyama, Kanehiro Nagai, Mitsubishi Heavy Industries, Ltd. (Japan); Yasuhiro Koshioka, RIMCOF (Japan) . . . . . [7647-11]	2:40 pm: <b>A film pressure sensor based on optical fiber Bragg grating</b> , Zhichun Zhang, Gang Deng, Yongbo Dai, Yanju Liu, Jinsong Leng, Harbin Institute of Technology (China) . . . . . [7648-09]	2:20 pm: <b>Smart fiber reinforced plastic composites based on fiber optic sensing</b> , Caiqian Yang, Zhishen Wu, Yongsheng Tang, Southeast Univ. (China) . . . . . [7649-08]	2:40 pm: <b>Warped frequency transform for damage detection using Lamb waves</b> , Luca De Marchi, Univ. di Bologna (Italy); Massimo Ruzzene, Buli Xu, Georgia Institute of Technology (United States); Emanuele Baravelli, Alessandro Marzani, Nicolò Speciale, Univ. di Bologna (Italy) [7650-13]	2:40 pm: <b>Electromagnetic wave modeling in a coaxial cable with multiple apertures</b> , Genda Chen, Mei Wang, Marina Koledintseva, David Pommerenke, Missouri Univ. of Science and Technology (United States) . . . . . [7650-18]	2:40 pm: <b>Smart fiber reinforced plastic composites based on fiber optic sensing</b> , Caiqian Yang, Zhishen Wu, Yongsheng Tang, Southeast Univ. (China) . . . . . [7649-08]	2:40 pm: <b>Warped frequency transform for damage detection using Lamb waves</b> , Luca De Marchi, Univ. di Bologna (Italy); Massimo Ruzzene, Buli Xu, Georgia Institute of Technology (United States); Emanuele Baravelli, Alessandro Marzani, Nicolò Speciale, Univ. di Bologna (Italy) [7650-13]	
2:50 pm: <b>Monitoring of fatigue crack growth using guided ultrasonic waves</b> , Bernard Masserey, Univ. of Applied Sciences Fribourg (Switzerland); Erik Kostson, Paul Fromme, Univ. College London (United Kingdom) . . . . . [7647-12]	2:50 pm: <b>Monitoring of fatigue crack growth using guided ultrasonic waves</b> , Bernard Masserey, Univ. of Applied Sciences Fribourg (Switzerland); Erik Kostson, Paul Fromme, Univ. College London (United Kingdom) . . . . . [7647-12]	2:40 pm: <b>A film pressure sensor based on optical fiber Bragg grating</b> , Zhichun Zhang, Gang Deng, Yongbo Dai, Yanju Liu, Jinsong Leng, Harbin Institute of Technology (China) . . . . . [7648-09]	2:40 pm: <b>Stay cable live load effects analysis by embedded OFBG sensors</b> , Chengming Lan, China Univ. of Mining and Technology (China); Hui Li, Harbin Institute of Technology (China) . . . . . [7649-09]	2:40 pm: <b>Warped frequency transform for damage detection using Lamb waves</b> , Luca De Marchi, Univ. di Bologna (Italy); Massimo Ruzzene, Buli Xu, Georgia Institute of Technology (United States); Emanuele Baravelli, Alessandro Marzani, Nicolò Speciale, Univ. di Bologna (Italy) [7650-13]	2:40 pm: <b>Electromagnetic wave modeling in a coaxial cable with multiple apertures</b> , Genda Chen, Mei Wang, Marina Koledintseva, David Pommerenke, Missouri Univ. of Science and Technology (United States) . . . . . [7650-18]	2:40 pm: <b>Stay cable live load effects analysis by embedded OFBG sensors</b> , Chengming Lan, China Univ. of Mining and Technology (China); Hui Li, Harbin Institute of Technology (China) . . . . . [7649-09]	2:40 pm: <b>Warped frequency transform for damage detection using Lamb waves</b> , Luca De Marchi, Univ. di Bologna (Italy); Massimo Ruzzene, Buli Xu, Georgia Institute of Technology (United States); Emanuele Baravelli, Alessandro Marzani, Nicolò Speciale, Univ. di Bologna (Italy) [7650-13]	
Coffee Break . . . . . 3:10 to 3:40 pm	Coffee Break . . . . . 3:10 to 3:40 pm	Coffee Break . . . . . 3:00 to 3:30 pm	Coffee Break . . . . . 3:00 to 3:30 pm	Coffee Break . . . . . 3:00 to 3:30 pm	Coffee Break . . . . . 3:00 to 3:30 pm	Coffee Break . . . . . 3:00 to 3:30 pm	Coffee Break . . . . . 3:00 to 3:30 pm	

Get a free trial subscription.  
Ask your librarian.



SPIEDigitalLibrary.org

Conference 7642	Conference 7643	Conference 7644	Conference 7645	Conference 7646	
<p><b>SESSION 3</b></p> <p><b>Room: Pacific Salon I-III</b> <b>Mon. 4:30 to 5:45 pm</b></p> <p><b>EAP-in-Action Session and Demonstrations</b></p> <p><i>Session Chair: Yoseph Bar-Cohen, Jet Propulsion Lab.</i></p> <p>This Session highlights some of the latest capabilities and applications of Electroactive Polymers (EAP) materials where the attendees are shown demonstrations of these materials in action. Also, the attendees interact directly with technology developers and given "hands-on" experience with this emerging technology. The first Human/EAP-Robot Armwrestling Contest was held during this session of the 2005 EAPAD conference.</p> <p><b>Tentative Demonstrations:</b></p> <p><b>Jinsong Leng, Zhen Zhang, Liwu Liu, Xin Lan,</b> Harbin Institute of Technology (China)</p> <p><b>1. Tactile display using stacked dielectric elastomer.</b></p> <p><b>2. Braille printer using refreshable shape-memory polymer (SMP) paper.</b></p> <p><b>HansErik Kil and Mike Tryson,</b> Danfoss PolyPower A/S (Denmark)</p> <p><b>Demos actuated by PolyPower dielectric EAP films.</b></p> <p><b>Federico Carpi,</b> Univ. of Pisa, Research Centre "E. Piaggio" (Italy)</p> <p><b>Hydrostatically coupled dielectric elastomer actuators</b></p> <p><b>Iain Anderson Emilio Calius, Todd Gisby, Thomas McKay and Ben O'Brien,</b> The Auckland Bioengineering Institute's Biomimetics Lab. (New Zealand)</p> <p><b>Dielectric elastomer actuator (DEA): demonstrations of actuation, sensing, and control</b></p> <p><b>Marcus Rosenthal, James Biggs and Al Zarrabi,</b> Artificial Muscle, Inc. (AMI) (USA)</p> <p><b>Reflex haptic feedback technology</b></p> <p><b>Deane Blazie and Noel Runyan,</b> National Braille Press (USA)</p> <p><b>Commercial active Braille displays</b></p> <p><b>Lenore Rasmussen,</b> Ras Labs. LLC (USA)</p> <p><b>Contractile EAPs</b></p> <p><b>Qibing Pei, Zhibin Yu, Paul Brochu, Xiaofan Niu, Wei Yuan, and Huafeng Li,</b> Univ. of California, Los Angeles (USA)</p> <p><b>Bi-stable electroactive polymers (BSEP)</b></p> <p><b>Erik Steltz and Annan Mozeika,</b> iRobot G&amp;L Research (USA)</p> <p><b>1) Jamming Skin Enabled Locomotion prototype</b></p> <p><b>2) Jamming Modulated Unimorph</b></p>	<p><b>SESSION 3a</b></p> <p><b>Room: Sunrise</b> <b>Mon. 3:30 to 5:10 pm</b></p> <p><b>Energy Harvesting and Scavenging II: Piezoelectric Systems II</b></p> <p><i>Session Chair: Mehrdad N. Ghasemi-Nejhad, Univ. of Hawai'i</i></p> <p><b>3:30 pm: Impedance matching for improving piezoelectric energy harvesting systems,</b> Junrui Liang, Wei-Hsin Liao, The Chinese Univ. of Hong Kong (Hong Kong, China) ..... [7643-19]</p> <p><b>3:50 pm: Broadband pipeline vibration energy harvesting,</b> Amr M. Baz, Univ. of Maryland, College Park (United States); Mustafa H. Arafa, The American Univ. in Cairo (Egypt); Wael N. Akl, Nile Univ. (Egypt); Khaleel Al-Hussain, Saudi Aramco (Saudi Arabia) ..... [7643-20]</p> <p><b>4:10 pm: A novel approach for a piezoelectric broadband vibration energy harvesting generator,</b> Jens Twiefel, Jörg Wallaschek, Leibniz Univ. Hannover (Germany); Shashank Priya, Vishwas Bedekar, Virginia Polytechnic Institute and State Univ. (United States) ..... [7643-21]</p> <p><b>4:30 pm: Piezoelectric energy harvesting from flow excitation: modeling and experiment,</b> Alper Erturk, Virginia Polytechnic Institute and State Univ. (United States); Wander G. R. Vieira, Carlos De Marqui, Jr., Univ. de São Paulo (Brazil); Daniel J. Inman, Virginia Polytechnic Institute and State Univ. (United States) ..... [7643-22]</p> <p><b>4:50 pm: Power-amplifying strategy in vibration-powered energy harvesters,</b> Pyung Sik Ma, Jae Eun Kim, Yoon Young Kim, Seoul National Univ. (Korea, Republic of) ..... [7643-23]</p> <p>Coffee Break. .... 3:10 to 3:40 pm</p>	<p><b>SESSION 3b</b></p> <p><b>Room: Towne</b> <b>Mon. 3:40 to 5:00 pm</b></p> <p><b>Passive and Active Vibration Isolation Systems II</b></p> <p><i>Session Chair: Mehrdad N. Ghasemi-Nejhad, Univ. of Hawai'i</i></p> <p><b>3:40 pm: Periodic piezoelectric sensor-actuator array for vibration suppression on a beam,</b> Benjamin S. Beck, Kenneth A. Cunefare, Georgia Institute of Technology (United States) ..... [7643-25]</p> <p><b>4:00 pm: Active vibration control with optimized modified acceleration feedback equipped with adaptive line enhancer,</b> S. Nima Mahmoudi, Michael J. Craft, Mehdi Ahmadian, Virginia Polytechnic Institute and State Univ. (United States) ..... [7643-26]</p> <p><b>4:20 pm: Numerical and experimental investigation for centrifugal loading effect on shunted piezoelectric damping,</b> James B. Min, NASA Glenn Research Ctr. (United States) ..... [7643-27]</p> <p><b>4:40 pm: Multimodal vibration control of a flexible beam and plate using multilayered piezoelectric film sensor/actuator,</b> Tsutomu Nishigaki, Kinki Univ. (Japan) ..... [7643-28]</p>	<p><b>SESSION 3</b></p> <p><b>Room: Royal Palm II</b> <b>Mon. 3:30 to 5:30 pm</b></p> <p><b>Piezoelectric Single Crystals</b></p> <p><i>Session Chairs: John E. Huber, Univ. of Oxford (United Kingdom); Jianguy Li, Univ. of Washington</i></p> <p><b>3:30 pm: Mapping of domain structure in barium titanate single crystals by synchrotron X-ray topography,</b> Prashant Potnis, John E. Huber, John P. Sutter, Felix Hofmann, Brian Abbey, Alexander M. Korsunsky, Univ. of Oxford (United Kingdom) ..... [7644-09]</p> <p><b>3:50 pm: A variational model of ferroelectric rank-2 laminate domain structures,</b> Nien-Ti Tsou, John E. Huber, Univ. of Oxford (United Kingdom) [7644-10]</p> <p><b>4:10 pm: Fabrication and characterization lead zirconate titanate (PZT) single crystal film by PZT cubes alignment,</b> Yirong Lin, Henry A. Sodano, Arizona State Univ. (United States) ..... [7644-11]</p> <p><b>4:30 pm: Triple-scale analysis and fabrication of new biocompatible MgSiO<sub>3</sub> piezoelectric thin films,</b> Hwisim Hwang, Doshisha Univ. (Japan); Yasutomo Uetsuji, Osaka Institute of Technology (Japan); Tsutao Katayama, Eiji Nakamachi, Doshisha Univ. (Japan) ..... [7644-12]</p> <p><b>4:50 pm: Domain switching in ferroelectric ceramics across morphotropic phase boundary,</b> Wen Tang, Daining Fang, Tsinghua Univ. (China); Jianguy Li, Univ. of Washington (United States) ..... [7644-13]</p>	<p><b>SESSION 3</b></p> <p><b>Room: Sunset</b> <b>Mon. 3:40 to 5:20 pm</b></p> <p><b>Engineering with Shape Memory Polymer for Industrial Applications (SMP) II</b></p> <p><i>Session Chairs: Ernie Havens, Cornerstone Research Group, Inc.; Michael D. Rauscher, Cornerstone Research Group, Inc.</i></p> <p><b>3:40 pm: Shape memory polymer activated by microwave,</b> Yao Zhang, Fencheng Zhang, Zhihong Xu, Nanjing Univ. of Science &amp; Technology (China) ..... [7645-10]</p> <p><b>3:50 pm: Shape memory polymer environmental exposure sensors,</b> Michael D. Rauscher, Ernie Havens, Teresa E. Havens, Cornerstone Research Group, Inc. (United States); Jace McFerran, Naval Surface Warfare Ctr. Dahlgren Div. (United States) ..... [7645-13]</p> <p><b>4:20 pm: The characterization of a deployable sandwich beam with shape memory polymer foam core,</b> Zhihong Xu, Nanjing Univ. of Science &amp; Technology (China) ..... [7645-14]</p> <p><b>4:40 pm: Characteristics of shape memory polymer foams filled with hollow microsphere,</b> Fencheng Zhang, Yao Zhang, Zhihong Xu, Nanjing Univ. of Science &amp; Technology (China) .. [7645-15]</p> <p><b>5:00 pm: Deployment dynamics of fiber-reinforced shape-memory polymer structure,</b> Xin Lan, Yanju Liu, Jinsong Leng, Harbin Institute of Technology (China) ..... [7645-16]</p>	<p><b>SESSION 5</b></p> <p><b>Room: Royal Palm III</b> <b>Mon. 3:40 to 5:40 pm</b></p> <p><b>Nano Devices and Sensors I</b></p> <p><i>Session Chair: Aswini K. Pradhan, Norfolk State Univ.</i></p> <p><b>3:40 pm: Vibration control of beam using piezoelectric electro-active paper sensor,</b> Jungyun Kim, Ho Cheol Lee, Heung Soo Kim, Catholic Univ. of Daegu (Korea, Republic of) ..... [7646-08]</p> <p><b>4:00 pm: Environmental sensing in composite oxide semiconductor films,</b> Aswini K. Pradhan, Norfolk State Univ. (United States) ..... [7646-09]</p> <p><b>4:20 pm: Formation of bismuth telluride with metallic nanoparticles for thermoelectric applications,</b> Shiho Iwanaga, The George Washington Univ. (United States); Glen C. King, Yeonjoon Park, NASA Langley Research Ctr. (United States); Kunik Lee, Federal Highway Administration (United States); Sang H. Choi, NASA Langley Research Ctr. (United States) ..... [7646-10]</p> <p><b>4:40 pm: Deposition of thin sodium-potassium niobate (NKN) films on piezoelectric cellulose EAPap,</b> Sang-Dong Jang, Joo-Hyung Kim, Jaehwan Kim, Inha Univ. (Korea, Republic of); Jung-Hyuk Koh, Kwangwoon Univ. (Korea, Republic of) ..... [7646-11]</p> <p><b>5:00 pm: Growth and properties of PZT-based perovskite multilayers for sensor applications,</b> Rajini B. Konda, Norfolk State Univ. (United States) ..... [7646-12]</p> <p><b>5:20 pm: Carbon nanocomposite-based contact mode interdigitated center of pressure sensor,</b> Tian-Bing Xu, Cheol Park, Nelson Guerreiro, Jin Ho Kang, Joycelyn S. Harrison, James Hubbard, Jr., National Institute of Aerospace (United States) ..... [7646-13]</p>

Publish with SPIE and advance your research globally.



SPIEDigitalLibrary.org

Conference 7647	Conference 7648	Conference 7649	Conference 7650		
<p style="text-align: center;"><b>SESSION 3a</b></p> <p style="text-align: center;"><b>Room: Pacific Salon IV-V Mon. 3:40 to 6:00 pm</b></p> <p style="text-align: center;"><b>Next-Generation Wireless Sensing Devices and Techniques</b></p> <p><i>Session Chairs: Yang Wang, Georgia Institute of Technology; Kenneth J. Loh, Univ. of California, Davis</i></p> <p>3:40 pm: <b>Embedded EMD algorithm within an FPGA-based design to classify nonlinear SDOF systems</b>, Jonathan D. Jones, Jin-Song Pei, Univ. of Oklahoma (United States); Joseph P. Wright, Weidlinger Associates, Inc. (United States); Monte P. Tull, Univ. of Oklahoma (United States) ..... [7647-13]</p> <p>4:00 pm: <b>Development of a wireless artificial soil particle sensor for monitoring particle movement at soil-structure interfaces</b>, Bogdan Liea, Kenneth J. Loh, Univ. of California, Davis (United States) ..... [7647-14]</p> <p>4:20 pm: <b>Development of smart sensing system for structural health monitoring</b>, Chin-Hsiung Loh, Kung-Chun Lu, National Taiwan Univ. (Taiwan) ..... [7647-15]</p> <p>4:40 pm: <b>Development of a wireless power transmission system for guided wave generation and sensing via a laser</b>, Hyun-Jun Park, Hoon Sohn, Chung-Bang Yun, Korea Advanced Institute of Science and Technology (Korea, Republic of); Joseph Chung, CyTronIQ Co., Ltd. (Korea, Republic of) ..... [7647-16]</p> <p>5:00 pm: <b>Sandwich-Imote2 for wireless sensor networks in bridge monitoring applications</b>, Shamim N. Pakzad, Liang Cheng, Lehigh Univ. (United States) [7647-17]</p> <p>5:20 pm: <b>Embedded model updating and load characterization of wind turbines using wireless sensor networks</b>, Raymond A. Swartz, Andrew Zimmerman, Jerome P. Lynch, Univ. of Michigan (United States) ..... [7647-18]</p> <p>5:40 pm: <b>Wireless sensors for permanent monitoring of heritage buildings</b>, Daniele Zonta, Matteo Pozzi, Huayong Wu, Univ. degli Studi di Trento (Italy); Matteo Ceriotti, Fondazione Bruno Kessler (Italy); Paolo Zanon, Gian Pietro Picco, Stefan V. Guna, Univ. degli Studi di Trento (Italy); Amy L. Murphy, Fondazione Bruno Kessler (Italy); Leonardo Mottola, SICS (Sweden); Michele Corrà, Tretac S.r.l. (Italy) ..... [7647-19]</p>	<p style="text-align: center;"><b>SESSION 3b</b></p> <p style="text-align: center;"><b>Room: Pacific Salon VI-VII Mon. 3:40 to 5:40 pm</b></p> <p style="text-align: center;"><b>Structural Control</b></p> <p><i>Session Chairs: Steven W. Shaw, Michigan State Univ.; Masayoshi Tomizuka, Univ. of California, Berkeley</i></p> <p>3:40 pm: <b>* A mobile gait monitoring system for abnormal gait diagnosis and rehabilitation</b>, Joonbum Bae, Kyoungchul Kong, Masayoshi Tomizuka, Univ. of California, Berkeley (United States) [7647-20]</p> <p>4:00 pm: <b>Noise reduction and analysis of two-time-based multi-output modal analysis techniques</b>, Kiran X. D'Souza, Bogdan I. Epureanu, Univ. of Michigan (United States) ..... [7647-21]</p> <p>4:20 pm: <b>An active vibration control system for spacecraft in launch vehicles</b>, Ashal Shah, Bo Chen, Ossama Abdelkhalik, Michigan Technological Univ. (United States) ..... [7647-22]</p> <p>4:40 pm: <b>* Fast estimation of bifurcation conditions using noisy response data</b>, Steven W. Shaw, Nick J. Miller, Mark I. Dykman, Michigan State Univ. (United States); Kimberly L. Turner, Univ. of California, Santa Barbara (United States) ..... [7647-23]</p> <p>5:00 pm: <b>* A new approach to tackle noise issue in miniature directional microphones: bio-inspired mechanical coupling</b>, Haijun Liu, Miao Yu, Univ. of Maryland, College Park (United States) ..... [7647-24]</p> <p>5:20 pm: <b>Adaptive damping of piezoelectric structures via digital implementation of inductor-resistor shunts</b>, Thomas Rittenschober, Johannes Korak, Andreas Dantele, Profactor Produktionsforschungs GmbH (Austria) ..... [7647-25]</p>	<p style="text-align: center;"><b>SESSION 3</b></p> <p style="text-align: center;"><b>Room: Royal Palm IV Mon. 3:30 to 4:50 pm</b></p> <p style="text-align: center;"><b>Applications of Fiber Optic Sensors in Composites</b></p> <p><i>Session Chair: Kara J. Peters, North Carolina State Univ.</i></p> <p>3:30 pm: <b>Comparing polymer optical fiber, fiber Bragg grating, and traditional strain gauge for aircraft structural health monitoring</b> (<i>Invited Paper</i>), Joseba Zubia, Univ. del Pais Vasco (Spain) . . . . [7648-10]</p> <p>4:10 pm: <b>Embedded fiber Bragg sensors for damage identification in sandwich composites after impact</b>, Drew A. Hackney, Sachin S. Pawar, Kara J. Peters, North Carolina State Univ. (United States) ..... [7648-12]</p> <p>4:30 pm: <b>Structural health monitoring of composite laminates using PVDF sensory layer</b>, Anand Kumar, Harcourt Butler Technological Institute, Kanpur (India); Bishakh Bhattacharya, Indian Institute of Technology Kanpur (India) ..... [7648-13]</p>	<p style="text-align: center;"><b>SESSION 3</b></p> <p style="text-align: center;"><b>Room: Royal Palm V Mon. 3:30 to 5:30 pm</b></p> <p style="text-align: center;"><b>Health Monitoring of Aerospace Composites</b></p> <p><i>Session Chairs: Aditi Chattopadhyay, Arizona State Univ.; Fuh-Gwo Yuan, North Carolina State Univ.</i></p> <p>3:30 pm: <b>Condition based fatigue life estimation of a cruciform structure under biaxial flight profile loading</b>, Subhashish Mohanty, Aditi Chattopadhyay, Arizona State Univ. (United States) . . . . . [7649-10]</p> <p>3:50 pm: <b>Damage detection in z-pin reinforced co-cured composite Pi-joints using Lamb wave propagation using 3D laser vibrometry</b>, Hitesh Kapoor, Virginia Polytechnic Institute and State Univ. (United States); Eric D. Swenson, Som R. Soni, Air Force Institute of Technology (United States) ..... [7649-11]</p> <p>4:10 pm: <b>Understanding Lamb wave propagation in confined geometry using 3D laser vibrometry</b>, Hitesh Kapoor, Virginia Polytechnic Institute and State Univ. (United States); Eric D. Swenson, Som R. Soni, Air Force Institute of Technology (United States) ..... [7649-12]</p> <p>4:30 pm: <b>Characterization of the self-sensing performance of carbon nanotube-enhanced fiber-reinforced polymers</b>, Bryan Loyola, Valeria La Saponara, Kenneth J. Loh, Univ. of California, Davis (United States) ..... [7649-13]</p> <p>4:50 pm: <b>Analysis methods for eddy-current imaging of carbon fibre materials</b>, Martin H. Schulze, Henning Heuer, Fraunhofer-Institut für Zerstörungsfreie Prüfverfahren (Germany) . . . . . [7649-14]</p> <p>5:10 pm: <b>NDT of carbon nanotube reinforced composite using electromagnetic techniques</b>, Carmela Bonavolonta, Consiglio Nazionale delle Ricerche (Italy) and Univ. Federico II (Italy); Massimo Valentino, Consiglio Nazionale delle Ricerche (Italy); Giovanni P. Pepe, Univ. degli Studi di Napoli Federico II (Italy); Carosena Meola, Giovanni M. Carlomagno, Univ. Federico II (Italy); Ruggero Volponi, Stefania Cantoni, Ctr. Italiano Ricerche Aerospaziali (Italy); Ian Rosca, Concordia Univ. (Canada) ..... [7649-15]</p>	<p style="text-align: center;"><b>SESSION 3a</b></p> <p style="text-align: center;"><b>Room: Royal Palm I Mon. 3:30 to 5:50 pm</b></p> <p style="text-align: center;"><b>Guided Waves III: Damage Detection</b></p> <p><i>Session Chairs: Hoon Sohn, Korea Advanced Institute of Science and Technology (Korea, Republic of); Francesco Lanza di Scalea, Univ. of California, San Diego</i></p> <p>3:30 pm: <b>Damage visualization via beamforming after frequency-wavenumber filtering of full wavefield data</b>, Massimo Ruzzene, Buli Xu, Sang Jun Lee, Thomas E. Michaels, Jennifer E. Michaels, Georgia Institute of Technology (USA) . . . . [7650-19]</p> <p>3:50 pm: <b>Computational Lamb wave model validation using 1D and 3D laser vibrometer measurements</b>, Steven E. Olson, Martin P. DeSimio, Univ. of Dayton Research Institute (United States); Eric D. Swenson, Air Force Institute of Technology (United States); Hoon Sohn, Korea Advanced Institute of Science and Technology (Korea, Republic of) . [7650-20]</p> <p>4:10 pm: <b>In situ PZT diagnostics using linear reciprocity under environmental and structural variations</b>, Sang Jun Lee, Jennifer E. Michaels, Thomas E. Michaels, Georgia Institute of Technology (United States); Hoon Sohn, Korea Advanced Institute of Science and Technology (Korea, Republic of) . [7650-21]</p> <p>4:30 pm: <b>Guided waves for SHM of large truss structures</b>, Xuan Zhu, Piervincenzo Rizzo, Univ. of Pittsburgh (United States); Jerry Bruck, Pennsylvania State Dept. of Transportation (United States) . . . [7650-22]</p> <p>4:50 pm: <b>Delamination detection in composite structures using laser vibrometry measurements of Lamb waves</b>, Hoon Sohn, Korea Advanced Institute of Science and Technology (Korea, Republic of); Eric D. Swenson, Air Force Institute of Technology (United States); Steven E. Olson, Martin P. DeSimio, Univ. of Dayton Research Institute (United States) . . . . . [7650-23]</p> <p>5:10 pm: <b>Reference-free impedance-based crack detection in plate-like structures</b>, Min Koo Kim, Korea Advanced Institute of Science and Technology (Korea, Republic of); Eun Jin Kim, Hyun Woo Park, Dong-A Univ. (Korea, Republic of); Hoon Sohn, Korea Advanced Institute of Science and Technology (Korea, Republic of) ..... [7650-24]</p> <p>5:30 pm: <b>Defect detection using a new ultrasonic guided wave modal analysis technique (UMAT)</b>, Fei Yan, FBS Inc. (United States); Joseph L. Rose, The Pennsylvania State Univ. (United States) . . . . . [7650-25]</p>	<p style="text-align: center;"><b>SESSION 3b</b></p> <p style="text-align: center;"><b>Room: Royal Palm VI Mon. 3:30 to 6:10 pm</b></p> <p style="text-align: center;"><b>Civil Structure and Pipe Monitoring</b></p> <p><i>Session Chairs: Henrique L. Reis, Univ. of Illinois at Urbana-Champaign; Shivan Haran, Arkansas State Univ.</i></p> <p>3:30 pm: <b>In-service monitoring of steam pipe systems at high temperatures</b>, Yoseph Bar-Cohen, Jet Propulsion Lab. (United States) . . . . . [7650-26]</p> <p>3:50 pm: <b>A guided wave technique for detection of gas accumulation in piping systems</b>, Michael J. Quarry, Nicholas R. Camilli, Electric Power Research Institute (United States) . . . . . [7650-27]</p> <p>4:10 pm: <b>Behavior of full-scale concrete segmented pipelines under permanent ground displacements</b>, Junhee Kim, Sean O'Connor, Srinivasa Nadukuru, Univ. of Michigan (United States); Mohammed Pour-Ghaz, Purdue Univ. (United States); Jerome P. Lynch, Radoslaw L. Michalowski, Univ. of Michigan (United States); Aaron Bradshaw, Merrimack College (United States); Russell A. Green, Univ. of Michigan (United States); W. Jason Weiss, Purdue Univ. (United States) ..... [7650-28]</p> <p>4:30 pm: <b>Rayleigh surface waves for characterization of porosity in fresh concrete</b>, Cliff J. Lissenden, Ronald Then, Sheng Li, Joseph L. Rose, The Pennsylvania State Univ. (United States) . . . . . [7650-29]</p> <p>4:50 pm: <b>Shear wave velocity profiling and evaluation of liquefaction potential in northeast Arkansas using simplified equipment</b>, Ashraf Elsayed, Shivan Haran, Arkansas State Univ. (United States) . . . . . [7650-30]</p> <p>5:10 pm: <b>Health monitoring of concrete piles using piezoceramic-based smart aggregates</b>, Gangbing Song, Haichang Gu, Y. L. Mo, Univ. of Houston (United States); Ruoling Wang, Wuhan Univ. (China) . . . . . [7650-31]</p> <p>5:30 pm: <b>On-track testing of a power harvesting device for railroad track health monitoring</b>, Carl A. Nelson, Sean E. Hansen, Univ. of Nebraska-Lincoln (United States) ..... [7650-32]</p> <p>5:50 pm: <b>Development of an impact monitoring system for petroleum pipelines</b>, Oluwafemi A. Olugboji, Newcastle Univ. (United Kingdom) . . . . . [7650-33]</p>

Conference 7642

Conference 7643

Conference 7644

Conference 7645

Conference 7646

**Tuesday Announcements, Awards, Funding Talks, and Plenary Presentation**

Room: Pacific Salon I-III · 8:00 to 8:05 am

**ASME Gary Anderson Early Achievement Award**  
**Smart Structures Product Implementation Award**

8:05 to 8:20 am

**ONR Funding Agency Talk: Current and Future Programs and Initiatives**

Ignatio Perez, Office of Naval Research (United States)

Plenary Presentation ..... 8:20 to 9:05 am



**Technology Opportunities for Wind Energy Systems**

Jose Zayas, Sandia National Labs. (United States)

See page 5 for more information.

**SESSION 4**

Room: Pacific Salon I-III  
 Tues. 9:10 am to 12:10 pm

**Haptic/Tactile Interfaces and Braille Displays II**

Session Chairs: **Federico Carpi**, Univ. di Pisa (Italy); **Noel H. Runyan**, National Braille Press

9:10 am: **Bistable electroactive polymers (BSEP)** (*Invited Paper*), Qibing Pei, Univ. of California, Los Angeles (United States) ..... [7642-09]

9:40 am: **Vibrotactile display for mobile applications based on dielectric elastomer stack actuators**, Marc Matysek, Peter Lotz, Klaus Flittner, Helmut F. Schlaak, Technische Univ. Darmstadt (Germany)..... [7642-10]

Coffee Break. .... 10:00 to 10:30 am

**SESSION 4a**

Room: Sunrise  
 Tues. 9:30 am to 12:00 pm

**Energy Harvesting and Scavenging III: General**

Session Chair: **Mehrdad N. Ghasemi-Nejhad**, Univ. of Hawai'i

9:30 am: **A magnetically sprung vibration harvester**, Peter Constantinou, Phillip H. Mellor, Paul D. Wilcox, Univ. of Bristol (United Kingdom) ..... [7643-30]

9:50 am: **Nonlinear vibrations of the piezo-electromagnetic structure for energy harvesting**, Mohammad A. Karami, Daniel J. Inman, Virginia Polytechnic Institute and State Univ. (United States) ..... [7643-31]

Coffee Break. .... 10:10 to 10:40 am

**SESSION 4b**

Room: Towne  
 Tues. 9:10 am to 12:00 pm

**Magneto Rheological Systems**

Session Chair: **Mehrdad N. Ghasemi-Nejhad**, Univ. of Hawai'i

9:10 am: **A dual adaptive tunable vibration absorber using MREs for vehicle powertrain vibration control**, Nga Hoang, Nong Zhang, Univ. of Technology, Sydney (Australia); Haiping Du, Univ. of Wollongong (Australia) ..... [7643-36]

9:30 am: **Design and control of multifunctional actuators for assistive knee braces**, Hongtao Guo, Wei-Hsin Liao, The Chinese Univ. of Hong Kong (Hong Kong, China) ..... [7643-37]

9:50 am: 10:40 am: **A compressible magnetorheological fluid damper-liquid spring for controllable suspension system**, Pramod Raja, Xiaojie Wang, Faramarz Gordaninejad, Univ. of Nevada, Reno (United States) ..... [7643-39]

Coffee Break. .... 10:10 to 10:40 am

**SESSION 4**

Room: Royal Palm II  
 Tues. 9:10 to 10:10 am

**Shape Memory Materials I**

Session Chairs: **Kam K. Leang**, Virginia Commonwealth Univ.; **Darren John Hartl**, Texas A&M Univ.

9:10 am: **Thermomechanical characterization of environmentally conditioned shape memory polymer using nanoindentation**, Jared Fulcher, Y. Charles Lu, Univ. of Kentucky (United States); Gyaneshwar P. Tandon, Dean C. Foster, Air Force Research Lab. (United States) ..... [7644-15]

9:30 am: **Jetsum: SMA actuator based undersea unmanned vehicle inspired by jellyfish bio-mechanics**, Scott Bressers, Virginia Polytechnic Institute and State Univ. (United States) ..... [7644-96]

9:50 am: **Development of a McKibben artificial muscle using a shape-memory polymer**, Kazuto Takashima, RIKEN (Japan); Jonathan M. Rossiter, Univ. of Bristol (United Kingdom); Toshiharu Mukai, RIKEN (Japan) ..... [7644-17]

Coffee Break. .... 10:10 to 10:40 am

**SESSION 4**

Room: Sunset  
 Tues. 9:20 to 10:00 am

**Smart Materials and Devices for Vehicle Applications I**

Session Chairs: **Norman M. Wereley**, Univ. of Maryland, College Park; **Alan L. Browne**, General Motors Corp.

9:20 am: **Magnetostrictive actuator with hydraulic stroke amplification for active powertrain mounts**, Suryarghya Chakrabarti, Marcelo J. Dapino, The Ohio State Univ. (United States) ..... [7645-17]

9:40 am: **Active material based active sealing technology, part 1: active seal requirements vs. active material actuator properties**, Alan L. Browne, General Motors Corp. (United States); Christopher P. Henry, William B. Carter, Guillermo Herrera, Geoffrey P. McKnight, HRL Labs., LLC (United States); Nancy L. Johnson, Imad Bazzi, General Motors Corp. (United States) ..... [7645-20]

Coffee Break. .... 10:00 to 10:30 am

Room: Royal Palm III  
 Tues. 9:10 to 10:00 am

**Keynote Session**

Session Chair: **Vijay K. Varadan**, Univ. of Arkansas

9:10 am: **Smart cancer nanotechnology**, You H. Bae, The Univ. of Utah (United States) ..... [7646-14]

9:40 am: **Eco green solar energy with nanotechnology**, Vijay K. Varadan, Univ. of Arkansas (United States) ..... [7646-15]

Coffee Break. .... 10:00 to 10:30 am



Conference 7647

Conference 7648

Conference 7649

Conference 7650

**Tuesday Announcements, Awards, Funding Talks, and Plenary Presentation**

Room: Pacific Salon I-III · 8:00 to 8:05 am

**ASME Gary Anderson Early Achievement Award**  
**Smart Structures Product Implementation Award**

8:05 to 8:20 am

**ONR Funding Agency Talk: Current and Future Programs and Initiatives**

Ignatio Perez, Office of Naval Research (United States)

Plenary Presentation ..... 8:20 to 9:05 am



**Technology Opportunities for Wind Energy Systems**

Jose Zayas, Sandia National Labs. (United States)

See page 5 for more information.

**SESSION 4a**

Room: Pacific Salon IV-V  
 Tues. 9:10 to 10:10 am

**Innovative Excitation and Sensing Technologies**

Session Chair: **Hoon Sohn**, Korea Advanced Institute of Science and Technology (Korea, Republic of)

9:10 am: **Integrated PZT/FBG guided wave generation and sensing system using a single laser source**, Hyeonseok Lee, Hyunjun Park Park, Hoon Sohn, Korea Advanced Institute of Science and Technology (Korea, Republic of); Il-bum Kwon, Korea Research Institute of Standards and Science (Korea, Republic of) ..... [7647-27]

9:30 am: **Laser induced highly nonlinear solitary waves for structural NDE**, Xianglei Ni, Ricki Garden, Piervincenzo Rizzo, Univ. of Pittsburgh (United States); Chiara Daraio, California Institute of Technology (United States) ..... [7647-28]

9:50 am: **Magnetic Nanoparticle (MNP) enhanced biosensing by Surface Plasmon Resonance (SPR) for portable devices**, J. L. Wang, Z. Z. Zhu, A. Munir, Susan H. Zhou, Worcester Polytechnic Institute (United States) ..... [7647-192]

**SESSION 4b**

Room: Pacific Salon VI-VII  
 Tues. 9:10 to 10:10 am

**Sensors I**

Session Chairs: **Chengying Xu**, Univ. of Central Florida; **Alison B. Flatau**, Univ. of Maryland, College Park

9:10 am: **Optical fiber sensors for high temperature harsh environment applications**, Tao Wei, Xinwei Lan, Yinan Zhang, Hongbiao Duan, Hai Xiao, Missouri Univ. of Science and Technology (United States) ..... [7647-30]

9:30 am: **\* Micro-machinable polymer-derived ceramics sensors for high-temperature applications**, Jian Liu, Chengying Xu, Linan An, Univ. of Central Florida (United States) ..... [7647-31]

9:50 am: **\* Non-contact torque measurement using rolled single crystal-like GaInFeO patches**, Darryl Douglas, Suok-Min Na, Alison B. Flatau, Univ. of Maryland, College Park (United States) ..... [7647-32]

Coffee Break ..... 10:10 to 10:40 am

**SESSION 4**

Room: Royal Palm IV  
 Tues. 9:10 to 10:10 am

**Electromagnetic Sensors**

Session Chair: **Gun-Jin Yun**, The Univ. of Akron

9:10 am: **Multi-axial fiber-optic electric field sensor**, Daniel T. Perry, Richard S. Gibson, Stephen M. Schultz, Richard H. Selfridge, Brigham Young Univ. (United States) ..... [7648-14]

9:30 am: **Optimization of magneto-mechanical coupling in damage detection using impedance method and magnetic transducer**, Xin Wang, Jiong Tang, Univ. of Connecticut (United States) ..... [7648-15]

9:50 am: **Sensitivity analysis of a smart two-directional MOSFET magnetic sensor**, Ali Abou-Elnour, Ajman Univ. of Science & Technology (United Arab Emirates) ..... [7648-16]

Coffee Break ..... 10:10 to 10:40 am

**SESSION 4**

Room: Royal Palm V  
 Tues. 9:10 am to 12:10 pm

**NIST Technology Innovation Program on Civil Infrastructure Critical National Need: Advanced Sensing Technologies for the Infrastructure: Bridges, Roads, Highways, and Water Systems I**

Session Chairs: **A. Emin Aktan**, Drexel Univ.; **Nenad Gucunski**, Rutgers, The State Univ. of New Jersey

9:10 am: **An overview of civil infrastructure critical national need in the NIST Technology Innovation Program** (Invited Paper), H. Felix Wu, National Institute of Standards and Technology (United States) ..... [7649-16]

9:40 am: **Advances in civil structural health monitoring with optical fiber sensors** (Invited Paper), Farhad Ansari, Univ. of Illinois at Chicago (United States) ..... [7649-17]

Coffee Break ..... 10:20 to 10:50 am

**SESSION 4a**

Room: Royal Palm I  
 Tues. 9:10 to 10:10 am

**Energy Harvesting and Low-powered Systems**

Session Chairs: **Sourav Banerjee**, Acellent Technologies, Inc.; **Michael D. Todd**, Univ. of California, San Diego

9:10 am: **A self-powered wireless SHM sensor node**, Dao Zhou, Na Kong, Dong S. Ha, Daniel J. Inman, Virginia Polytechnic Institute and State Univ. (United States) ..... [7650-34]

9:30 am: **Autonomous self-powered (ASP) structural health monitoring system**, Xinlin P. Qing, David Zhang, Irene Li, Acellent Technologies, Inc. (United States); Steve Anton, Daniel J. Inman, Virginia Polytechnic Institute and State Univ. (United States) ..... [7650-35]

9:50 am: **Mathematical model for power output from a bimorph plate: energy harvester under random vibration**, Sourav Banerjee, Acellent Technologies, Inc. (United States) ..... [7650-36]

**SESSION 4b**

Room: Royal Palm VI  
 Tues. 9:10 to 10:10 am

**Novel Sensing for SHM**

Session Chairs: **Perngjin F. Pai**, Univ. of Missouri-Columbia; **Olivier Giraudo**, ONERA (France)

9:10 am: **Structural health monitoring system for a power boiler monitoring**, Pawel Gasior, Jerzy Kaleta, Wroclaw Univ. of Technology (Poland); Aleksander Przygoda, RAFAKO SA (Poland) [7650-37]

9:30 am: **Non-destructive measurement of the steel cable force based on magnetoelastic effect**, Liu Lin, Weimin Chen, Chongqing Univ. (China) . [7650-38]

9:50 am: **Development of antibacterial nanocomposite fiber based on PP/PET/nanosilver**, Nadereh Golshan Ebrahimi, Tarbiat Modares Univ. (Iran, Islamic Republic of) ..... [7650-39]

Coffee Break ..... 10:10 to 10:40 am

Conference 7642	Conference 7643	Conference 7644	Conference 7645	Conference 7646	
<p><b>SESSION 4 Continued</b></p> <p>10:30 am: <b>Hydrostatically coupled dielectric elastomer actuators for tactile displays and cutaneous stimulators</b>, Federico Carpi, Gabriele Frediani, Sergio Tarantino, Danilo De Rossi, Univ. of Pisa (Italy) . . . . . [7642-11]</p> <p>10:50 am: <b>Flexible tactile sensor for robot fingertip</b>, Hyouk Ryeol Choi, Duk Sang Kim, Huu Chuc Nguyen, Sung Moon Jin, Huu Lam Vuong Nguyen, Kuang Jun An, Hong Phuc Vuong, Ja Choon Koo, Jae-Do Nam, Young Kwan Lee, Sungkyunkwan Univ. (Korea, Republic of) . . . . . [7642-12]</p> <p>11:10 am: <b>Active polymers based high-resolution tactile display</b>, Andreas Richter, Georgi Paschew, Karl-Friedrich Arndt, Technische Univ. Dresden (Germany) . . . . . [7642-13]</p> <p>11:30 am: <b>EAP arrays of single-cell stretching devices for tissue engineering applications</b>, Samin Akbari, Muhamed Niklaus, Herbert R. Shea, Ecole Polytechnique Fédérale de Lausanne (Switzerland) . . . . . [7642-14]</p> <p>11:50 am: <b>Artificial muscle actuators for haptic displays: system design to match the dynamics and tactile sensitivity of the human fingerpad</b>, Silmon J. Biggs, Roger N. Hitchcock, Artificial Muscle, Inc. (United States) . . . . . [7642-15]</p> <p>Lunch/Exhibition Break . 12:10 to 1:30 pm</p>	<p><b>SESSION 4a Continued</b></p> <p>10:40 am: <b>Self-contained active fluid mount</b>, Nader Vahdati, Somayeh Heidari, Nanyang Technological Univ. (Singapore) . . . . . [7643-32]</p> <p>11:00 am: <b>The influence of power harvesting circuits on energy harvesting performance</b>, Dane Quinn, The Univ. of Akron (United States); Stephen G. Burrow, David K. Barton, Univ. of Bristol (United Kingdom) . . . . . [7643-33]</p> <p>11:20 am: <b>Effective energy harvesting devices for railroad applications</b>, Mehdi Ahmadian, Virginia Polytechnic Institute and State Univ. (United States) . . . . . [7643-34]</p> <p>11:40 am: <b>Optimal and sub-optimal power management in broadband vibratory energy harvesters with one-directional power flow constraints</b>, Jeffrey T. Scruggs, Duke Univ. (United States) . . . . . [7643-35]</p> <p>Lunch/Exhibition Break . 12:00 to 1:30 pm</p>	<p><b>SESSION 4b Continued</b></p> <p>10:40 am: <b>Design and testing of a magnetorheological damper to control both vibration and shock loads for a vehicle crew seat</b>, Andrew Becnel, Wei Hu, Univ. of Maryland, College Park (United States); Gregory J. Hiemenz, Techno-Sciences Inc. (United States); Norman M. Wereley, Univ. of Maryland, College Park (United States) . . . . . [7643-40]</p> <p>11:00 am: <b>Force characteristics of a modular squeeze-mode magneto-rheological element</b>, Michael J. Craft, Mehdi Ahmadian, Alireza Farjoud, William Burke, Clément Nagode, Virginia Polytechnic Institute and State Univ. (United States) . . . . . [7643-41]</p> <p>11:20 am: <b>Structural considerations in designing magnetorheological fluid mounts</b>, The M. Nguyen, Univ. of Minnesota (United States); Constantin Ciocanel, Northern Arizona Univ. (United States); Mohammad H. Elahinia, The Univ. of Toledo (United States) . . . . . [7643-42]</p> <p>11:40 pm: <b>Simulated and experimental flow evaluation for a magnetorheological fluid based micropump</b>, Nick Bruno, Allison Kipple, Constantin Ciocanel, Northern Arizona Univ. (United States) . . . . . [7643-129]</p> <p>Lunch/Exhibition Break . 12:00 to 1:30 pm</p>	<p><b>SESSION 5</b></p> <p><b>Room: Royal Palm II</b> <b>Tues. 10:40 am to 3:10 pm</b></p> <p><b>Shape Memory Materials II: Shape Memory Alloys</b> <i>Session Chairs: Dimitris C. Lagoudas, Texas A&amp;M Univ.; Chihou Lei, Univ. of Washington</i></p> <p>10:40 am: <b>Phase transformations and shape memory effects in finite length nanostructures</b>, Roderick V. N. Melnik, Wilfrid Laurier Univ. (Canada); Linxiang Wang, Hangzhou Dianzi Univ. (China); Olena Tsviliuk, JSC Rodovid Bank (Ukraine) . . . . . [7644-18]</p> <p>11:00 am: <b>Mechanical characterization of Ni-Ti-Hf high temperature shape memory alloys</b>, Gurdish Ded, Haluk E. Karaca, Univ. of Kentucky (United States); Ronald D. Noebe, NASA Glenn Research Ctr. (United States); Burak Basaran, Univ. of Kentucky (United States) . . . . . [7644-19]</p> <p>11:20 am: <b>Passive damping of composites with embedded shape memory alloy wires</b>, Rui de Oliveira, Antoine Sigg, Véronique J. Michaud, Jan-Anders E. Manson, Ecole Polytechnique Fédérale de Lausanne (Switzerland) . . . . . [7644-20]</p> <p>11:40 am: <b>Characterization of indentation response and shape memory surface morphology of Ni-Ti-Hf-Cu and Ni-Ti-Hf-Pd high temperature shape memory alloys</b>, Aydin Hatemi, Gurdish Ded, Haluk E. Karaca, Burak Basaran, Univ. of Kentucky (United States) . . . . . [7644-21]</p> <p>Lunch/Exhibition Break . 12:00 to 1:30 pm</p>	<p><b>SESSION 5</b></p> <p><b>Room: Sunset</b> <b>Tues. 10:30 am to 11:50 pm</b></p> <p><b>Smart Materials and Devices for Vehicle Applications II</b> <i>Session Chairs: Marcelo J. Dapino, The Ohio State Univ.; Diann E. Brei, Univ. of Michigan</i></p> <p>10:30 am: <b>Smart material database compilation and material selection tool development</b>, Jung-Kyu Park, Gregory N. Washington, The Ohio State Univ. (United States) . . . . . [7645-21]</p> <p>10:50 am: <b>Numerical simulation of the activation behavior of thermal shape memory alloys</b>, Reimund Neugebauer, André Bucht, Kenny Pagel, Jakob Jung, Fraunhofer-Institut für Werkzeugmaschinen und Umformtechnik (Germany) . [7645-22]</p> <p>11:10 am: <b>Modeling and validation of shape memory alloy actuated toothed linear ratchet drive (TOTLRAD) architecture</b>, Brian M. Barnes, Diann E. Brei, Jonathan E. Luntz, Univ. of Michigan (United States) . . . . . [7645-23]</p> <p>11:30 am: <b>A compact quick-release mechanism for rapid reset of SMA actuated systems</b>, Niles D. Mankame, Richard J. Skurkis, General Motors Corp. (United States) . . . . . [7645-24]</p> <p>Lunch/Exhibition Break . 11:50 to 1:30 pm</p>	<p><b>SESSION 7</b></p> <p><b>Room: Royal Palm III</b> <b>Tues. 10:30 am to 12:10 pm</b></p> <p><b>Nano Devices and Sensors II</b> <i>Session Chair: Christina L. Brantley, U.S. Army Research, Development and Engineering Command</i></p> <p>10:30 am: <b>Nanowire gas sensors and wireless sensing network for electronic-nose development</b>, Hargsoon Yoon, Phillip T. Hanks, Sechang Oh, Univ. of Arkansas (United States); Christina L. Brantley, U.S. Army Research, Development and Engineering Command (United States); Eugene Edwards, Paul B. Ruffin, U.S. Army Aviation and Missile Research, Development and Engineering Ctr. (United States); Young Min Kim, Vijay K. Varadan, Univ. of Arkansas (United States) . . . . . [7646-16]</p> <p>10:50 am: <b>Nanocalorimeter arrays for detection of biohazard samples</b>, Lei Zuo, Stony Brook Univ. (United States)[7646-17]</p> <p>11:10 am: <b>Homeland security monitoring sensors and early warning relay and diagnostic system</b>, Vijay K. Varadan, Univ. of Arkansas (United States) . . . . . [7646-18]</p> <p>11:30 am: <b>PEDOT:PSS coated SWNT based gas sensor</b>, Sushmee Badhulika, Univ. of California, Riverside (United States) . . . . . [7646-19]</p> <p>11:50 am: <b>Flexible strain sensor based on carbon nanotube rubber composites</b>, Inpil Kang, Jin Ho Kim, Kwon Taek Lim, Pukyong National Univ. (Korea, Republic of)[7646-20]</p> <p>Lunch/Exhibition Break . 12:10 to 1:40 pm</p>



Conference 7647	Conference 7648	Conference 7649	Conference 7650		
<p style="text-align: center;"><b>SESSION 5a</b></p> <p style="text-align: center;"><b>Room: Pacific Salon IV-V Tues. 10:40 am to 12:00 pm</b></p> <p style="text-align: center;"><b>Smart Sensors and Materials I</b></p> <p><i>Session Chairs: Xiong Yu, Case Western Reserve Univ.; Baoguo Han, Harbin Institute of Technology (China)</i></p> <p>10:40 am: * <b>Smart pavement sensor based on thermoelectricity power</b>, Xiong Yu, Case Western Reserve Univ. (United States) ..... [7647-33]</p> <p>11:00 am: <b>Experimental investigation of a smart FRP-concrete composite bridge superstructure</b>, Yanlei Wang, Dalian Univ. of Technology (China); Qingduo Hao, Harbin Institute of Technology (China); Jinping Ou, Dalian Univ. of Technology (China)[7647-34]</p> <p>11:20 am: <b>Foot angle determination using conductive polymer sensors</b>, Lina M. Castano, Allen E. Winkelmann, Alison B. Flatau, Univ. of Maryland, College Park (United States) ..... [7647-35]</p> <p>11:40 am: <b>Smart composite based on field emission and tunneling effects and its piezoresistive characteristic model</b>, Baoguo Han, Jinping Ou, Harbin Institute of Technology (China)..... [7647-36]</p> <p>Lunch/Exhibition Break . 12:00 to 1:30 pm</p>	<p style="text-align: center;"><b>SESSION 5b</b></p> <p style="text-align: center;"><b>Room: Pacific Salon VI-VII Tues. 10:40 am to 12:00 pm</b></p> <p style="text-align: center;"><b>Sensors II</b></p> <p><i>Session Chairs: Roy Ikegami, Acellent Technologies, Inc.; Juan Caicedo, Univ. of South Carolina</i></p> <p>10:40 am: <b>Multifunctional sensor network for structural state sensing</b>, Xinlin P. Qing, Roy Ikegami, Shawn J. Beard, David Zhang, Samik Das, Sourav Banerjee, Acellent Technologies, Inc. (United States)[7647-37]</p> <p>11:00 am: <b>SMART composite high pressure vessels with integrated optical fiber sensors</b>, Pawel Gasior, Wojciech Blazejewski, Jerzy Kaleta, Wroclaw Univ. of Technology (Poland); Andrzej Czulak, Technische Univ. Dresden (Germany)..... [7647-38]</p> <p>11:20 am: <b>On electrostatically actuated microsensors</b>, Dumitru Caruntu, The Univ. of Texas-Pan American (United States); Martin Knecht, Univ. of Texas-Pan American (United States) ..... [7647-193]</p> <p>11:40 am: <b>Magnetostrictive unimorph transducer network model</b>, Uwe Marschner, Technische Univ. Dresden (Germany); Supratik Datta, Chaitanya Mudivarthi, Univ. of Maryland, College Park (United States); Eric Starke, Günther Pfeifer, Wolf-Joachim Fischer, Technische Univ. Dresden (Germany); Alison B. Flatau, Univ. of Maryland, College Park (United States) ..... [7647-40]</p> <p>Lunch/Exhibition Break . 12:00 to 1:30 pm</p>	<p style="text-align: center;"><b>SESSION 5</b></p> <p style="text-align: center;"><b>Room: Royal Palm IV Tues. 10:40 am to 12:00 pm</b></p> <p style="text-align: center;"><b>Sensors for SHM</b></p> <p><i>Session Chair: Curtis E. Banks, NASA Marshall Space Flight Ctr.</i></p> <p>10:40 am: <b>A performance comparison of transducer designs for interferometric and fiber Bragg grating optical accelerometers</b>, Erik A. Moro, Univ. of California, San Diego (United States) and Los Alamos National Lab. (United States); Michael D. Todd, Univ. of California, San Diego (United States); Anthony Puckett, Los Alamos National Lab. (United States) ..... [7648-17]</p> <p>11:00 am: <b>Development of a wireless 3D digital image correlation sensor for local damage diagnosis</b>, Joan Carletta, Gun-Jin Yun, Shilpa Kunchum, Soon-Gie Lee, The Univ. of Akron (United States); Si-Byung Nam, Kangwon Univ. (Korea, Republic of) ..... [7648-18]</p> <p>11:20 am: <b>A wireless strain sensor system</b>, Nezhir Mirad, Defence Research and Development Canada (Canada) . [7648-19]</p> <p>11:40 am: <b>Intelligent inventory management for packaged gases</b>, Alex A. Mason, Ahmed I. Al-Shamma'a, Andy Shaw, Liverpool John Moores Univ. (United Kingdom) ..... [7648-20]</p> <p>Lunch/Exhibition Break . 12:00 to 1:30 pm</p>	<p style="text-align: center;"><b>SESSION 4 Continued</b></p> <p>10:50 am: <b>Overview of a novel cyber-enabled wireless monitoring system for health management of bridges</b>, Jerome P. Lynch, Univ. of Michigan (United States) ..... [7649-18]</p> <p>11:10 am: <b>Multi-functional engineered cementitious composites for intelligent infrastructure</b>, Victor C. Li, Jerome P. Lynch, Univ. of Michigan (United States) ..... [7649-19]</p> <p>11:30 am: <b>Smart antenna technology for structural health monitoring applications</b>, Tayfun Ozdemir, Yuriy Goykhman, Larry M. Oberdier, Monarch Antenna, Inc. (United States); Jerome P. Lynch, Univ. of Michigan (United States) ..... [7649-20]</p> <p>11:50 am: <b>Near-optimal sensor placement for health monitoring of civil structures</b>, Gwendolyn W. van der Linden, Abbas Emami-Naeini, Robert L. Kosut, Hassan Sederat, SC Solutions, Inc. (United States); Jerry P. Lynch, Univ. of Michigan (United States) ..... [7649-21]</p> <p>Lunch/Exhibition Break . 12:10 to 1:40 pm</p>	<p style="text-align: center;"><b>SESSION 5a</b></p> <p style="text-align: center;"><b>Room: Royal Palm I Tues. 10:40 am to 12:00 pm</b></p> <p style="text-align: center;"><b>Guided Waves IV: Signal Generation and Analysis</b></p> <p><i>Session Chairs: Francesco Lanza di Scalea, Univ. of California, San Diego; Hoon Sohn, Korea Advanced Institute of Science and Technology (Korea, Republic of)</i></p> <p>10:40 am: <b>Chirplet-based imaging using compact piezoelectric array</b>, Patrice Masson, Dominique Langlois Demers, Nicolas Quaegebeur, Philippe Micheau, Univ. de Sherbrooke (Canada) ..... [7650-40]</p> <p>11:00 am: <b>Acousto-elastic measurements and baseline-free assessment of bolted joints using guided waves in space structures</b>, Andrei N. Zagrai, Vlasii Giginishvili, Walter A. Kruse, New Mexico Institute of Mining and Technology (United States) ..... [7650-41]</p> <p>11:20 am: <b>Detection multi-debonding in honeycomb sandwich structures using a piezoelectric actuator/sensor network</b>, Guoliang Huang, Univ. of Arkansas at Little Rock (United States)..... [7650-42]</p> <p>11:40 am: <b>A low-power system design for Lamb wave methods</b>, Dong S. Ha, Daniel J. Inman, Virginia Polytechnic Institute and State Univ. (United States) ..... [7650-43]</p> <p>Lunch/Exhibition Break . 12:00 to 1:30 pm</p>	<p style="text-align: center;"><b>SESSION 5b</b></p> <p style="text-align: center;"><b>Room: Royal Palm VI Tues. 10:40 am to 12:00 pm</b></p> <p style="text-align: center;"><b>Complete SHM System and Related Issues</b></p> <p><i>Session Chairs: Victor Giurgiutiu, Univ. of South Carolina; Jennifer E. Michaels, Georgia Institute of Technology</i></p> <p>10:40 am: <b>Missile captive carry monitoring using a capacitive MEMS accelerometer</b>, Brian K. Hatchell, Fred Mauss, Emiliano Santiago-Rojas, Ivan Amaya, Jim Skorpiak, Kurt Silvers, Pacific Northwest National Lab. (United States); Steve Marotta, U.S. Army Aviation and Missile Research, Development and Engineering Ctr. (United States) ..... [7650-44]</p> <p>11:00 am: <b>Propulsion health monitoring of a turbine engine disk using spin test data</b>, Ali Abdul-Aziz, Mark R. Woike, NASA Glenn Research Ctr. (United States); Nikunj Oza, Bryan Matthews, NASA Ames Research Ctr. (United States); George Y. Baaklini, NASA Glenn Research Ctr. (United States) ..... [7650-45]</p> <p>11:20 am: <b>Positioning challenges in reconfigurable semi-autonomous robotic NDE inspection</b>, Stephen G. Pierce, The Univ. of Sheffield (United Kingdom); Rahul Summan, Gordon Dobie, Liam Mackenzie, Univ. of Strathclyde (United Kingdom); James Hensman, Keith Worden, The Univ. of Sheffield (United Kingdom); Gordon Hayward, Univ. of Strathclyde (United Kingdom) ..... [7650-46]</p> <p>11:40 am: <b>An integrated health management system for real-time impact monitoring and prediction of impact-induced damage on composite structures</b>, Ingolf Mueller, Stanford Univ. (United States); Samik Das, Acellent Technologies, Inc. (United States); Surajit Roy, Vishnu Janapati, Stanford Univ. (United States); David Zhang, Acellent Technologies, Inc. (United States); Fu-Kuo Chang, Stanford Univ. (United States) ..... [7650-47]</p> <p>Lunch/Exhibition Break . 12:00 to 1:30 pm</p>

Conference 7642	Conference 7643	Conference 7644	Conference 7645	Conference 7646
<p style="text-align: center;"><b>SESSION 5</b></p> <p style="text-align: center;"><b>Room: Pacific Salon I-III</b> <b>Tues. 1:30 to 3:10 pm</b></p> <p style="text-align: center;"><b>Dielectric EAP Actuators I</b></p> <p><i>Session Chairs: Iain A. Anderson, The Univ. of Auckland (New Zealand); Gabor M. Kovacs, EMPA (Switzerland)</i></p> <p>1:30 pm: <b>Materials science on the nano-scale for improvements in actuation properties of dielectric elastomer actuators</b> (<i>Invited Paper</i>), Guggi Kofod, Hristiyan Stoyanov, Matthias Kollosche, Sebastian Risse, Huelya Ragusch, Denis N. McCarthy, Univ. Potsdam (Germany) . . . [7642-16]</p> <p>2:10 pm: <b>Challenges in microfabrication of DEAs</b>, Bavani Balakrishnan, Elisabeth Smela, Univ. of Maryland, College Park (United States) . . . [7642-17]</p> <p>2:30 pm: <b>Dielectric elastomer bending tube actuators with rigid electrode structures</b>, Frank Wehrheim, Jörg-Uwe Meyer, Richard Wolf GmbH (Germany); Helmut F. Schlaak, Technische Univ. Darmstadt (Germany) . . . . . [7642-99]</p> <p>2:50 pm: <b>Dielectric elastomer actuators: enhanced performance by systematic improvement of materials properties</b>, Martin Molberg, EMPA (Switzerland) and Ecole Polytechnique Fédérale de Lausanne (Switzerland); Yves Leterrier, Ecole Polytechnique Fédérale de Lausanne (Switzerland); Christopher J. G. Plummer, Christiane I. E. Löwe, Dorina M. Opris, EMPA (Switzerland); Jan-Anders E. Månson, Ecole Polytechnique Fédérale de Lausanne (Switzerland) . . . . . [7642-19]</p> <p>Coffee Break. . . . . 3:10 to 3:40 pm</p>	<p style="text-align: center;"><b>SESSION 5</b></p> <p style="text-align: center;"><b>Room: Sunrise</b> <b>Tues. 1:30 to 3:10 pm</b></p> <p style="text-align: center;"><b>Energy Harvesting and Scavenging IV: Piezoelectric Systems III</b></p> <p><i>Session Chair: Mehrdad N. Ghasemi-Nejhad, Univ. of Hawai'i</i></p> <p>1:30 pm: <b>High efficient energy harvesting using piezo macro fiber composites on vibrators with optimized energy transfer</b>, Thomas P. Daue, Jan Kunzmann, Smart Material Corp. (United States); Andreas J. Schönecker, Fraunhofer Group (Germany) . . . . . [7643-43]</p> <p>1:50 pm: <b>Self-powered smart blade, part 1: helicopter blade energy harvesting</b>, Matthew J. Bryant, Austin Fang, Ephraim Garcia, Cornell Univ. (United States) . . . . . [7643-44]</p> <p>2:10 pm: <b>Self-powered smart blade: helicopter blade power extraction and conditioning for on-blade RF wireless embedded sensor systems</b>, Austin Fang, Matthew J. Bryant, Ephraim Garcia, Cornell Univ. (United States) . . . . . [7643-45]</p> <p>2:30 pm: <b>Dynamic analysis of a structure integrated with periodically arranged piezoelectric transducers</b>, Yi Lu, Jiong Tang, Univ. of Connecticut (United States) . . . . . [7643-46]</p> <p>2:50 pm: <b>Vibro-impacting power harvester</b>, Scott D. Moss, Ian G. Powlesland, Stephen C. Galea, Defence Science and Technology Organisation (Australia); Gregory P. Carman, Univ. of California, Los Angeles (United States) . . . . . [7643-47]</p> <p>Coffee Break. . . . . 3:10 to 3:40 pm</p>	<p style="text-align: center;"><b>SESSION 5 Continued</b></p> <p>1:30 pm: <b>3-D finite element analysis of indentation recovery due to the shape memory effect</b>, James Nolan, Darren J. Hartl, Dimitris C. Lagoudas, Texas A&amp;M Univ. (United States); David S. Goumon, Michigan State Univ. (United States) . . . . . [7644-22]</p> <p>1:50 pm: <b>Processing and characterization of composite shape memory alloy (SMA) thin film structures for microactuators</b>, Shiva Mandepudi, Kennametal Inc. (United States); Harold D. Ackler, Skyline Solar, Inc. (United States) . . . . . [7644-23]</p> <p>2:10 pm: <b>Low-hysteresis in Ti<sub>50</sub>Ni<sub>50</sub>Pd alloys</b>, Vijay K. Srivastava, Xian Chen, Richard D. James, Univ. of Minnesota (United States); Remi Delville, Dominique Schryvers, Univ. Antwerpen (Belgium) . . . . . [7644-24]</p> <p>2:30 pm: <b>Simulation of austenite-martensite interface in microstructures and hysteresis</b>, Chihou Lei, Liangjun Li, Jianguyu Li, Univ. of Washington (United States) . . . . . [7644-25]</p> <p>2:50 pm: <b>Modeling and experimental study of simultaneous creep, plasticity and transformation of high temperature shape memory alloys during cyclic actuation</b>, Uri Desai, James Monroe, Parikshith K. Kumar, George Chatzigeorgiou, Ibrahim Karaman, Dimitris C. Lagoudas, Texas A&amp;M Univ. (United States); Ronald D. Noebe, Glen S. Bigelow, NASA Glenn Research Ctr. (United States) [7644-26]</p> <p>Coffee Break. . . . . 3:10 to 3:40 pm</p>	<p style="text-align: center;"><b>SESSION 6</b></p> <p style="text-align: center;"><b>Room: Sunset</b> <b>Tues. 1:30 to 3:10 pm</b></p> <p style="text-align: center;"><b>Smart Materials and Devices for Vehicle Applications III</b></p> <p><i>Session Chairs: Jonathan E. Luntz, Univ. of Michigan; Nancy L. Johnson, General Motors Corp.</i></p> <p>1:30 pm: <b>Ultrasonic-assisted microforming using Terfenol-D</b>, Adam T. Witthauer, LeAnn E. Faidley, Gap-Yong Kim, Iowa State Univ. (United States) . . . . . [7645-25]</p> <p>1:50 pm: <b>Active metal matrix composites with embedded smart materials by ultrasonic additive manufacturing</b>, Ryan M. Hahnlen, Marcelo J. Dapino, The Ohio State Univ. (United States); Matt Short, Karl Graff, Edison Welding Institute (United States) . . . . . [7645-26]</p> <p>2:10 pm: <b>Friction control in automotive seat belt systems by piezoelectrically generated ultrasonic vibrations</b>, Shravan Bharadwaj, Brett R. Burton, Marcelo J. Dapino, The Ohio State Univ. (United States) . . . . . [7645-27]</p> <p>2:30 pm: <b>Deformation modelling: embedding of communication device in SMC using numerical and FE models</b>, Edin Sulic, Brendan Pell, Sabu J. John, RMIT Univ. (Australia) . . . . . [7645-28]</p> <p>2:50 pm: <b>Design and analysis of supporting structure with smart struts for active vibration isolation</b>, Byeongil Kim, Gregory N. Washington, Rajendra Singh, The Ohio State Univ. (United States) . . . . . [7645-29]</p> <p>Coffee Break. . . . . 3:10 to 3:40 pm</p>	<p style="text-align: center;"><b>SESSION 8</b></p> <p style="text-align: center;"><b>Room: Royal Palm III</b> <b>Tues. 1:40 to 3:00 pm</b></p> <p style="text-align: center;"><b>Smart Electronics</b></p> <p><i>Session Chair: Ashok Srivastava, Louisiana State Univ.</i></p> <p>1:40 pm: <b>A digital logic nanowire for reliability enhancement</b>, Samuel C. Lee, Univ. of Oklahoma (United States) . . . . . [7646-21]</p> <p>2:00 pm: <b>A programmable second order oversampling CMOS sigma-delta analog-to-digital converter for low power bio- and chemical sensor interface electronics</b>, Rajiv Soundararajan, Ashok Srivastava, Louisiana State Univ. (United States) . . . . . [7646-22]</p> <p>2:20 pm: <b>Probabilistic behavior and information measures of sequential nanolCs</b>, Samuel C. Lee, Univ. of Oklahoma (United States) . . . . . [7646-23]</p> <p>2:40 pm: <b>Quantum state transition diagram: a bridge from classical computing to quantum computing</b>, Loyd R. Hook IV, Samuel C. Lee, Univ. of Oklahoma (United States) . . . . . [7646-24]</p> <p>Coffee Break. . . . . 3:00 to 3:30 pm</p>

Publish with SPIE and advance your research globally.

**SPIE**   
**Digital Library**

SPIEDigitalLibrary.org

Conference 7647	Conference 7648	Conference 7649	Conference 7650		
<p style="text-align: center;"><b>SESSION 6a</b></p> <p style="text-align: center;"><b>Room: Pacific Salon IV-V</b> Tues. 1:30 to 3:10 pm</p> <p style="text-align: center;"><b>Embedded Data Processing in Sensor Networks for Structural Health Monitoring I</b></p> <p><i>Session Chairs: Jerome P. Lynch, Univ. of Michigan; Billie F. Spencer, Jr., Univ. of Illinois at Urbana-Champaign</i></p> <p>1:30 pm: <b>Distributed wireless sensor network for structural health monitoring using embedded piezoelectric transducers</b>, Peng Li, Claudio Olmi, Gangbing Song, Univ. of Houston (United States) ..... [7647-41]</p> <p>1:50 pm: <b>The combined use of low-cost smart sensors and high accuracy sensors to apprehend structural dynamic behavior</b>, Tomonori Nagayama, Mitsushi Ushita, Yoza Fujino, The Univ. of Tokyo (Japan); Masataka Ieiri, Noritoshi Makihata, JIP Techno Science Corp. (Japan)[7647-42]</p> <p>2:10 pm: <b>SHMTools: a new embeddable software for SHM applications</b>, Eric B. Flynn, Samory Kpotufe, Denis Dondi, Univ. of California, San Diego (United States); Eloi F. Figueiredo, Los Alamos National Lab. (United States); Todor Mollov, Michal D. Todd, Tajana Simunic Rosing, Univ. of California, San Diego (United States); Stuart G. Taylor, Gyuhae Park, Charles R. Farrar, Los Alamos National Lab. (United States) ..... [7647-43]</p> <p>2:30 pm: <b>Decentralized data aggregation in wireless smart sensor network</b>, Sung-Han Sim, Billie F. Spencer, Jr., Univ. of Illinois at Urbana-Champaign (United States) ..... [7647-44]</p> <p>2:50 pm: * <b>Validation of a wireless sensor network using local damage detection algorithm for beam-column connections</b>, Shamim N. Pakzad, Liang Cheng, Lehigh Univ. (United States) ..... [7647-45]</p> <p>Coffee Break ..... 3:10 to 3:40 pm</p>	<p style="text-align: center;"><b>SESSION 6b</b></p> <p style="text-align: center;"><b>Room: Pacific Salon VI-VII</b> Tues. 1:30 to 3:10 pm</p> <p style="text-align: center;"><b>Sensors III</b></p> <p><i>Session Chairs: Stewart Sherrit, Jet Propulsion Lab.; Steven D. Glaser, Univ. of California, Berkeley</i></p> <p>1:30 pm: <b>Compact sensitive piezoelectric mass balance for measurement of unconsolidated materials in space</b>, Stewart Sherrit, Ashitey Trebi-Ollennu, Robert Bonitz, Yoseph Bar-Cohen, Jet Propulsion Lab. (United States) . [7647-46]</p> <p>1:50 pm: * <b>Mechanisms of sliding friction studied with an array of industrial conical piezoelectric sensors</b>, Gregory McLaskey, Steven D. Glaser, Univ. of California, Berkeley (United States) ..... [7647-47]</p> <p>2:10 pm: <b>Direct measurement sensor of the boundary shear stress in fluid flow</b>, Mircea Badescu, Yoseph Bar-Cohen, Xiaoqi Bao, Zensheu Chang, Jet Propulsion Lab. (United States); Kornel Kerenyi, Federal Highway Administration (United States); Shyh-Shiuh Lih, Stewart Sherrit, Brian P. Trease, Scott Widholm, Jet Propulsion Lab. (United States) ..... [7647-48]</p> <p>2:30 pm: <b>Multipoint fibre optic voltage sensor</b>, Zourab Brodzeli, Harpreet K. Bal, Fotios Sidiroglou, Stephen F. Collins, Victoria Univ. (Australia); Vladimir G. Chigrinov, Anatoli Murauski, Fei Fan, Hong Kong Univ. of Science and Technology (Hong Kong, China) ..... [7647-49]</p> <p>2:50 pm: <b>Study on in-line fiber-optic sensor using near-infrared spectroscopy</b>, Hong Wang, Yucheng Peng, South China Univ. of Technology (China) ..... [7647-50]</p> <p>Coffee Break ..... 3:10 to 3:40 pm</p>	<p style="text-align: center;"><b>SESSION 6</b></p> <p style="text-align: center;"><b>Room: Royal Palm IV</b> Tues. 1:30 to 3:10 pm</p> <p style="text-align: center;"><b>Micro- and Nano-Sensors</b></p> <p><i>Session Chair: Stephen M. Schultz, Brigham Young Univ.</i></p> <p>1:30 pm: <b>Advancement of device prototyping and fabrication techniques for sensors and flexible electronics</b>, James L. Zunino III, Daniel P. Schmidt, Anne Marie Petrock, U.S. Army Armament Research, Development and Engineering Ctr. (United States); Adam Wichert, Youngstown State Univ. (United States) ..... [7648-21]</p> <p>1:50 pm: <b>Nanowire-based magnetorheological elastomeric composites for actuators and sensors</b>, Norman M. Wereley, H. J. Song, Univ. of Maryland, College Park (United States); Richard Bell, The Pennsylvania State Univ. (United States) ..... [7648-22]</p> <p>2:10 pm: <b>Self-repairing polymer optical fiber sensor</b>, Young J. Song, Kara J. Peters, North Carolina State Univ. (United States) ..... [7648-23]</p> <p>2:30 pm: <b>Embedded high resolution sensor based on optical feedback in a vertical cavity surface emitting laser</b>, Bram Van Hoe, Deben Lamon, Erwin Bosman, Geert Van Steenberge, Jeroen Missinne, Univ. Gent (Belgium); Pauwel Goethals, Katholieke Univ. Leuven (Belgium); Krassimir Panajotov, Vrije Univ. Brussel (Belgium); Dominiek F. Reynaerts, Katholieke Univ. Leuven (Belgium); Jan M. A. Vanfleteren, Peter Van Daele, Univ. Gent (Belgium) ..... [7648-24]</p> <p>2:50 pm: <b>Polymer encapsulated 3D sensor arrays as building blocks for creating smart objects</b>, Maryna Lishchynska, Kieran Delaney, Cork Institute of Technology (Ireland) ..... [7648-25]</p> <p>Coffee Break ..... 3:10 to 3:40 pm</p>	<p style="text-align: center;"><b>SESSION 5</b></p> <p style="text-align: center;"><b>Room: Royal Palm V</b> Tues. 1:40 to 5:30 pm</p> <p style="text-align: center;"><b>NIST Technology Innovation Program on Civil Infrastructure Critical National Need: Advanced Sensing Technologies for the Infrastructure: Bridges, Roads, Highways, and Water Systems II</b></p> <p><i>Session Chairs: Nenad Gucunski, Rutgers, The State Univ. of New Jersey; A. Emin Aktan, Drexel Univ.</i></p> <p>1:40 pm: <b>Nondestructive monitoring of a pipe network: hydrodynamics and model experiment (Invited Paper)</b>, Masanobu Shinozuka, Pai Chou, Univ. of California, Irvine (United States) ..... [7649-22]</p> <p>2:20 pm: <b>Nondestructive monitoring of a pipe network using a MEMS-based wireless network</b>, Pai Chou, Masanobu Shinozuka, Univ. of California, Irvine (United States) ..... [7649-23]</p> <p>2:40 pm: <b>Self powered wireless acoustic emission sensor</b>, Didem Ozevin, Valery F. Godinez, Edward P. Lowenhar, Mark F. Carlos, Physical Acoustics Corp. (United States); Daniel J. Inman, Mickael Lallart, Virginia Polytechnic Institute and State Univ. (United States); Paul H. Ziehl, Univ. of South Carolina (United States); Antonio Nanni, Fabio Matta, Univ. of Miami (United States) ..... [7649-24]</p> <p>Coffee Break ..... 3:00 to 3:30 pm</p>	<p style="text-align: center;"><b>SESSION 6a</b></p> <p style="text-align: center;"><b>Room: Royal Palm I</b> Tues. 1:30 to 3:10 pm</p> <p style="text-align: center;"><b>Guided Waves V: Modeling</b></p> <p><i>Session Chairs: Anthony J. Croxford, Univ. of Bristol (United Kingdom); Guoliang Huang, Univ. of Arkansas at Little Rock</i></p> <p>1:30 pm: <b>Efficient finite element modeling of scattering for 2D, 3D and guided waves problems</b>, Paul D. Wilcox, Alexander Velichko, Univ. of Bristol (United Kingdom) ..... [7650-48]</p> <p>1:50 pm: <b>Frequency-domain bridging multiscale method for wave propagation simulations in damaged structures</b>, Filippo Casadei, Massimo Ruzzene, Georgia Institute of Technology (United States) ..... [7650-49]</p> <p>2:10 pm: <b>Transient ultrasonic wave field modeling in an elastic half-space using distributed point source method</b>, Samik Das, Sourav Banerjee, Acellent Technologies, Inc. (United States); Tribikram Kundu, The Univ. of Arizona (United States) ..... [7650-50]</p> <p>2:30 pm: <b>Modeling and characterization of micro-fiber composite rosettes for lamb wave excitation</b>, Manuel Collet, Univ. de Franche-Comté (France); Massimo Ruzzene, Buli Xu, Kenneth A. Cunefare, Georgia Institute of Technology (United States) ..... [7650-51]</p> <p>2:50 pm: <b>Efficient methods to model the scattering of ultrasonic guided waves in 3D</b>, Ludovic Moreau, Alexander Velichko, Paul D. Wilcox, Bruce W. Drinkwater, Univ. of Bristol (United Kingdom) .... [7650-52]</p> <p>Coffee Break ..... 3:10 to 3:40 pm</p>	<p style="text-align: center;"><b>SESSION 6b</b></p> <p style="text-align: center;"><b>Room: Royal Palm VI</b> Tues. 1:30 to 3:10 pm</p> <p style="text-align: center;"><b>Fatigue Damage Monitoring</b></p> <p><i>Session Chairs: Sourav Banerjee, Acellent Technologies, Inc.; Kumar V. Jata, Asian Office of Aerospace Research and Development (Japan)</i></p> <p>1:30 pm: <b>Fatigue damage assessment using high frequency resonance measurements</b>, Walter A. Kruse, Andrei N. Zagrai, Vlasi Gigineishvili, New Mexico Institute of Mining and Technology (United States) ..... [7650-53]</p> <p>1:50 pm: <b>Gaussian mixture regression for fatigue damage monitoring</b>, Sourav Banerjee, Xinlin P. Qing, Shawn J. Beard, Acellent Technologies, Inc. (United States) ..... [7650-54]</p> <p>2:10 pm: <b>Magneto elastic active sensors for structural health monitoring using magneto-mechanical impedance and elastic wave propagation</b>, Timothy A. Barnes, Davit Kukhalashvili, Andrei N. Zagrai, New Mexico Institute of Mining and Technology (United States) .... [7650-55]</p> <p>2:30 pm: <b>Influence of guided ultrasonic wave scattering directionality on the detection sensitivity for SHM of fatigue cracks</b>, Paul Fromme, Univ. College London (United Kingdom) ..... [7650-56]</p> <p>2:50 pm: <b>Comparison between different damage estimation techniques for monitoring fatigue damage in terms of computation power requirement</b>, Sourav Banerjee, Shawn J. Beard, Xinlin P. Qing, Acellent Technologies, Inc. (United States); Marcias Martinez, National Research Council Canada (Canada) ..... [7650-57]</p> <p>Coffee Break ..... 3:10 to 3:40 pm</p>

Conference 7642	Conference 7643	Conference 7644	Conference 7645	Conference 7646
<p style="text-align: center;"><b>SESSION 6</b></p> <p style="text-align: center;"><b>Room: Pacific Salon I-III</b> <b>Tues. 3:40 to 6:00 pm</b></p> <p style="text-align: center;"><b>Dielectric EAP Actuators II</b> <i>Session Chairs: John David W. Madden, The Univ. of British Columbia (Canada); Guggi Kofod, Univ. Potsdam (Germany)</i></p> <p>3:40 pm: <b>Optimized on dielectric elastomer actuator based on acrylonitrile butadiene rubber</b>, Hyouk Ryeol Choi, Kuang Jun An, Huu Chuc Nguyen, Duk Sang Kim, Huu Lam Vuong Nguyen, Hong Phuc Vuong, Ja Choon Koo, Jae-Do Nam, Youngkwan Lee, Sungkyunkwan Univ. (Korea, Republic of) . . . . . [7642-20]</p> <p>4:00 pm: <b>The dynamic properties of tubular DEAP actuators</b>, Rahimullah Sarbran, Alan Poole, Kim P. Lorenzen, Danfoss PolyPower A/S (Denmark) . . . . . [7642-21]</p> <p>4:20 pm: <b>Radially-expanding mechanism for dielectric elastomer actuators</b>, Andrew T. Conn, Jonathan M. Rossiter, Univ. of Bristol (United Kingdom) . . . . . [7642-22]</p> <p>4:40 pm: <b>Processing, microstructure, and properties of a fiber-reinforced dielectric elastomer actuator</b>, Brian K. Stewart, NASA Langley Research Ctr. (United States); Kathryn V. Logan, Virginia Polytechnic Institute and State Univ. (United States) . . . . . [7642-23]</p> <p>5:00 pm: <b>Graphite/PDMS stretchable electrodes for dielectric elastomer actuators</b>, Mark P. Kujawski, Justin Pearse, Elisabeth Smela, Univ. of Maryland, College Park (United States) . . . . . [7642-24]</p> <p>5:20 pm: <b>Effects of conductive particles on the actuating behavior of dielectric elastomer actuator</b>, Zhen Zhang, Yanju Liu, Jinsong Leng, Harbin Institute of Technology (China) . . . . . [7642-25]</p> <p>5:40 pm: <b>Thermodynamic design model for dielectric elastomer actuators</b>, Jean-Philippe Lucking Bigué, Sylvain Proulx, Patrick Chouinard, Jean-Sébastien Plante, Univ. de Sherbrooke (Canada) . . . . . [7642-26]</p>	<p style="text-align: center;"><b>SESSION 6</b></p> <p style="text-align: center;"><b>Room: Sunrise</b> <b>Tues. 3:40 to 5:40 pm</b></p> <p style="text-align: center;"><b>Energy Harvesting and Scavenging V: Renewable Energy</b> <i>Session Chair: Mehrdad N. Ghasemi-Nejhad, Univ. of Hawai'i</i></p> <p>3:40 pm: <b>Design of energy harvesting systems for harnessing vibrational motion from land and air vehicles</b>, Adam M. Wickenheiser, Ephraim Garcia, Cornell Univ. (United States) . . . . . [7643-48]</p> <p>4:00 pm: <b>An efficiency analysis of a novel thermal energy harvesting device</b>, Samuel M. Sandoval, Chin-Jui Hsu, Gregory P. Carman, Univ. of California, Los Angeles (United States) . . . . . [7643-49]</p> <p>4:20 pm: <b>Feasibility of a multidimensional wave energy harvester</b>, Sam Behrens, Anthony Fowler, Commonwealth Scientific and Industrial Research Organisation (Australia) . . . . . [7643-50]</p> <p>4:40 pm: <b>Thermoelectric energy harvesting as a wireless sensor node power source</b>, Christopher G. Knight, Commonwealth Scientific and Industrial Research Organisation (Australia); Joshua P. Davidson, James Cook Univ. (Australia) . . . . . [7643-51]</p> <p>5:00 pm: <b>Theoretical analysis of acceleration measurements in a model of an operating wind turbine</b>, Jonathan White, Purdue Univ. (United States) . . . . . [7643-52]</p> <p>5:20 pm: <b>Study of underwater performance of solar cells with change in depth and salinity</b>, Keyur Joshi, Shashank Priya, Virginia Polytechnic Institute and State Univ. (United States) . . . . . [7643-53]</p>	<p style="text-align: center;"><b>SESSION 6</b></p> <p style="text-align: center;"><b>Room: Royal Palm II</b> <b>Tues. 3:40 to 6:00 pm</b></p> <p style="text-align: center;"><b>Magneto-Active Materials I: Magnetostriction</b> <i>Session Chairs: LeAnn E. Faidley, Iowa State Univ.; George Akhras, Royal Military College of Canada (Canada)</i></p> <p>3:40 pm: <b>A 3D model for the dynamical sensing response of Gallenol with applications to energy harvesting</b>, Philip C. Weetman, George Akhras, Royal Military College of Canada (Canada) . . . . . [7644-27]</p> <p>4:00 pm: <b>Modeling the magneto-elastic interactions of magneto-sensitive composites</b>, Zelalem A. Aga, LeAnn E. Faidley, Iowa State Univ. (United States) . . . . . [7644-28]</p> <p>4:20 pm: <b>Power generating by high pulse mechanical stimulation of magnetic coupled NdFeB and Terfenol-D</b>, Daniel Lewandowski, Jerzy Kaleta, Przemyslaw Wiewiórski, Rafał Mech, Wrocław Univ. of Technology (Poland) . . . . . [7644-29]</p> <p>4:40 pm: <b>Image analysis of the microstructure of pseudo-1-3 magnetostrictive composites</b>, Xufeng Dong, Dalian Univ. of Technology (China); Xinchun Guan, Harbin Institute of Technology (China); Jinping Ou, Min Qi, Dalian Univ. of Technology (China) . . . . . [7644-30]</p> <p>5:00 pm: <b>Finite element modeling of magnetostrictive thin film actuator considering the nonlinear magnetic field for MEMS</b>, Heung-Shik Lee, Chongdu Cho, Inha Univ. (Korea, Republic of) . . . . . [7644-31]</p> <p>5:40 pm: <b>Magnetostrictive properties of Tb<sub>0.24</sub>Dy<sub>0.76</sub>Fe<sub>2-x</sub>Ni<sub>x</sub> thin films for wireless micro actuators and application to array type micro transporter</b>, Heung-Shik Lee, Bongjun Kim, Chongdu Cho, Inha Univ. (Korea, Republic of) . . . . . [7644-33]</p>	<p style="text-align: center;"><b>SESSION 7</b></p> <p style="text-align: center;"><b>Room: Sunset</b> <b>Tues. 3:40 to 5:20 pm</b></p> <p style="text-align: center;"><b>Aerospace Applications of Smart Structure Technologies</b> <i>Session Chairs: M. Brett McMickell, Honeywell, Inc.; W. Lance Richards, NASA Dryden Flight Research Ctr.</i></p> <p>3:40 pm: <b>High and low temperature cyanate ester shape memory polymers for space applications</b>, Richard D. Hreha, Brittany Collins, Cornerstone Research Group, Inc. (United States) . . . . . [7645-32]</p> <p>4:00 pm: <b>A novel voice coil actuator for fast steering mirror system</b>, Benyi Shi, Sihai Chen, Xiao Ding, Huazhong Univ. of Science and Technology (China) . . . . . [7645-33]</p> <p>4:20 pm: <b>Characterization of varied geometry shape memory alloy beams</b>, Lynn M. Gravatt, James H. Mabe, Frederick T. Calkins, The Boeing Co. (United States) . . . . . [7645-34]</p> <p>4:40 pm: <b>Optimal control of piezoelectric elements for active vibrations suppression of blades</b>, Fabio Botta, Univ. degli Studi di Roma Tre (Italy) [7645-35]</p> <p>5:00 pm: <b>Pneumatic artificial muscle and its application on driving variable trailing-edge camber wing</b>, Weilong Yin, Libo Liu, Yijin Chen, Yanju Liu, Jinsong Leng, Harbin Institute of Technology (China) . . . . . [7645-36]</p> <p>• Conference End</p>	<p style="text-align: center;"><b>SESSION 9</b></p> <p style="text-align: center;"><b>Room: Royal Palm III</b> <b>Tues. 3:30 to 5:30 pm</b></p> <p style="text-align: center;"><b>Wireless Sensor Systems</b> <i>Session Chairs: Frances Williams, Norfolk State Univ.; Eugene Edwards, U.S. Army Aviation and Missile Research, Development and Engineering Ctr.</i></p> <p>3:30 pm: <b>Power beaming to a micro aerial vehicle using an active phased array</b>, Hironori Sawahara, Akinori Oda, Aلسeny Diallo, Kimiya Komurasaki, Yoshihiro Arakawa, The Univ. of Tokyo (Japan) . . . . . [7646-25]</p> <p>3:50 pm: <b>Enhanced thermoelectric figure of merit in nanostructured SiGe alloys</b>, Hyun-Jung Kim, National Institute of Aerospace (United States); Yeonjoon Park, George Washington Univ. (United States); Glen C. King, NASA Langley Research Ctr. (United States); Kunik Lee, Federal Highway Administration (United States); Sang H. Choi, NASA Langley Research Ctr. (United States) . . . . . [7646-26]</p> <p>4:10 pm: <b>Rectennas performance based on substrates for bio-medical applications</b>, Kyo D. Song, Frances Williams, Norfolk State Univ. (United States); Sang Yeol Yang, Jaehwan Kim, Inha Univ. (Korea, Republic of); Sang H. Choi, NASA Langley Research Ctr. (United States) . . . . . [7646-27]</p> <p>4:30 pm: <b>Reliability considerations in switchable PLL frequency synthesizers for wireless sensor networks</b>, Yang Liu, Ashok Srivastava, Louisiana State Univ. (United States) . . . . . [7646-28]</p> <p>4:50 pm: <b>The application of wireless sensor system on security network</b>, Sechang Oh, Hyeokjun Kwon, Hargsoon Yoon, Vijay K. Varadan, Univ. of Arkansas (United States) . . . . . [7646-29]</p> <p>5:10 pm: <b>Software structure for broadband wireless sensor network system</b>, Hyeokjun Kwon, Sechang Oh, Hargsoon Yoon, Vijay K. Varadan, Univ. of Arkansas (United States) . . . . . [7646-30]</p>

Conference 7647	Conference 7648	Conference 7649	Conference 7650		
<p style="text-align: center;"><b>SESSION 7a</b></p> <p style="text-align: center;"><b>Room: Pacific Salon IV-V Tues. 3:40 to 6:00 pm</b></p> <p style="text-align: center;"><b>SHM/Damage Detection Method I</b></p> <p><i>Session Chairs: Charles R. Farrar, Los Alamos National Lab.; Dryver R. Huston, The Univ. of Vermont</i></p> <p>3:40 pm: <b>Structural health monitoring for ship structures using time series models</b>, Charles R. Farrar, Gyuhae Park, Marian Anghel, Matthew Bement, Los Alamos National Lab. (United States); Liming W. Salvino, Naval Surface Warfare Ctr. Carderock Div. (United States). . . . [7647-51]</p> <p>4:00 pm: <b>Corrosion monitoring of reinforcing steel in concrete by electrochemical sensors</b>, Guofu Qiao, Harbin Institute of Technology (China) . . . . . [7647-52]</p> <p>4:20 pm: <b>Prestress-force monitoring of PSC girder bridges using wireless impedance sensor nodes</b>, Jae-Hyung Park, Jeong-Tae Kim, Pukyong National Univ. (Korea, Republic of) . . . . . [7647-53]</p> <p>4:40 pm: <b>Application of self-sensing BFRP bars into concrete structures</b>, Yongsheng Tang, Southeast Univ. (China); Zhishen Wu, Ibaraki Univ. (Japan); Caiqian Yang, Gang Wu, Lihua Zhao, Shiwei Song, Southeast Univ. (China) . . . . . [7647-54]</p> <p>5:00 pm: <b>Coordinated sensing and autonomous repair of pressure vessels and structures</b>, Dryver R. Huston, David H. Hurley, Kenneth Gollins, Anthony Gervais, The Univ. of Vermont (United States) . . . . . [7647-55]</p> <p>5:20 pm: <b>Structural identification of progressive damage states in concrete columns subject to seismic excitations</b>, Zhishen Wu, Adekunle P. Adewuyi, Ibaraki Univ. (Japan); Songtao Xue, Kinki Univ. (Japan) . . . . . [7647-56]</p> <p>5:40 pm: <b>Detection and assessment of wood decay in glulam beams using a decay rate approach</b>, Henrique L. Reis, Adam Senalik, Univ. of Illinois at Urbana-Champaign (United States); Frank C. Beall, Univ. of California, Berkeley (United States) . . . . . [7647-57]</p>	<p style="text-align: center;"><b>SESSION 7b</b></p> <p style="text-align: center;"><b>Room: Pacific Salon VI-VII Tues. 3:40 to 5:40 pm</b></p> <p style="text-align: center;"><b>Signal Processing</b></p> <p><i>Session Chairs: Nesrin Sarigul-Klijn, Univ. of California, Davis; Balakumar Balachandran, Univ. of Maryland, College Park</i></p> <p>3:40 pm: <b>* An emerging time-domain sensing technique for large scale, multi-fiber optical sensor networks</b>, Chuji Wang, Chamini Herath, Mississippi State Univ. (United States) . . . . . [7647-58]</p> <p>4:00 pm: <b>Noise effects on mobile sensor platform localization</b>, Nikhil Chopra, Balakumar Balachandran, Univ. of Maryland, College Park (United States); Hamad Karki, The Petroleum Institute (United Arab Emirates) . . . . . [7647-59]</p> <p>4:20 pm: <b>Systematic decision-support in damage assessment: an evidential reasoning approach</b>, Israel Lopez, Nesrin Sarigul-Klijn, Univ. of California, Davis (United States) . . . . . [7647-60]</p> <p>4:40 pm: <b>* Intelligent fault detection, diagnosis and prevention (IFDDP) technology for the design of smart outlets in healthy and safe homes</b>, Imin Kao, Stony Brook Univ. (United States) . . . . . [7647-61]</p> <p>5:00 pm: <b>Object identification by multispectral fusion and Haar classification</b>, Arun Manohar, Francesco Lanza di Scalea, Univ. of California, San Diego (United States) . . . . . [7647-62]</p> <p>5:20 pm: <b>Reduction of uncertainties by comprehensive monitoring of load-carrying structures</b>, Jan Koenen, Technische Univ. Darmstadt (Germany); Roland Platz, Fraunhofer-Institut für Betriebsfestigkeit und Systemzuverlässigkeit (Germany); Holger Hanselka, Technische Univ. Darmstadt (Germany) . . . . . [7647-63]</p>	<p style="text-align: center;"><b>SESSION 7</b></p> <p style="text-align: center;"><b>Room: Royal Palm IV Tues. 3:40 to 5:20 pm</b></p> <p style="text-align: center;"><b>Civil Infrastructure Applications of Fiber Optic Sensors</b></p> <p><i>Session Chair: Theodore E. Matikas, Univ. of Ioannina (Greece)</i></p> <p>3:40 pm: <b>SHM process as perceived through 350 projects (Invited Paper)</b>, Branko Glisic, Princeton Univ. (United States) . . . . . [7648-26]</p> <p>4:20 pm: <b>Experimental investigation on BOTDA/R-FBG based FRP anchoring pole</b>, Minghua Huang, Harbin Institute of Technology (China); Zhi Zhou, Harbin Institute of Technology (China) and Missouri Univ. of Science and Technology (United States); Jianping He, Genda Chen, Harbin Institute of Technology (China); Jinping Ou, Harbin Institute of Technology (China) and Dalian Univ. of Technology (China)[7648-28]</p> <p>4:40 pm: <b>Experimental investigation of prestress loss in RC beams</b>, Chunguang Lan, Zhi Zhou, Harbin Institute of Technology (China); Genda Chen, Missouri Univ. of Science and Technology (United States); Jinping Ou, Harbin Institute of Technology (China) and Dalian Univ. of Technology (China) . . . . . [7648-29]</p> <p>5:00 pm: <b>The monitoring of bridges for scour by FBG sensor</b>, He Jun, Huijuan Dong, Guangyu Zhang, Harbin Institute of Technology (China) . . . . . [7648-30]</p>	<p style="text-align: center;"><b>SESSION 5 Continued</b></p> <p>3:30 pm: <b>Quantification of fatigue cracking in CT specimens with passive and active piezo-electric sensing</b>, Jianguo Yu, Boris Zarate, Juan Caicedo, Victor Giurgiutiu, Lingyu Yu, Paul H. Ziehl, Univ. of South Carolina (United States); Fabio Matta, Brian Metrovich, Univ. of Miami (United States) . . . . . [7649-25]</p> <p>3:50 pm: <b>Method and experiments for correction of strain-transfer errors in long gauge optical fiber sensors</b>, Xiaotan Zhang, Changsen Sun, Xin Feng, Todd Taylor, Farhad Ansari, Univ. of Illinois at Chicago (United States) . . . . . [7649-26]</p> <p>4:10 pm: <b>Improved sensing schemes with Brillouin optical time domain reflectometry</b>, Changsen Sun, Xin Feng, Xiaotan Zhang, Farhad Ansari, Univ. of Illinois at Chicago (United States) [7649-27]</p> <p>4:30 pm: <b>A method and theory for temperature compensation in long gauge fiber</b>, Xin Feng, Changsen Sun, Xiaotan Zhang, Farhad Ansari, Univ. of Illinois at Chicago (United States) . . . . . [7649-28]</p> <p>4:50 pm: <b>Damage simulation and verification for structural health monitoring on carbon epoxy composite structures</b>, Shyan B. Shen, Hung-Chi Chung, Tom Chang, Xinlin P. Qing, Shawn J. Beard, Acellent Technologies, Inc. (United States) . . . . . [7649-29]</p> <p>5:10 pm: <b>Versatile onboard traffic-embedded roaming sensors</b>, Ming L. Wang, Northeastern Univ. (United States) . . . . . [7649-83]</p>	<p style="text-align: center;"><b>SESSION 7a</b></p> <p style="text-align: center;"><b>Room: Royal Palm I Tues. 3:40 to 6:00 pm</b></p> <p style="text-align: center;"><b>Sensor Development</b></p> <p><i>Session Chairs: Wolfgang Grill, Univ. Leipzig (Germany); George Zentai, Varian Medical Systems, Inc.</i></p> <p>3:40 pm: <b>Magnetostrictive sleeve transducer for in-situ monitoring of specimens</b>, Manton J. Guers, Bernhard R. Tittmann, The Pennsylvania State Univ. (United States) . . . . . [7650-58]</p> <p>4:00 pm: <b>Development of a novel polymeric fiber-optic magnetostrictive metal detector</b>, Wei-Chih Wang, Univ. of Washington (United States) . . . . . [7650-59]</p> <p>4:20 pm: <b>Towards a nanofilm-coated photonic crystal fiber long-period grating refractive index sensor: corrosion detection for structural health monitoring</b>, Shijie Zheng, Yinian Zhu, Sridhar Krishnaswamy, Northwestern Univ. (United States) . . . . . [7650-60]</p> <p>4:40 pm: <b>A MEMS based measurement system for structure health monitoring applications</b>, Soeren Majcherek, Soeren Hirsch, Bertram Schmidt, Otto-von-Guericke-Univ. Magdeburg (Germany) . . . . . [7650-61]</p> <p>5:00 pm: <b>Development of a polymeric capacitive 3-D tactile sensor</b>, Wei-Chih Wang, Univ. of Washington (United States) . . . . . [7650-62]</p> <p>5:20 pm: <b>Surface acoustic wave generation and detection by Coulomb excitation</b>, A. Habib, Univ. Siegen (Germany); U. Amjad, M. von Buttlar, M. Pluta, Univ. Leipzig (Germany); U. Pietsch, Univ. Siegen (Germany); W. Grill, Univ. Leipzig (Germany) . . . . . [7650-63]</p> <p>5:40 pm: <b>Structural health monitoring of composite structures by carbon nanotubes and piezoelectric sensors</b>, Shayn B. Shen, Sourav Banerjee, Shawn J. Beard, Acellent Technologies, Inc. (United States); Erik T. Thostenson, Univ. of Delaware (United States); Joycelyn S. Harrison, Air Force Office of Scientific Research (United States) . . . . . [7650-64]</p>	<p style="text-align: center;"><b>SESSION 7b</b></p> <p style="text-align: center;"><b>Room: Royal Palm VI Tues. 3:40 to 5:40 pm</b></p> <p style="text-align: center;"><b>Optical Techniques for SHM</b></p> <p><i>Session Chairs: Olivier Giraud, ONERA (France); Sridhar Krishnaswamy, Northwestern Univ.</i></p> <p>3:40 pm: <b>Structural health monitoring of helicopter hard landing using 3D digital image correlation</b>, Bruce LeBlanc, Christopher Niezrecki, Peter Avitabile, Univ. of Massachusetts Lowell (United States) . . . . . [7650-65]</p> <p>4:00 pm: <b>Characterization of acoustic lenses with the Foucault test by confocal laser scanning microscopy</b>, Esam T. Ahmed Mohamed, Amro Abdelrahman, Wolfgang Grill, Univ. Leipzig (Germany) . . . . . [7650-66]</p> <p>4:20 pm: <b>Paired structured light configuration for structural health monitoring</b>, Hyun Myung, Seungmok Lee, Haemin Jeon, Jongdae Jung, Korea Advanced Institute of Science and Technology (Korea, Republic of) [7650-67]</p> <p>4:40 pm: <b>Hardware complexity for extrinsic Fabry-Perot interferometer sensor processing</b>, Kyle K. Mitchell, William J. Ebel, Sr., St. Louis Univ. (United States) . . . . . [7650-68]</p> <p>5:00 pm: <b>Optical encoder feedback system for levitating three phase rotor system</b>, Wei-Chih Wang, Univ. of Washington (United States) . . . . . [7650-69]</p> <p>5:20 pm: <b>Acousto-shearographic method for detecting adherence anomalies</b>, Olivier Giraud, ONERA (France) . . . . . [7650-70]</p>

# Posters · Tuesday · Golden Ballroom, Exhibition Hall · 6:00 to 7:30 pm

Conference attendees are invited to attend the joint poster session/exhibition reception to network, enjoy light refreshments, and view the poster papers. Attendees are required to wear their conference registration badge. Authors of poster papers will be present to answer questions concerning their papers. Poster authors must set up their poster between 10:00 am and 4:00 pm on Tuesday 9 March.

## Conference 7642

**Novel cellulosic gel preparation for using in electro-responsive applications**, Anuvat Sirivat, Wissawin Kunchornsup, Chulalongkorn Univ. (Thailand) ..... [7642-65]

**Electric field modelling of DEAP material with compliant metal electrodes**, Peng Wang, Richard W. Jones, Benny Lassen, Univ. of Southern Denmark (Denmark) ..... [7642-96]

**Active vibration control of periodic disturbances using a DEAP damper**, Rahimullah Sarban, Danfoss PolyPower A/S (Denmark); Richard W. Jones, Univ. of Southern Denmark (Denmark); Brian Mace, Univ. of Southampton (United Kingdom) ..... [7642-97]

**Ultra high electrostriction behavior of electroactive thermoplastic elastomer gels by in-situ tracing microstructural change during electromechanical actuation**, Chong Min Koo, Soon Man Hong, Korea Institute of Science and Technology (Korea, Republic of) ..... [7642-98]

**Development of high strain electro-active polymer actuators via optimization of the pore size of the conductor network composite layer**, Reza Montazami, Virginia Polytechnic Institute and State Univ. (United States); Sheng Liu, The Pennsylvania State Univ. (United States); Vaibhav Jain, Virginia Polytechnic Institute and State Univ. (United States); Yang Liu, Minren Lin, Qiming M. Zhang, The Pennsylvania State Univ. (United States); James R. Heflin, Virginia Polytechnic Institute and State Univ. (United States) ..... [7642-100]

**Preparation and characterizations of PVDF/MWCNT nanocomposites**, Soon Man Hong, Korea Institute of Science and Technology (Korea, Republic of) ..... [7642-101]

**Electrically driven PEDOT/PSS actuators**, Hidenori Okuzaki, Univ. of Yamanashi (Japan); Takamichi Ito, Takano Co. Ltd. (Japan); Kosuke Hosaka, Univ. of Yamanashi (Japan) ..... [7642-102]

**Effect of strain on the electrical conductivity of a styrene-butadiene rubber**, Young Hee Kim, Jee Young Lim, Jae Young Kim, Gi-Bbeum Lee, Alan N. Gent, Changwoon Nah, Chonbuk National Univ. (Korea, Republic of) ..... [7642-103]

**Integration of dielectric elastomer stack actuators into micro systems**, Klaus Flittner, Michael Schlosser, Marc Matysek, Peter Lotz, Helmut F. Schlaak, Technische Univ. Darmstadt (Germany) ..... [7642-104]

**Dependence on boundary conditions for the actuation characteristics of the dielectric elastomer actuators**, Matthias Kollosche, Hülja Ragusch, Guggi Kofod, Univ. Potsdam (Germany) ..... [7642-106]

**Novel approach to tunable diffractive transmission gratings based on dielectric elastomer actuators**, Matthias Kollosche, Univ. Potsdam (Germany); Sebastian Döring, Fraunhofer-Institut für Angewandte Polymerforschung (Germany); Guggi Kofod, Univ. Potsdam (Germany); Joachim Stumpe, Fraunhofer-Institut für Angewandte Polymerforschung (Germany) ..... [7642-107]

**Modeling ionic polymer diluent response in sensing**, Ursula Zangrilli, Lisa M. Weiland, Univ. of Pittsburgh (United States) ..... [7642-108]

**Photo/electro-responsive materials based on spiropyran dyes, terthiophene, PEDOT, and thiophene hybrid materials**, Michele Zanoni, Dublin City Univ. (Ireland); Robert Breukers, Univ. of Wollongong (Australia); Robert H. Byrne, Dublin City Univ. (Ireland); Gordon G. Wallace, Univ. of Wollongong (Australia); David L. Officer, Univ. of Wollongong (Italy); Dermot Diamond, Dublin City Univ. (Ireland) ..... [7642-109]

**Electro-mechanical properties of novel large strain PolyPower film and laminate components for DEAP actuator and sensor applications**, Mohamed Benslimane, Hans-Erik Kiil, Michael J. Tryson, Danfoss PolyPower A/S (Denmark) [7642-110]

**Scavenging energy from human motion with tubular dielectric polymer**, Claire Jean-Mistral, Commissariat à l'Énergie Atomique (France); Skandar Basrour, TIMA Lab. (France) ..... [7642-111]

**Understanding the role of surface and intermediate layer impedance in mechanoelastic property of IPMC**, Kwang J. Kim, Rashi Tiwari, Univ. of Nevada, Reno (United States) ..... [7642-112]

**Electromechanical properties of silicone-PZT (lead-zirconate-titanate) composite**, Nafiseh Gharavi, Mehdi Razzaghi Kashani, Ali Moradi, Tarbiat Modares Univ. (Iran, Islamic Republic of) [7642-114]

**High-resolution tactile display operated by an integrated 'smart hydrogel' actuator array**, Georgi Paschew, Andreas Richter, Karl-Friedrich Arndt, Technische Univ. Dresden (Germany) ... [7642-115]

**Utilization of electroactive polymer actuators in micromixing and in extended-life biosensor applications**, Vinh Ho, Univ. of California, Irvine (United States); Xavier Casadevall i Solvas, Imperial College, London (United Kingdom); Daniel Scott, Univ. of Kentucky (United States); Luisa S. Dolci, Univ. degli Studi di Bologna (Italy); Lawrence Kulinsky, Univ. of California, Irvine (United States); Sylvia Daunert, Univ. of Kentucky (United States); Marc J. Madou, Univ. of California, Irvine (United States) ..... [7642-116]

**Tunable stiffness and damping modules using dielectric elastomers**, Sanjay Dastoor, Mark Cutkosky, Stanford Univ. (United States) [7642-117]

**Optimization on the structure of micro-pumps driving by IPMC**, Haitao Ding, Qingsong He, Min Yu, Dongjie Guo, Zhendong Dai, Nanjing Univ. of Aeronautics and Astronautics (China) ... [7642-118]

**The area of allowable states in Mooney-Rivlin type dielectric elastomer generators**, Shouhua Sun, Liwu Liu, Yanju Liu, Jinsong Leng, Harbin Institute of Technology (China) ..... [7642-119]

**EAP generators**, Gyungsoo Kang, Korea Advanced Institute of Science and Technology (Korea, Republic of) ..... [7642-121]

## Conference 7643

**Shake table tests of semi-active fuzzy control for seismic response reduction with piezoelectric friction damper**, Da-Hai Zhao, Yanshan Univ. (China) and Dalian Univ. of Technology (China); Hong-Nan Li, Dalian Univ. of Technology (China) ..... [7643-103]

**Multimodal vibration control of a plant using synchronized switch damping based on negative capacitance**, Hongli Ji, Jinhao Qiu, Nanjing Univ. of Aeronautics and Astronautics, Nanjing (China) ..... [7643-104]

**Active unbalance control in an asymmetrical rotor system using a suspension with linear actuators**, Manuel Arias-Montiel, Gerardo Silva-Navarro, Ctr. de Investigación y de Estudios Avanzados (Mexico) ..... [7643-105]

**Ultrasonic piezoelectric cleaning of acoustic vector sensing elements**, Scott Cravens, Ronald M. Barrett, The Univ. of Kansas (United States) ..... [7643-108]

**Feasibility study on self-powered active vibration control using a piezoelectric actuator**, Kimihiko Nakano, Masanori Oho, Atsushi Tagaya, The Univ. of Tokyo (Japan) ..... [7643-109]

**Piezoelectric energy harvester operating in flowing water**, Enrico Bischur, Sebastian Pobering, Markus Menacher, Norbert Schwesinger, Technische Univ. München (Germany) ..... [7643-110]

**Manufacture of active piezoelectric components using plastic injection molding**, Hans-Juergen Roscher, Fraunhofer-Institut für Werkzeugmaschinen und Umformtechnik (Germany); Tassilo Moritz, Lutz Seffner, Fraunhofer-Institut für Keramische Technologien und Systeme (Germany); Christian Anselment, Daniel Just, Fraunhofer-Institut für Chemische Technologie (Germany) ..... [7643-111]

**Characterization of multifunctional piezoelectric fibers as structural capacitors for energy storage**, Joseph W. Shaffer, Yirong Lin, Henry A. Sodano, Arizona State Univ. (United States) ..... [7643-112]

**Damping capacity in shape memory alloy honeycomb structures**, M. Boucher, Chris W. Smith, The Univ. of Exeter (United Kingdom); Fabrizio L. Scarpa, Univ. of Bristol (United Kingdom); W. Miller, The Univ. of Exeter (United Kingdom); Mohd N. Hassan, Univ. Putra Malaysia (Malaysia) . [7643-113]

**Small-scale modular wind turbine**, Chris Vernier, Scott Bressers, Virginia Polytechnic Institute and State Univ. (United States) ..... [7643-114]

**Development and flight test of a shape memory alloy flight control system**, Michael T. Brennon, Ronald M. Barrett, The Univ. of Kansas (United States) ..... [7643-116]

**A comparative experimental study on structural and interface damping approaches for vibration suppression purposes**, Yi Liu, ETH Zürich (Switzerland) ..... [7643-117]

**Suspension system with magneto-rheological damper and energy regeneration**, Zhihao Wang, Zhengqing Chen, Hunan Univ. (China) . . . [7643-118]

**Harvesting energy using a piezo-composite generating element (PCGE)**, Cam Minh Tri Tien, Nam-Seo Goo, Konkuk Univ. (Korea, Republic of) ..... [7643-119]

**The disadvantage effect of magnetorheological damper on the hosting structures**, Xiu-Ling Li, Sr., Shandong Jianzhu Univ. (China); Hong-Nan Li, Dalian Univ. of Technology (China) ..... [7643-120]

**A novel above-knee prosthetic knee based on magnetorheological effect: design and testing**, Daihua Wang, Lei Xu, Chongqing Univ. (China) ..... [7643-121]

**Performance optimization of an integrated relative displacement self-sensing magnetorheological damper**, Daihua Wang, Xian-Xu Bai, Chongqing Univ. (China) ..... [7643-122]

**BATMAV: a 2-DOF bio-inspired flapping flight platform**, Gheorghe Bungeat, Preston Cook, Stefan S. Seelecke, North Carolina State Univ. (United States) ..... [7643-123]

**FE analysis of SMA-based dual-joint flexible nozzle used in smart inhaler system**, Nicole Lewis, Stefan S. Seelecke, North Carolina State Univ. (United States) ..... [7643-124]

**Radar tower frequency control and earthquake response analysis**, Zeyu Wu, Zhengzhou Univ. (China); Yuhe Li, North China Univ. of Water Conservancy and Electric Power (China); Fuming Wang, Dongwei Wang, Zhengzhou Univ. (China) ..... [7643-127]



# Posters · Tuesday · Golden Ballroom, Exhibition Hall · 6:00 to 7:30 pm

Conference attendees are invited to attend the joint poster session/exhibition reception to network, enjoy light refreshments, and view the poster papers. Attendees are required to wear their conference registration badge. Authors of poster papers will be present to answer questions concerning their papers. Poster authors must set up their poster between 10:00 am and 4:00 pm on Tuesday 9 March.

## Conference 7644

**A preliminary study on effect of gamma radiation on shape memory polymer composite filled with carbon nanotube**, Xuelian Wu, Yanju Liu, Jinsong Leng, Harbin Institute of Technology (China) [7644-16]

**EMI shielding performance study of tri-layer nano stealth composites**, Di Song, Harbin Institute of Technology (China) . . . . . [7644-52]

**Nonlinear bending response of Terfenol-D/PZT laminated devices under electromagnetic fields**, Kotaro Mori, Fumio Narita, Yasuhide Shindo, Tohoku Univ. (Japan) . . . . . [7644-73]

**Stress analysis of thick-walled cylinders made of functionally graded materials using theory of strain gradient elasticity**, Hossein Sadeghi, Reza Naghdabadi, Sharif Univ. of Technology (Iran, Islamic Republic of) . . . . . [7644-74]

**Modeling and simulation of corrosion mechanism for glass fiber reinforced plastic in sea water**, Jinying Yin, Harbin Institute of Technology (China) . . . . . [7644-75]

**A phenomenological rate-related model for the super-elastic shape memory alloy**, Bo Zhou, Harbin Engineering Univ. (China) . . . . . [7644-76]

**Simulation models for design and production of active structural parts with deformed piezoceramic-metal-compounds**, Welf-Guntram Drossel, Sebastian Hensel, Burkhard Kranz, Fraunhofer-Institut für Werkzeugmaschinen und Umformtechnik (Germany) . . . . . [7644-77]

**Characterization of a Pt-core PZT fiber/Al matrix composite**, Matthew Richeson, Karla M. Mossi, Virginia Commonwealth Univ. (United States); Jun Kunikata, Hiroshi Asanuma, Chiba Univ. (Japan) . . . . . [7644-78]

**Bio-inspired unmanned undersea vehicle**, Colin F. Smith, Alex Villanueva, Shashank Priya, Virginia Polytechnic Institute and State Univ. (United States) . . . . . [7644-79]

**Characterization of tensile mechanical response of epoxy resins**, Masoud Yekani Fard, Yingtao Liu, Aditi Chattopadhyay, Arizona State Univ. (United States) . . . . . [7644-83]

**Design of RF MEMS switches without pull-in instability**, Ralph C. Smith, North Carolina State Univ. (United States); Tyler Skorzewski, Univ. of California, Davis (United States); Gregory Richards, Kent State Univ. (United States); Cyrus Proctor, North Carolina State Univ. (United States); Chongyi Shen, The Univ. of Iowa (United States); Min Wang, Northern Illinois Univ. (United States); Jingyan Zhang, The Pennsylvania State Univ. (United States); Peng Zhong, The Univ. of Tennessee (United States); Jordan E. Massad, Sandia National Labs. (United States) . . . . . [7644-84]

**Effect of surface modified Fe<sub>3</sub>O<sub>4</sub> nanoparticles on rheology of bidisperse magnetorheological fluids**, Hongbo Cheng, Ciming Zhou, Qingying Zhang, Wuhan Univ. of Technology (China); Norman M. Wereley, Univ. of Maryland, College Park (United States) . . . . . [7644-89]

**Dynamic analysis of slider crank mechanism and two-link manipulator using constraint technique**, Moutaz M. Hegaze, Ahmed M. El-Nady, Emam Morgan, Military Technical College (Egypt) [7644-90]

**Finite element analysis of fatigue damage of composite laminated structures under stochastic loading**, Moutaz M. Hegaze, Mohamed M. Abo El Dahab, Military Technical College (Egypt) . [7644-91]

**Attenuation behavior of multimode optical fibers bended several times and comparison with current models**, Karina Rodriguez Carmona, Alfredo M. Lucero, Ctr. de Investigación en Materiales Avanzados, S.C. (Mexico) . . . . . [7644-92]

**Mechanical behavior of coupled DEAP actuator and negative-rate bias spring system**, Micah Hodgins, Alexander York, Stefan S. Seelecke, North Carolina State Univ. (United States) . . . . . [7644-95]

**Influence of a non-uniform stress on the electromechanical transduction coefficient of a magnetostrictive unimorph**, Eric Starke, Uwe Marschner, Günther Pfeifer, Wolf-Joachim Fischer, Technische Univ. Dresden (Germany); Alison B. Flatau, Univ. of Maryland, College Park (United States) . . . . . [7644-97]

**Field induced variation of Austenite and Martensite phase coexistence region in Ni<sub>55</sub>Fe<sub>20</sub>Al<sub>25</sub> shape memory alloy**, Archana Lakhani, Pallavi Kushwaha, Rajeev Rawat, P. Chaddah, Univ. Grants Commission (India) . . . . . [7644-98]

## Conference 7645

**Nanojoining and fabrication of nanojunctions using nano-particles**, Mustafa Yavuz, Wei Wu, Hani Alarifi, Anming Hu, Norman Y. Zhou, Univ. of Waterloo (Canada) . . . . . [7645-37]

**Study on the novel Li polymer battery using polyindole electrode**, Zhijiang Cai, Tianjin Polytechnic Univ. (China) . . . . . [7645-38]

**Research on thermo-mechanical properties of styrene-based shape memory polymer composite**, Bo Zhou, Harbin Engineering Univ. (China); Yanju Liu, Xin Lan, Jinsong Leng, Harbin Institute of Technology (China) . . . . . [7645-39]

## Conference 7646

**Micro-electronic circuit design for amplification and modulation in a MEMs human blood-pressure sensor**, Jose A. Alvarez-Chavez, Ctr. de Investigación e Innovación Tecnológica (Mexico); Ivett Quiñones, Evaristo Vela, Instituto Nacional de Rehabilitación (Mexico) . . . . . [7646-57]

**Synthesis and characterization of composite of gold nanoparticles attached ZnO nanorods**, Kai Zhang, Norfolk State Univ. (United States) [7646-58]

**Simple theoretical analysis of the thermoelectric power under strong magnetic quantization in superlattices of non-parabolic semiconductors with graded interfaces**, Subhamoy Singharoy, JIS College of Engineering (India) . . . . . [7646-61]

**Dynamic behavior of double-walled carbon nanotubes conveying viscous fluid based on nonlocal elastic theory**, Yaxin Zhen, Bo Fang, Tianzhi Yang, Harbin Institute of Technology (China) . . . . . [7646-62]

**Analysis of the effect of both specimen size and grain size on the tensile strength of the polycrystalline metallic materials**, Bong-Bu Jung, Hun-Keel Lee, Hyun-Chul Park, Pohang Univ. of Science and Technology (Korea, Republic of) . . . . . [7646-63]

**Simple theory of the interband optical absorption co-efficient in semiconductors in presence of an electric field and its dependence on a longitudinal magnetic field**, Subhamoy Singharoy, JIS College of Engineering (India) . . . . . [7646-64]

**Thermal sensors based on nano porous silicon**, Jia-Chuan Lin, St. John's Univ. (Taiwan); Wei-Chih Tsai, National Cheng Kung Univ. (Taiwan) [7646-65]

**Ferritin as a photocatalyst in an artificial photosynthesis system**, Robert J. Hilton, Jeremiah Keyes, Richard K. Watt, Brigham Young Univ. (United States) . . . . . [7646-66]

## Conference 7647

**Mechanical monolithic tiltmeter for low frequency measurements**, Fausto Acernese, Univ. degli Studi di Salerno (Italy); Rosario De Rosa, Gerardo Giordano, Univ. degli Studi di Napoli Federico II (Italy); Rocco Romano, Univ. degli Studi di Salerno (Italy); Fabrizio Barone, Istituto Nazionale di Fisica Nucleare (Italy) . . . . . [7647-156]

**Low frequency seismic noise acquisition and analysis in the Homestake Mine with tunable monolithic horizontal sensors**, Fausto Acernese, Univ. degli Studi di Salerno (Italy); Rosario De Rosa, Univ. degli Studi di Napoli Federico II (Italy); Riccardo DeSalvo, California Institute of Technology (United States); Gerardo Giordano, Univ. degli Studi di Salerno (Italy); Jan Harms, Vuk Mandic, Univ. of Minnesota, Twin Cities (United States); Fabrizio Barone, Istituto Nazionale di Fisica Nucleare (Italy) . . . . . [7647-157]

**Study on the fatigue reliability of optical fiber based on distributed optical fiber strain sensing technique**, Shiwei Song, Southeast Univ. (China); Zhishen Wu, Ibaraki Univ. (Japan); Caiqian Yang, Gang Wu, Sheng Shen, Southeast Univ. (China) . . . . . [7647-159]

**Structural health monitoring of a composite wind turbine blade using fiber Bragg grating sensors**, Hyung-Joon Bang, Hyunki Shin, Yung-chul Ju, Korea Institute of Energy Research (Korea, Republic of) . . . . . [7647-160]

**Adaptive optics system for fast automatic control of laser beam jitters in air**, Salvatore Grasso, Univ. degli Studi di Roma Tre (Italy); Fausto Acernese, Rocco Romano, Univ. degli Studi di Salerno (Italy); Fabrizio Barone, Istituto Nazionale di Fisica Nucleare (Italy) . . . . . [7647-161]

**Piezoelectric sensor system for simultaneous detection of local and global damages in structures**, Yongrae Roh, Hyeoksang Kwon, Jinwook Kim, Byungsoo Kim, Kyungpook National Univ. (Korea, Republic of) . . . . . [7647-162]

# Posters · Tuesday · Golden Ballroom, Exhibition Hall · 6:00 to 7:30 pm

Conference attendees are invited to attend the joint poster session/exhibition reception to network, enjoy light refreshments, and view the poster papers. Attendees are required to wear their conference registration badge. Authors of poster papers will be present to answer questions concerning their papers. Poster authors must set up their poster between 10:00 am and 4:00 pm on Tuesday 9 March.

**Development of NDT system with image reconstruction capabilities of flaws using EMAT,** Yoshihiro Nishimura, Akira Sasamoto, Takayuki Suzuki, National Institute of Advanced Industrial Science and Technology (Japan) . . . . . [7647-163]

**Oblique excitation of nearly-longitudinal waves in thick plates,** Yujie Ying, James H. Garrett, Jr., David W. Greve, Irving J. Oppenheim, Lucio Soibelman, Carnegie Mellon Univ. (United States) . . . [7647-164]

**The development and performance study of polypropylene packaged FBG strain sensor for monitoring on asphalt pavement,** Qingli Hu, Chuan Wang, Jinping Ou, Harbin Institute of Technology (China) . . . . . [7647-165]

**Decentralized semi-active structural control system with wireless sensing and control network,** Ying Lei, Xiamen Univ. (China) [7647-166]

**An optimal design of magnetostrictive material (MsM) based energy harvester,** Jingzhen Hu, Fuh-Gwo Yuan, North Carolina State Univ. (United States); Fujun Xu, Donghua Univ. (China) and North Carolina State Univ. (United States); Alex Q. Huang, North Carolina State Univ. (United States)[7647-167]

**Coupling of ab-initio and bifurcation techniques for martensitic transformations in transition-metal materials,** Ryan S. Elliott, Matteo Cococcioni, Dipta B. Ghosh, Univ. of Minnesota (United States) . . . . . [7647-168]

**In-situ geo-characterization using wireless functional signals,** Xu Li, Tae Sup Yun, Liang Cheng, Sibel Pamukcu, Lehigh Univ. (United States) . . . . . [7647-169]

**Low-cost self-cleaning room temperature tin dioxide thin film gas sensor on polymer nanostructures,** Mengyan Shen, Haibin Huo, Fadong Yan, Cong Wang, Haizhou Ren, Univ. of Massachusetts Lowell (United States) . . . [7647-170]

**Classification of damage in structural systems using time series analysis and supervised and unsupervised pattern recognition techniques,** Piotr Omenzetter, Oliver R. de Lautour, The Univ. of Auckland (New Zealand) . . . . . [7647-171]

## NSF Poster Session

*This special poster collection features projects funded by the National Science Foundation.*

*\* indicates papers that will also be presented in conference 7647 oral sessions.*

**\*A mobile gait monitoring system for abnormal gait diagnosis and rehabilitation,** Joonbum Bae, Kyoungchul Kong, Masayoshi Tomizuka, Univ. of California, Berkeley (United States) . . . . . [7647-20]

**\*Fast estimation of bifurcation conditions using noisy response data,** Steven W. Shaw, Nick J. Miller, Mark I. Dykman, Michigan State Univ. (United States); Kimberly L. Turner, Univ. of California, Santa Barbara (United States) . . . . . [7647-23]

**\*A new approach to tackle noise issue in miniature directional microphones: bio-inspired mechanical coupling,** Haijun Liu, Miao Yu, Univ. of Maryland, College Park (United States) . . . [7647-24]

**\*Micro-machinable polymer-derived ceramics sensors for high-temperature applications,** Jian Liu, Chengying Xu, Linan An, Univ. of Central Florida (United States) . . . . . [7647-31]

**\*Non-contact torque measurement using rolled single crystal-like Galfenol patches,** Darryl Douglas, Suok-Min Na, Alison B. Flatau, Univ. of Maryland, College Park (United States) . . . [7647-32]

**\*Smart pavement sensor based on thermoelectricity power,** Xiong Yu, Case Western Reserve Univ. (United States) . . . . . [7647-33]

**\*Validation of a wireless sensor network using local damage detection algorithm for beam-column connections,** Shamim N. Pakzad, Liang Cheng, Lehigh Univ. (United States) . . . . . [7647-45]

**\*Mechanisms of sliding friction studied with an array of industrial conical piezoelectric sensors,** Gregory McLaskey, Steven D. Glaser, Univ. of California, Berkeley (United States) . . . . . [7647-47]

**\*An emerging time-domain sensing technique for large scale, multi-function fiber optic sensor networks,** Chuji Wang, Chamini Herath, Mississippi State Univ. (United States) . . . . . [7647-58]

**\*Intelligent fault detection, diagnosis and prevention (IFDDP) technology for the design of smart outlets in healthy and safe homes,** Imin M. Kao, Stony Brook Univ. (United States) . . . [7647-61]

**\*Support vector machine for abnormality detection of a cable-stayed bridge,** David M. Vines-Cavanaugh, Yinghong Cao, Ming L. Wang, Northeastern Univ. (United States) . . . . . [7647-65]

**\*Design and fabrication of a sensor integrated MEMS/nano-skin system for human physiological response measurement,** Yingzi Lin, Northeastern Univ. (United States) . . . . . [7647-67]

**\*Continuous piezoelectric health monitoring systems based on ultrasonic guided waves,** Cliff J. Lissenden, Sheng Li, Joseph L. Rose, The Pennsylvania State Univ. (United States) . [7647-77]

**\*Flexure-based mobile sensor design with application in structural damage identification,** Dapeng Zhu, Xiaohua Yi, Jiajie Guo, Yang Wang, Kok-Meng Lee, Georgia Institute of Technology (United States) . . . . . [7647-81]

**\*Agent-based computational topology formation for automated modal analysis in dense wireless sensing networks,** Andrew Zimmerman, Jerome P. Lynch, Univ. of Michigan (United States) . . [7647-82]

**\*Acoustic emission detection and energy transduction with piezoelectric wafer active sensors,** Bin Lin, Victor Giurgiutiu, Univ. of South Carolina (United States) . . . . . [7647-97]

**\*Full-scale bridge health monitoring using a receptance-based method,** Shin Ae Jang, Sung-Han Sim, Billie F. Spencer, Jr., Univ. of Illinois at Urbana-Champaign (United States) . . . . [7647-125]

**\*Luminescent photoelastic coating image analysis and strain separation on a three-dimensional grid,** Ergin Esirgemez, James P. Hubner, The Univ. of Alabama (United States) . . . . . [7647-127]

**\*Unpowered passive sensor for crack detection and measurement,** Srikanth Deshmukh, Irshad Mohammad, Haijing Huang, The Univ. of Texas at Arlington (United States) . . . . . [7647-144]

**\*Infrasound energy harvesting for embedded structural health monitoring micro-sensors,** Chenling Huang, Nizar Lajnef, Shantanu Chakrabarty, Michigan State Univ. (United States) . . . . . [7647-148]

**\*Environmental urban runoff monitoring,** Byunggu Yu, Pradeep K. Behera, Seon Ho Kim, Paul Cotae, Juan F. Ramirez Rochac, Travis Branham, Univ. of the District of Columbia (United States) . . . . [7647-149]

**\*Magneto-inductive waveguide as a passive wireless sensor net for structural health monitoring,** Ye Chen, Praveenkumar Pasupathy, Dean P. Neikirk, Sharon L. Wood, The Univ. of Texas at Austin (United States) . . . . . [7647-150]

**\*Experimental demonstration of the AQSSE damage detection technique based on finite-element approach,** Jann N. Yang, Ye Xia, Univ. of California, Irvine (United States); Chin-Hsiung Loh, National Taiwan Univ. (Taiwan) . . . . . [7647-153]

**An optimal design of magnetostrictive material (MsM) based energy harvester,** Jingzhen Hu, Fuh-Gwo Yuan, North Carolina State Univ. (United States); Fujun Xu, Donghua Univ. (China) and North Carolina State Univ. (United States); Alex Q. Huang, North Carolina State Univ. (United States) . . . . [7647-167]

**Coupling of ab-initio and bifurcation techniques for martensitic transformations in transition-metal materials,** Ryan S. Elliott, Matteo Cococcioni, Dipta B. Ghosh, Univ. of Minnesota (United States) . . . . . [7647-168]

**In-situ geo-characterization using wireless functional signals,** Xu Li, Tae Sup Yun, Liang Cheng, Sibel Pamukcu, Lehigh Univ. (United States) . . . . . [7647-169]

**Low-cost self-cleaning room temperature tin dioxide thin film gas sensor on polymer nanostructures,** Mengyan Shen, Haibin Huo, Fadong Yan, Cong Wang, Haizhou Ren, Univ. of Massachusetts Lowell (United States) . . . [7647-170]

# Posters · Tuesday · Golden Ballroom, Exhibition Hall · 6:00 to 7:30 pm

Conference attendees are invited to attend the joint poster session/exhibition reception to network, enjoy light refreshments, and view the poster papers. Attendees are required to wear their conference registration badge. Authors of poster papers will be present to answer questions concerning their papers. Poster authors must set up their poster between 10:00 am and 4:00 pm on Tuesday 9 March.

## Conference 7648

- The feasibility of low power wireless sensor devices in an industrial environment**, Alex A. Mason, Ahmed I. Al-Shamma'a, Andy Shaw, Liverpool John Moores Univ. (United Kingdom) ..... [7648-43]
- Study on the sensing performance of OFBG under large-scale negative strain**, Chuan Wang, Qingli Hu, Jinping Ou, Harbin Institute of Technology (China) ..... [7648-44]
- Simple expressions of the reflection and transmission coefficients of a lamb wave by a rectangular notch**, Yongrae Roh, Byungsoo Kim, Kyungpook National Univ. (Korea, Republic of) ..... [7648-45]
- The application research of wireless networks for HSM**, Jian Xin Wang, Gong Huan, Yu Song, Xiamen Univ. (China) ..... [7648-46]
- Dynamic forces measurement of cables in structural health monitoring**, Yu Song, Xiamen Univ. (China) ..... [7648-47]
- Distributed structural damage detection technology with smart sensor network**, Ying Lei, Xiamen Univ. (China) ..... [7648-48]

## Conference 7649

- The design of delay pulse circuit for ultrasonic phased array system**, Hua Wang, Harbin Institute of Technology (China) ..... [7649-62]
- Global mechanical behavior of Sutong Bridge under static loads**, Yuanbing Li, Qiwei Zhang, Tongji Univ. (China) ..... [7649-64]
- Non-linear material characterisation using the noncollinear method**, Anthony J. Croxford, Paul D. Wilcox, Bruce W. Drinkwater, Univ. of Bristol (United Kingdom); Peter B. Nagy, Univ. of Cincinnati (United States) ..... [7649-65]
- A damage detection approach based on multi-scale numerical model for composite structures with truss core**, Hui Fang, China Academy of Engineering Physics (China) and Xi'an Jiaotong Univ. (China) ..... [7649-66]
- Damage propagation monitoring of composite blade under fatigue loading**, Wensong Zhou, Hui Li, Yanqing Wang, Harbin Institute of Technology (China) ..... [7649-68]
- The next generation magnetovision system for SMART applications**, Daniel Lewandowski, Jerzy Kaleta, Przemyslaw Wiewiórski, Wrocław Univ. of Technology (Poland) ..... [7649-69]
- Characterization of pitting corrosion on small diameter ductile iron pipe using thermography**, Zheng Liu, Marc Genest, National Research Council Canada (Canada) ..... [7649-70]
- Experimental investigation on mechanical behavior of filament-wound CFRP tubes**, Liangquan Zhang, Northeast Forestry Univ. (China); Hui Li, Harbin Institute of Technology (China); Jinping Ou, Dalian Univ. of Technology (China) ... [7649-71]
- Measurement of surface resistivity/conductivity of anodized aluminium alloy by optical interferometry techniques**, Khaled J. Habib, Kuwait Institute for Scientific Research (Kuwait) . . [7649-73]
- Dynamic behaviour analysis for catwalks without wind-resistant cable of long-span suspension bridge**, Shengli Li, Zhengzhou Univ. (China); Jinping Ou, Harbin Institute of Technology (China) [7649-75]

## Conference 7650

- A no-calorimetric method for measuring SAR in MRI**, Rocco Romano, Fausto Acernese, Univ. degli Studi di Salerno (Italy); Fabrizio Barone, Istituto Nazionale di Fisica Nucleare (Italy). . . . . [7650-119]
- MATCAKE, a flexible toolbox for 2D NMR spectra integration by CAKE algorithm**, Rocco Romano, Fausto Acernese, Univ. degli Studi di Salerno (Italy); Alessandro Motta, Deborah Paris, Fabrizio Barone, Istituto Nazionale di Fisica Nucleare (Italy)[7650-120]
- Biomedical imaging with THz waves**, Andrew Nguyen, Univ. of California, Irvine (United States) ..... [7650-121]
- Investigation of THz for possible use in medical ultrasound technique**, Andrew Nguyen, Univ. of California, Irvine (United States). . . . . [7650-122]
- Monitoring system of arch bridge for safety network management**, Bong-Chul Joo, Young Jun Yoo, Chin Hyung Lee, Ki Tae Park, Yoon Koog Hwang, Korea Institute of Construction Technology (Korea, Republic of) ..... [7650-123]
- Wireless structural health monitoring system of city bridges**, Shuri Cai, Jian Su, Research Institute of Highway (China) ..... [7650-125]
- Structural damage detection based on non-negative matrix factorization and relevance vector machine**, Yuequan Bao, Hui Li, Yong Huang, Harbin Institute of Technology (China); Jinping Ou, Harbin Institute of Technology (China) and Dalian Univ. of Technology (China)..... [7650-127]
- Fractal theory and wavelet packet transform based damage detection method for beam structures**, Yong Huang, Yongchao Yang, Hui Li, Harbin Institute of Technology (China) ... [7650-128]
- Wave field characterization for non-destructive assessment of elastic properties using laser-acoustic sources in fluids and eye related tissues**, Thomas Windisch, Frank Schubert, Bernd Koehler, Norbert G. Meyendorf, Fraunhofer-Institut für Zerstörungsfreie Prüfverfahren (Germany)[7650-129]

Get a free trial subscription.  
Ask your librarian.

**SPiE**   
Digital Library

SPiEDigitalLibrary.org

Conference 7642

Conference 7643

Conference 7644

Conference 7646

Room: Pacific Salon I-III · Wed. 8:00 to 9:05 am  
**Wednesday Announcements, Awards, Funding Agency Talks, and Plenary Presentation**

8:00 to 8:05 am  
**ASME/SPIE Best Student Paper Award**  
**ASME Best Paper Award**

8:05 to 8:20 am

**Funding Agency Talk: Current and Future Programs and Initiatives**

**European Clean Sky Initiative**  
 John Simpson, Clean Sky JTI (European Union)

Plenary Presentation ..... 8:20 to 9:05 am



**Photonic Sensing for Structural Monitoring**  
 Ralph Tatam, Cranfield Univ. (United Kingdom)  
 See page 5 for more information.

SESSION 7a

Room: Pacific Salon I-III  
 Wed. 9:10 am to 12:10 pm

**Ionic EAP I**

Session Chairs: **Hyook Ryeol Choi**, Sungkyunkwan Univ. (Korea, Republic of); **Hans-Erik Kil**, Danfoss PolyPower A/S (Denmark)

9:10 am: **IPMC: recent progress in modeling, manufacturing, and new applications** (*Invited Paper*), Kwang J. Kim, Univ. of Nevada, Reno (United States) ..... [7642-27]

9:40 am: **Experiments with self-sensing IPMC actuating device**, Karl Kruusamäe, Univ. of Tartu (Estonia); Paola Brunetto, Salvatore Graziani, Univ. degli Studi di Catania (Italy); Andres Punning, Alvo Aabloo, Univ. of Tartu (Estonia) ..... [7642-28]

Coffee Break ..... 10:00 to 10:30 am

SESSION 7b

Room: Sunset  
 Wed. 9:10 am to 12:10 pm

**Dielectric EAP Actuators III**

Session Chairs: **Donald J. Leo**, Virginia Polytechnic Institute and State Univ.; **Helmut F. Schlaak**, Technische Univ. Darmstadt (Germany)

9:10 am: **Asymptotically accurate non-linear analysis of electro-elastomer structures**, Ramesh Gupta Burela, Dineshkumar Harursampath, Indian Institute of Science (India) ..... [7642-33]

9:30 am: **Modeling approaches for electroactive polymers**, William Kaal, Sven Herold, Tobias Melz, Fraunhofer-Institut für Betriebsfestigkeit und Systemzuverlässigkeit (Germany) ..... [7642-34]

9:50 am: **Evaluation of electrostriction in dielectric elastomer actuation and instability**, Bo Li, Xi'an Jiaotong Univ. (China) ..... [7642-35]

Coffee Break ..... 10:10 to 10:30 am

SESSION 7a

Room: Sunrise  
 Wed. 9:10 am to 12:20 pm

**Optimization and Design of Integrated Systems**

Session Chair: **Mehrdad N. Ghasemi-Nejhad**, Univ. of Hawai'i

9:10 am: **Performance analysis of discrete whole-spacecraft vibration isolation platforms for flexible spacecrafts**, Bo Fang, Yewei Zhang, Yuhang Li, Harbin Institute of Technology (China) . . . [7643-54]

9:30 am: **Integration of adaptive components by incremental forming processes**, Markus Türk, Peter Groche, Technische Univ. Darmstadt (Germany) . . . . . [7643-55]

9:50 am: **Active sensor/actuator assemblies for vibration damping, compensation, measurement, and testing**, Vyacheslav M. Ryaboy, Prakash S. Kasturi, Newport Corp. (United States) ..... [7643-56]

Coffee Break ..... 10:10 to 10:40 am

SESSION 7

Room: Royal Palm II  
 Wed. 9:10 to 10:10 am

**Magneto-Active Materials II: Magnetic Shape Memory Effect**

Session Chairs: **Ibrahim Karaman**, Texas A&M Univ.; **Haluk E. Karaca**, Univ. of Kentucky

9:10 am: **Stability of the magnetomechanical problem in magnetic shape memory alloys**, George Chatzigeorgiou, Krishnendu Haldar, Dimitris C. Lagoudas, Texas A&M Univ. (United States) ..... [7644-34]

9:25 am: **Magneto-mechanical behavior of magnetic shape memory alloys under simultaneously variable magnetic and mechanical loading**, Constantin Ciocanel, Heidi P. Feigenbaum, Northern Arizona Univ. (United States) ..... [7644-35]

9:40 am: **Constitutive model prediction of magneto-mechanical coupling response of magnetic field-induced phase transformations in NiMnCoIn magnetic shape memory alloys**, Dimitris C. Lagoudas, Krishnendu Haldar, Burak Basaran, Ibrahim Karaman, Texas A&M Univ. (United States) ..... [7644-36]

9:55 am: **Mechanisms of domain switching in ferromagnetic shape memory alloys**, Vesselin M. Stoilov, Ola Rashwan, Univ. of Windsor (Canada) . . . . . [7644-37]

Coffee Break ..... 10:10 to 10:40 am

SESSION 10

Room: Royal Palm III  
 Wed. 9:10 to 10:10 am

**Nano Sensors and Actuators**

Session Chair: **Sungryul Yun**, Inha Univ. (Korea, Republic of)

9:10 am: **Multi-walled carbon nanotubes covalent bonded cellulose composite chemical vapor sensor**, Sungryul Yun, Sang Yeol Yang, Jaehwan Kim, Inha Univ. (Korea, Republic of) ..... [7646-31]

9:30 am: **Integration of OLEDs in biomedical sensor systems: design and feasibility analysis**, Pratyush Rai, Prashanth S. Kumar, Vijay K. Varadan, Univ. of Arkansas (United States) ..... [7646-32]

9:50 am: **Cellulose polypyrrole-ionic liquid (CPIL) nanocomposite for highly durable, biomimetic electro-active paper actuator**, Suresha K. Mahadeva, Joo-Hyung Kim, Jaehwan Kim, Inha Univ. (Korea, Republic of) ..... [7646-33]

Coffee Break ..... 10:10 to 10:40 am

Conference 7647

Conference 7648

Conference 7649

Conference 7650

Room: Pacific Salon I-III · Wed. 8:00 to 9:05 am  
**Wednesday Announcements, Awards, Funding Agency Talks, and Plenary Presentation**

8:00 to 8:05 am

**ASME/SPIE Best Student Paper Award**

**ASME Best Paper Award**

8:05 to 8:20 am

**Funding Agency Talk: Current and Future Programs and Initiatives**

**European Clean Sky Initiative**

John Simpson, Clean Sky JTI (European Union)

Plenary Presentation ..... 8:20 to 9:05 am



**Photonic Sensing for Structural Monitoring**

Ralph Tatam, Cranfield Univ. (United Kingdom)

See page 5 for more information.

SESSION 8a

Room: Pacific Salon IV-V  
 Wed. 9:10 to 10:10 am

**Signal Processing and Damage Detection I**

Session Chair: **Jeong-Tae Kim**, Pukyong National Univ. (Korea, Republic of)

9:10 am: **Detecting seismic response signals using singular spectrum analysis**, Chin-Hsiung Loh, Chien-Hong Mao, Chia-Hui Chen, National Taiwan Univ. (Taiwan) ..... [7647-64]

9:30 am: **\* Support vector machine for abnormality detection of a cable-stayed bridge**, David M. Vines-Cavanaugh, Yinghong Cao, Ming L. Wang, Northeastern Univ. (United States) ..... [7647-65]

9:50 am: **Adaptive noise variance identification for data fusion using subspace-based technique**, Zhen Li, Chih-Chen Chang, Hong Kong Univ. of Science and Technology (Hong Kong, China) ..... [7647-66]

Coffee Break ..... 10:10 to 10:40 am

SESSION 8b

Room: Pacific Salon VI-VII  
 Wed. 9:10 to 10:10 am

**Nano and MEMS**

Session Chairs: **Ming L. Wang**, Northeastern Univ.; **Jugdutt Jack Singh**, La Trobe Univ. (Australia)

9:10 am: **\* Design and fabrication of a sensor integrated MEMS/nano-skin system for human physiological response measurement**, Yingzi Lin, Northeastern Univ. (United States)[7647-67]

9:30 am: **Carbon nanotube sensors on CMOS circuitry for environmental monitoring**, Yu Liu, Chia-Ling Chen, Mehmet R. Dokmeci, Ming L. Wang, Northeastern Univ. (United States)[7647-68]

9:50 am: **Reconfigurable multivariable MEMS sensor array**, Stephen P. van der Velden, Defence Science and Technology Organisation (Australia) and La Trobe Univ. (Australia); Jugdutt Singh, La Trobe Univ. (Australia) ..... [7647-69]

Coffee Break ..... 10:10 to 10:40 am

SESSION 8

Room: Royal Palm IV  
 Wed. 9:10 to 10:10 am

**Guided Wave Sensors I**

Session Chair: **Norbert G. Meyendorf**, Fraunhofer-Institut für Zerstörungsfreie Prüfverfahren

9:10 am: **Piezoelectric wafer active sensor guided wave imaging**, Lingyu Yu, Victor Giurgiutiu, Univ. of South Carolina (United States) ..... [7648-31]

9:30 am: **A comparison of 3 optical systems for the detection of broadband ultrasound**, Graham J. Thursby, Brian Culshaw, Univ. of Strathclyde (United Kingdom) ..... [7648-32]

9:50 am: **Fatigue crack location and quantification in lug joints using reference-free methods**, Sunilkumar O. Soni, Seung Bum Kim, Aditi Chattopadhyay, Arizona State Univ. (United States)[7648-33]

Coffee Break ..... 10:10 to 10:40 am

SESSION 6

Room: Royal Palm V  
 Wed. 9:10 am to 12:00 pm

**Acoustic/Ultrasound Characterization I**

Session Chairs: **Didem Ozevin**, Univ. of Illinois at Chicago; **Xiaoning Jiang**, North Carolina State Univ.

9:10 am: **Fabrication and characterization of high frequency phased arrays for NDE imaging**, Xiaoning Jiang, TRS Technologies, Inc. (United States); Ruibin Liu, Blatek, Inc. (United States); Kevin A. Snook, TRS Technologies, Inc. (United States); Xuecang Geng, Blatek, Inc. (United States); Wesley S. Hackenberger, TRS Technologies, Inc. (United States) ..... [7649-30]

9:30 am: **Evaluation of bridge cable corrosion using acoustic emission technique**, Dongsheng Li, Dalian Univ. of Technology (China) ..... [7649-63]

9:50 am: **Ultrasonic inspection technique for NDE of fibre composite materials**, Dieter Hentschel, Frank Schubert, Lars Schubert, Bernd Frankenstein, Fraunhofer-Institut für Zerstörungsfreie Prüfverfahren (Germany) ..... [7649-32]

Coffee Break ..... 10:10 to 10:40 am

SESSION 8a

Room: Royal Palm I  
 Wed. 9:10 to 10:10 am

**Guided Waves VI: Stress Measurement**

Session Chairs: **Hoon Sohn**, Korea Advanced Institute of Science and Technology (Korea, Republic of); **Francesco Lanza di Scalea**, Univ. of California, San Diego

9:10 am: **Stress dependence of guided waves in rails**, Ivan Bartoli, Stefano Coccia, Robert Phillips, Ankit Srivastava, Francesco Lanza di Scalea, Salvatore Salamone, Univ. of California, San Diego (United States); Mahmood Fateh, Gary Carr, Federal Railroad Administration (United States) .. [7650-71]

9:30 am: **Monitoring stress in materials using diffuse ultrasonic backscatter**, Chris Kube, Univ. of Nebraska-Lincoln (United States); Goutam Ghoshal, Univ. of Illinois at Urbana-Champaign (United States); Joseph A. Turner, Univ. of Nebraska-Lincoln (United States) ..... [7650-72]

9:50 am: **Guided wave propagation as a measure of axial loads in rails**, Philip W. Loveday, Council for Scientific and Industrial Research (South Africa); Paul D. Wilcox, Univ. of Bristol (United Kingdom) [7650-73]

SESSION 8b

Room: Royal Palm VI  
 Wed. 9:10 to 10:10 am

**Neural Network for SHM**

Session Chairs: **Michael D. Todd**, Univ. of California, San Diego; **Andrei N. Zagrai**, New Mexico Institute of Mining and Technology

9:10 am: **Ultrasonic acoustic health monitoring with neural network pattern classification of power spectral density**, William Kirchner, Steve Southward, Virginia Polytechnic Institute and State Univ. (United States) ..... [7650-74]

9:30 am: **Damage location in composite components using ultrasonic sensors and artificial neural networks**, Zachary T. Kral, Walter Horn, James Steck, Wichita State Univ. (United States) ..... [7650-75]

9:50 am: **Arch bridge suspender tension identification by using neural network**, Dongsheng Li, Dalian Univ. of Technology (China) ..... [7650-76]

Coffee Break ..... 10:10 to 10:40 am

Conference 7642

SESSION 7a Continued

10:30 am: **Conducting polymers as simultaneous sensor-actuators** (*Invited Paper*), Toribio Fernandez-Otero, Gemma Vazquez, Laura Valero, Univ. Politécnica de Cartagena (Spain) . . . . . [7642-29]

11:10 am: **MEMS-based fabrication of multiple-degree-of-freedom ionic polymer-metal composite actuators**, Zheng Chen, Xiaobo Tan, Michigan State Univ. (United States) . . . . . [7642-30]

11:30 am: **Effects of anisotropic surface texture on the performance of ionic polymer-metal composite**, Qingsong He, Haitao Ding, Min Yu, Dongjie Guo, Zhendong Dai, Nanjing Univ. of Aeronautics and Astronautics (China) . . . . . [7642-31]

11:50 am: **Considerations for contractile electroactive polymeric materials and actuators**, Lenore Rasmussen, David Schramm, Ras Labs, LLC (United States); Lewis D. Meixler, Charles A. Gentile, George Ascione, Carl Tilson, Kelsey Pagdon, Princeton Plasma Physics Lab. (United States) . . . . . [7642-32]

Lunch/Exhibition Break . 12:10 to 1:30 pm

SESSION 7b Continued

10:30 am: **Leakage current as a predictor of failure in dielectric elastomer actuators**, Todd A. Gisby, Iain A. Anderson, Sheng Quan Xie, The Univ. of Auckland (New Zealand); Emilio P. Calius, Industrial Research Ltd. (New Zealand) . . . [7642-36]

10:50 am: **Modeling of non ideal dielectric elastomer stack actuators**, Peter Lotz, Marc Matysek, Klaus Flittner, Helmut F. Schlaak, Technische Univ. Darmstadt (Germany) . . . . . [7642-37]

11:10 am: **Dielectric elastomer bimorphs using electrolessly-deposited silver electrodes**, Chun-Kiat Goh, Gih-Keong Lau, Nanyang Technological Univ. (Singapore) . . . . . [7642-38]

11:30 am: **Self-priming circuit design for dielectric elastomer generators**, Thomas G. McKay, Benjamin M. O'Brien, The Univ. of Auckland (New Zealand); Emilio P. Calius, Industrial Research Ltd. (New Zealand); Iain A. Anderson, The Univ. of Auckland (New Zealand) . . . . . [7642-39]

11:50 am: **Energy harvesting using electro active polymers**, Jürgen Maas, Christian Graf, Ostwestfalen-Lippe Univ. of Applied Sciences (Germany); Dirk Schapeler, Bayer MaterialScience AG (Germany) [7642-120]

Lunch/Exhibition Break . 12:10 to 1:30 pm

Conference 7643

SESSION 7a Continued

10:40 am: **Performance evaluation of energy recycling semi-active vibration suppression method with multiple piezoelectric transducers**, Shigeru Shimose, Kenji Minesugi, Junjiro Onoda, Japan Aerospace Exploration Agency (Japan) . . . . . [7643-57]

11:00 am: **Design of optimized piezoelectric HDD-sliders**, Paulo H. Nakasone, Escola Politécnica da Univ. de São Paulo (Brazil); Jeonghoon Yoo, Yonsei Univ. (Korea, Republic of); Emilio C. N. Silva, Escola Politécnica da Univ. de São Paulo (Brazil) . . . . . [7643-58]

11:20 am: **Simultaneous thrust vector control and vibration isolation of satellites using steerable smart platforms**, Mehrdad N. Ghasemi-Nejhad, Kougen Ma, Univ. of Hawai'i (United States) . . . . . [7643-59]

11:40 am: **Design and manufacturing strategies for active tensegrity structures**, Nate Houle, Keith W. Moored III, Trevor Kemp, Hilary Bart-Smith, Univ. of Virginia (United States) . . . . . [7643-60]

12:00 pm: **Review of smart material technologies for active parachute applications**, Eric A. Favini, Christopher Niezrecki, Julie Chen, David Willis, Eugene Niemi, Univ. of Massachusetts Lowell (United States) . . . . . [7643-115]

Lunch/Exhibition Break . 12:10 to 1:30 pm

SESSION 7b

**Room: Towne**  
Wed. 10:40 am to 12:00 pm

**Biological-Inspired Systems and Bio-MEMS I: Flappers and Swimmers**

*Session Chair: Mehrdad N. Ghasemi-Nejhad*, Univ. of Hawai'i

10:40 am: **Bio-inspired thorax design for wing flapper of micro-air-vehicle**, Wei Xiong Teo, Gih-Keong Lau, Nanyang Technological Univ. (Singapore); Holden K. H. Li, DSO National Labs. (Singapore) . . . . . [7643-61]

11:00 am: **Biomimetic wing design for the development of pigeon-inspired flapping-wing MAV**, Nanang Mahardika, Hoon Cheol Park, Konkuk Univ. (Korea, Republic of) . . . . . [7643-107]

11:20 am: **Design and demonstration of a fish robot actuated by a SMA-driven actuation system**, Chan H. Le, Hoon C. Park, Konkuk Univ. (Korea, Republic of) . . . . . [7643-63]

11:40 am: **Development of a propulsion system for a biomimetic swimmer and the effect of complex filament on its performance**, Anh-Tuan Tran-Le, Ngoc-San Ha, Nam-Seo Goo, Konkuk Univ. (Korea, Republic of) . . . . . [7643-64]

Lunch/Exhibition Break . 12:20 to 1:30 pm

Conference 7644

SESSION 8

**Room: Royal Palm II**  
Wed. 10:40 am to 12:20 pm

**Magneto-Active Materials III: Magnetolectric Effect**

*Session Chairs: Jayasimha Atulasimha*, Virginia Commonwealth Univ.; *Marcelo J. Dapino*, The Ohio State Univ.

10:40 am: **Multiferroic nanofibers by electrospinning**, Shuhong Xie, Xiantan Univ. (China) and Univ. of Washington (United States); Jiangyu Li, Univ. of Washington (United States) . . . . . [7644-38]

11:00 am: **Static and dynamic characterization of a magnetolectric cantilever cutting tool**, Vishnu B. Sundaresan, Josh Clarke, Virginia Commonwealth Univ. (United States) . . . . . [7644-39]

11:20 am: **Thickness ratio effects on quasistatic actuation and sensing behavior of laminate magnetolectric cantilevers**, Yezuo Wang, Jayasimha Atulasimha, Virginia Commonwealth Univ. (United States) . . . . . [7644-40]

11:40 am: **Integration of magnetolectric laminate composites and prestress consideration**, Tao Wu, Univ. of California, Los Angeles (United States) . . . [7644-41]

12:00 pm: **Monte Carlo simulation of multiferroic BiFeO<sub>3</sub>**, Yang Yang, Liangjun Li, Jiangyu Li, Univ. of Washington (United States) . . . . . [7644-42]

Lunch/Exhibition Break . 12:20 to 1:30 pm

Conference 7646

SESSION 11

**Room: Royal Palm III**  
Wed. 10:40 am to 12:20 pm

**Applications I**

*Session Chair: Xuelian Wu*, Harbin Institute of Technology (China)

10:40 am: **Photoresponsive hydrogel microvalve activated by bacteriorhodopsin proton pumps**, Khaled M. Al-Arife, George K. Knopf, The Univ. of Western Ontario (Canada) . . . . [7646-34]

11:00 am: **Synthesis and evaluation of novel light-curing dental nanocomposite**, Xiaorong Wu, Yi Sun, Xueyu Song, Harbin Institute of Technology (China); Weili Xie, Harbin Medical Univ. (China) . . . [7646-35]

11:20 am: **Versatile smart optical material characterizer**, Yeonjoon Park, George Washington Univ. (United States); Sang H. Choi, NASA Langley Research Ctr. (United States); Kunik Lee, Federal Highway Administration (United States) . . [7646-36]

11:40 am: **Bioelectronic photosensing array for non-planar imaging**, George K. Knopf, The Univ. of Western Ontario (Canada) . . . . . [7646-37]

12:00 pm: **Can magnetotactic bacteria in multiple optical traps be used to form magnetic nanostructures?**, Dennis Tierney, Meredith Henstridge, Dorothy Engle, Xavier Univ. (United States); Wolfgang Dultz, Johann Wolfgang Goethe-Univ. Frankfurt am Main (Germany); Heidrun Schmitzer, Xavier Univ. (United States) . . . . . [7646-38]

Lunch/Exhibition Break . 12:20 to 1:40 pm

Publish with SPIE and advance your research globally.



SPIEDigitalLibrary.org

Conference 7647	Conference 7648	Conference 7649	Conference 7650		
<p style="text-align: center;"><b>SESSION 9a</b></p> <p style="text-align: center;"><b>Room: Pacific Salon IV-V Wed. 10:40 am to 12:00 pm</b></p> <p style="text-align: center;"><b>Piezo Sensors and Applications</b></p> <p><i>Session Chairs: Haeng-Ki Lee, Korea Advanced Institute of Science and Technology (Korea, Republic of); Venu Gopal Madhav Annamdas, Nanyang Technological Univ. (Singapore)</i></p> <p>10:40 am: <b>Steel bridge fatigue crack detection with piezoelectric wafer active sensors</b>, Lingyu Yu, Victor Giurgiutiu, Paul H. Ziehl, Univ. of South Carolina (United States); Didem Ozevin, Physical Acoustics Corp. (United States) ..... [7647-70]</p> <p>11:00 am: <b>Monitoring concrete by means of embedded sensors and electromechanical impedance technique</b>, Venu G. M. Annamdas, Piervincenzo Rizzo, Univ. of Pittsburgh (United States)[7647-71]</p> <p>11:20 am: <b>Identification of delamination between steel bars and concrete using wavelet packet analysis</b>, Ge Ou, The Univ. of Western Australia (Australia); Xinqun Zhu, Univ. of Western Sydney (Australia); Hong Hao, The Univ. of Western Australia (Australia) ..... [7647-72]</p> <p>11:40 am: <b>Monitoring bond performance between steel rebar and concrete by electro-mechanical impedance approach</b>, Rudy Tawie, Haeng-Ki Lee, Korea Advanced Institute of Science and Technology (Korea, Republic of) ..... [7647-73]</p> <p>Lunch/Exhibition Break . 12:00 to 1:30 pm</p>	<p style="text-align: center;"><b>SESSION 9b</b></p> <p style="text-align: center;"><b>Room: Pacific Salon VI-VII Wed. 10:40 am to 12:00 pm</b></p> <p style="text-align: center;"><b>Structural Life Prognosis</b></p> <p><i>Session Chairs: Andreas Ricoeur, Univ. Kassel (Germany); Cliff J. Lissenden, The Pennsylvania State Univ.</i></p> <p>10:40 am: <b>Estimation of fatigue life using electromechanical impedance technique</b>, Yee Yan Lim, Chee Kiong Soh, Nanyang Technological Univ. (Singapore). [7647-74]</p> <p>11:00 am: <b>Life cycle structural health monitoring of airframe structures by strain mapping using FBG sensors</b>, Ichiya Takahashi, Kazushi Sekine, Masami Kume, Hajime Takeya, Mitsubishi Electric Corp. (Japan); Yutaka Iwahori, Japan Aerospace Exploration Agency (Japan); Nobuo Takeda, The Univ. of Tokyo (Japan); Yasuhiro Koshioka, RIMCOF (Japan) . . . . [7647-75]</p> <p>11:20 am: <b>In situ determination of stress intensity factors for the prediction of fatigue crack growth using piezoelectric polymer coatings</b>, Andreas Ricoeur, Univ. Kassel (Germany); Dennis Bäcker, Meinhard Kuna, Technische Univ. Bergakademie Freiberg (Germany). . . . . [7647-76]</p> <p>11:40 am: * <b>Continuous piezoelectric health monitoring systems based on ultrasonic guided waves</b>, Cliff J. Lissenden, Sheng Li, Joseph L. Rose, The Pennsylvania State Univ. (United States) . . . . . [7647-77]</p> <p>Lunch/Exhibition Break . 12:00 to 1:30 pm</p>	<p style="text-align: center;"><b>SESSION 9</b></p> <p style="text-align: center;"><b>Room: Royal Palm IV Wed. 10:40 am to 12:00 pm</b></p> <p style="text-align: center;"><b>Guided Wave Sensors II</b></p> <p><i>Session Chair: Lingyu Yu, Univ. of South Carolina</i></p> <p>10:40 am: <b>Comparison of guided wave sensors for SHM sensor networks</b>, Thomas Windisch, Bernd Köhler, Norbert Meyendorf, Fraunhofer-Institut für Zerstörungsfreie Prüfverfahren (Germany) . . . . . [7648-34]</p> <p>11:00 am: <b>Flexible ultrasonic transducers for structural health monitoring of metals and composites</b>, Makiko Kobayashi, Cheng-Kuei Jen, Kuo-Ting Wu, Silvio E. Kruger, National Research Council Canada (Canada) . . . . . [7648-35]</p> <p>11:20 am: <b>Thin film characterization using high frequency eddy current spectroscopy</b>, Henning Heuer, Susanne Hillmann, Martin H. Schulze, Mike Rölliig, Marcus Klein, Fraunhofer-Institut für Zerstörungsfreie Prüfverfahren (Germany) . . . . . [7648-36]</p> <p>11:40 am: <b>A physically based classification approach for identifying acoustic emission source mechanisms</b>, Mannur J. Sundaresan, Duwarahan Rajendra, Albert C. Esterline, North Carolina Agricultural and Technical State Univ. (United States) . . . . . [7648-37]</p> <p>Lunch/Exhibition Break . 12:00 to 1:30 pm</p>	<p style="text-align: center;"><b>SESSION 6 Continued</b></p> <p>10:40 am: <b>Early detection of buckling in structural members using stress wave technique</b>, Mannur J. Sundaresan, Kassahun Asamene, Bashir Ali, North Carolina A&amp;T State Univ. (United States) . . . . . [7649-33]</p> <p>11:00 am: <b>Service induced damage in composite laminates: non destructive assessment, quantification and modeling</b>, Dimitrios G. Aggelis, Nektaria-Marianthi Barkoula, Theodore E. Matikas, Alkiviades S. Paipetis, Univ. of Ioannina (Greece)[7649-34]</p> <p>11:20 am: <b>Acoustic emission characterization of steel fiber reinforced concrete during bending</b>, Dimitrios G. Aggelis, Dimitra V. Soulioti, Nikolaos Sapouridis, Nektaria-Marianthi Barkoula, Alkiviades S. Paipetis, Theodore E. Matikas, Univ. of Ioannina (Greece) . . . . . [7649-35]</p> <p>11:40 am: <b>Using 2-D arrays for sensing multimodal Lamb waves</b>, Tadeusz Stepinski, Marcus Engholm, Uppsala Univ. (Sweden). . . . . [7649-36]</p> <p>Lunch/Exhibition Break . 12:00 to 1:30 pm</p>	<p style="text-align: center;"><b>SESSION 9a</b></p> <p style="text-align: center;"><b>Room: Royal Palm I Wed. 10:40 am to 12:00 pm</b></p> <p style="text-align: center;"><b>Novel Devices and Techniques</b></p> <p><i>Session Chairs: Paul D. Panetta, Applied Research Associates, Inc.; Perngjin F. Pai, Univ. of Missouri-Columbia</i></p> <p>10:40 am: <b>Electro-mechanical impedance investigations on a complex satellite structure</b>, Derek T. Doyle, Air Force Research Lab. (United States); Whitney D. Reynolds, CSA Engineering, Inc. (United States) . . . . . [7650-77]</p> <p>11:00 am: <b>Determination of the speed of ultrasound in thin materials by observation in reflection or transmission</b>, U. Amjad, A. M. Esam, W. Grill, Univ. Leipzig (Germany) . . . . . [7650-78]</p> <p>11:20 am: <b>Experiments on focusing and use of acoustic energy to enhance the rate of polymer healing</b>, Umesh A. Korde, Katherine A. Barnes, Eric A. Petersen, Brian C. Fehrman, South Dakota School of Mines and Technology (United States) . [7650-79]</p> <p>11:40 am: <b>Micro-elastic property characterization of chitosan films by phase-sensitive acoustic microscopy</b>, Albert E. Kamanyi, Jr., Ahmed M. Esam, Univ. Leipzig (Germany); Wilfred Ngwa, Univ. of Central Florida (United States); Wolfgang Grill, Univ. Leipzig (Germany) . . . [7650-80]</p> <p>Lunch/Exhibition Break . 12:00 to 1:30 pm</p>	<p style="text-align: center;"><b>SESSION 9b</b></p> <p style="text-align: center;"><b>Room: Royal Palm VI Wed. 10:40 am to 12:00 pm</b></p> <p style="text-align: center;"><b>Vibration-based SHM</b></p> <p><i>Session Chairs: Kumar V. Jata, Asian Office of Aerospace Research and Development (Japan); Henrique L. Reis, Univ. of Illinois at Urbana-Champaign</i></p> <p>10:40 am: <b>Damage detection in a sandwich honeycomb panel via analysis of vibration signatures</b>, Shivan Haran, Arkansas State Univ. (United States); Guoliang Huang, Fie Song, Univ. of Arkansas at Little Rock (United States) . . . . . [7650-81]</p> <p>11:00 am: <b>Bicoherence-based structural health monitoring of fixed offshore structures</b>, Andrew J. Hillis, Univ. of Bath (United Kingdom); Charles R. Courtney, Univ. of Bristol (United Kingdom) . . . . [7650-82]</p> <p>11:20 am: <b>Damage detection of structures under unknown input with several measured responses</b>, Kun Zhang, Zhongdong Duan, Harbin Institute of Technology (China); Suisong Law, The Hong Kong Polytechnic Univ. (China) . [7650-83]</p> <p>11:40 am: <b>Machine learning algorithms to damage detection under operational and environmental variability</b>, Elói F. Figueiredo, Univ. do Porto (Portugal); Gyuhae Park, Charles R. Farrar, Los Alamos National Lab. (United States); Keith Worden, The Univ. of Sheffield (United Kingdom); Joaquim Figueiras, Univ. do Porto (Portugal)[7650-84]</p> <p>Lunch/Exhibition Break . 12:00 to 1:30 pm</p>

Conference 7642

SESSION 8a

Room: Pacific Salon I-III  
Wed. 1:30 to 3:10 pm

Ionic EAP II

Session Chairs: **Toribio Fernandez-Otero**, Univ. Politécnic de Cartagena (Spain); **Jonathan M. Rossiter**, Univ. of Bristol (United Kingdom)

1:30 pm: **Nanotube yarns as high stress actuators and sensors**, John D. W. Madden, The Univ. of British Columbia (Canada); Geoffrey M. Spinks, Javad Foroughi, Univ. of Wollongong (Australia); Tissaphern Mirfakhrai, The Univ. of British Columbia (Canada); Ray H. Baughman, The Univ. of Texas at Dallas (United States); Gordon G. Wallace, Univ. of Wollongong (Australia) . . . . . [7642-41]

1:50 pm: **Conductive filler morphology effect on performance of ionic polymer conductive network composite actuators**, Sheng Liu, Yang Liu, The Pennsylvania State Univ. (United States); Hulya Cebececi, Roberto G. de Villoria, Massachusetts Institute of Technology (United States); Jun-Hong Lin, The Pennsylvania State Univ. (United States); Brian L. Wardle, Massachusetts Institute of Technology (United States); Qiming M. Zhang, The Pennsylvania State Univ. (United States) . . . . . [7642-42]

2:10 pm: **Ionic liquids in ionic polymer conductor network composite actuators**, Yang Liu, Sheng Liu, Jun-Hong Lin, Wenjuan Liu, Ralph H. Colby, Qiming M. Zhang, The Pennsylvania State Univ. (United States) . . . . . [7642-43]

2:30 pm: **Experimental investigations on carbon nanotube actuators defining the operation point and its standard deviation**, Urszula Kosidlo, Raphael Addinall, Friedemann Tonner, Ivica Kolaric, Carsten Glanz, Fraunhofer-Institut für Produktionstechnik und Automatisierung (Germany) . . . . . [7642-44]

2:50 pm: **A study for thickness property of IPMCs based on rules**, Chul-Jin Kim, Hyun-Seok Yang, Young-Pil Park, No-Cheol Park, Yonseil Univ. (Korea, Republic of) [7642-45]

Coffee Break. . . . . 3:10 to 3:40 pm

SESSION 8b

Room: Sunset  
Wed. 1:30 to 3:15 pm

Other Types of EAP Materials I

Session Chairs: **Stephen Brewster**, Univ. of Glasgow (United Kingdom); **Barbar J. Akle**, Lebanese American Univ. (Lebanon)

1:30 pm: **Nanoporous carbon-based electrodes for high strain ionic bending actuators**, Viljar Palmre, Univ. of Tartu (Estonia); Daniel Brandell, Uppsala Univ. (Sweden); Uno Mäeorg, Janno Torop, Univ. of Tartu (Estonia); Olga Volobujeva, Tallinn Univ. of Technology (Estonia); Andres Punning, Urmas Johanson, Maarja Kruusmaa, Alvo Aabloo, Univ. of Tartu (Estonia) . [7642-46]

1:50 pm: **Dielectric elastomer actuators of silicone rubber-titania composites obtained by dielectrophoretic assembly of filler particles**, Mehdi Razzaghi-Kashani, Sara Javadi, Tarbiat Modares Univ. (Iran, Islamic Republic of) . . . . . [7642-47]

2:10 pm: **NOMS: nano opto-mechanical systems**, Eva M. Campo, Humberto Campanella, Ctr. Nacional de Microelectrónica (Spain); J. Roig, Univ. Autònoma de Barcelona (Spain); Mária Omastová, Igor Krupa, Polymer Institute (Slovakia); Jaume Esteve, Univ. Autònoma de Barcelona (Spain); E. M. Terentjev, Univ. of Cambridge (United Kingdom) . . [7642-48]

2:30 pm: **Self-assembled regular arrays of carbon nanotube and the route toward actuation of shape memory polymer**, Haibao Lu, Harbin Institute of Technology (China) . . . . . [7642-49]

2:45 pm: **Thermomechanical properties of multiwalled carbon nanotube reinforced shape-memory polymer nanocomposite**, Jing Zhong, Jun Gui Xian, Hui Li, Harbin Institute of Technology (China) . . [7642-50]

3:00 pm: **The constitutive relation of silicone rubber soft active materials**, Liwu Liu, Shouhua Sun, Yanju Liu, Jinsong Leng, Harbin Institute of Technology (China) . . . . . [7642-51]

Coffee Break. . . . . 3:10 to 3:40 pm

Conference 7643

SESSION 8a

Room: Sunrise  
Wed. 1:30 to 3:10 pm

Micro and Nano Integrated Systems

Session Chair: **Mehrdad N. Ghasemi-Nejhad**, Univ. of Hawai'i

1:30 pm: **Multiscale analysis of the effect of nanotube functionalization on damping characteristics of polymeric composites**, Ailin Liu, K. W. Wang, Univ. of Michigan (United States); Charles E. Bakis, The Pennsylvania State Univ. (United States) . . . . . [7643-65]

1:50 pm: **Microfibrous metallic cloth for damping in printed circuit boards**, George T. Flowers, Auburn Univ. (United States) . . . . . [7643-66]

2:10 pm: **Broadband pulsed flow using piezoelectric microjets**, Joshua M. Hogue, John Solomon, Farrukh Alvi, Jonathan Clark, William S. Oates, Florida State Univ. (United States) . . . . . [7643-67]

2:30 pm: **Distributed intelligence using gallium nitride based active devices**, Prashanth Ramesh, Gregory N. Washington, Siddharth Rajan, The Ohio State Univ. (United States) . . . . . [7643-68]

2:50 pm: **Nano-silicon based photonic crystal stamps with electron beam lithography (EBL) technology**, Reyhaneh Jannesary, Johannes Kepler Univ. Linz (Austria) . . . . . [7643-69]

Coffee Break. . . . . 3:10 to 3:40 pm

SESSION 8b

Room: Towne  
Wed. 1:30 to 3:10 pm

Biological-Inspired Systems and Bio-MEMS II: General

Session Chair: **Mehrdad N. Ghasemi-Nejhad**, Univ. of Hawai'i

1:30 pm: **Variable stiffness fluidic actuator based on F<sup>2</sup>MC and piezoelectric-hydraulic pump**, Gi-Woo Kim, Suyi Li, Kon-Well Wang, Univ. of Michigan (United States) . . . . . [7643-70]

1:50 pm: **Autonomic structural materials with controlled toughening**, Michael E. Garcia, Henry A. Sodano, Arizona State Univ. (United States) . . . . . [7643-71]

2:10 pm: **Non-invasive measurement techniques for measuring bilayers and protein activity in droplet-interface-bilayers**, M. Austin Creasy, Donald J. Leo, Virginia Polytechnic Institute and State Univ. (United States) . . . . . [7643-72]

2:30 pm: **Constructing precise bio-inspired material systems in flexible substrates using the regulated attachment method**, Stephen A. Sarles, Donald J. Leo, Virginia Polytechnic Institute and State Univ. (United States) . . . . . [7643-73]

2:50 pm: **Comparison of the throughput of techniques for prototyping protein-bound suspended bilayer lipid membranes**, Vishnu B. Sundaresan, Virginia Commonwealth Univ. (United States) . . . . . [7643-74]

Coffee Break. . . . . 3:10 to 3:40 pm

Conference 7644

SESSION 9

Room: Royal Palm II  
Wed. 1:30 to 3:10 pm

Active Polymers I

Session Chairs: **Donald J. Leo**, Virginia Polytechnic Institute and State Univ.; **Karla M. Mossi**, Virginia Commonwealth Univ.

1:30 pm: **Large deformation and electrochemistry of polyelectrolyte gels**, Wei Hong, Iowa State Univ. (United States); Xuanhe Zhao, Zhigang Suo, Harvard Univ. (United States) . . . . . [7644-43]

1:50 pm: **Stimuli responsive hydrogel simulation**, Kamleshkumar J. Suthar, Western Michigan Univ. (United States) and Argonne National Lab. (United States); Muralidhar K. Ghantasala, Western Michigan Univ. (United States); Derrick C. Mancini, Agonne National Lab. (United States) . . . . . [7644-44]

2:10 pm: **Fabrication and characterization of ionic polymer gel actuators**, Choonhee Jo, Hani E. Naguib, Univ. of Toronto (Canada) . . . . . [7644-45]

2:30 pm: **Piezoelectric polymer foams: preparation and charging conditions as well as touch-sensor and ultrasonic transducer properties**, Michael Wegener, Fraunhofer-Institut für Angewandte Polymerforschung (Germany) . . . [7644-46]

2:50 pm: **Characterization of healable polymers**, Christian Nielsen, Or Weizman, Siavouche Nemat-Nasser, Univ. of California, San Diego (United States) . . . . [7644-47]

Coffee Break. . . . . 3:10 to 3:40 pm

Conference 7646

SESSION 12

Room: Royal Palm III  
Wed. 1:40 to 3:00 pm

Applications II

Session Chair: **Vijay K. Varadan**, Univ. of Arkansas

1:40 pm: **Flexible PEDOT:PSS strain gauge**, Wei-Chih Wang, Univ. of Washington (United States) . . . . . [7646-39]

2:00 pm: **Organic electronics based pressure sensor towards intracranial pressure monitoring**, Pratyush Rai, Vijay K. Varadan, Univ. of Arkansas (United States) . . . . . [7646-40]

2:20 pm: **A bio-inspired flow sensor**, Xiong Yu, Case Western Reserve Univ. (United States) . . . . . [7646-41]

2:40 pm: **Smart textiles with nanosensor array for point-of-care soldier health monitoring in real time**, Vijay K. Varadan, Univ. of Arkansas (United States) [7646-42]

Coffee Break. . . . . 3:00 to 3:30 pm

Papers available in 2-4 weeks.



SPIEDigitalLibrary.org



Conference 7647	Conference 7648	Conference 7649	Conference 7650		
<p style="text-align: center;"><b>SESSION 10a</b></p> <p style="text-align: center;"><b>Room: Pacific Salon IV-V Wed. 1:30 to 3:10 pm</b></p> <p style="text-align: center;"><b>Embedded Data Processing in Sensor Networks for Structural Health Monitoring II</b></p> <p><i>Session Chairs: Jerome P. Lynch, Univ. of Michigan; Billie F. Spencer, Jr., Univ. of Illinois at Urbana-Champaign</i></p> <p>1:30 pm: <b>Autonomous smart sensor network for full-scale structural health monitoring</b>, Jennifer A. Rice, Texas Tech Univ. (United States); Kirill Mechitov, Billie F. Spencer, Jr., Gul Agha, Univ. of Illinois at Urbana-Champaign (United States) ..... [7647-78]</p> <p>1:50 pm: <b>Discovery of emerging patterns with immune network theory</b>, Bo Chen, Chuanzhi Zang, Michigan Technological Univ. (United States)..... [7647-79]</p> <p>2:10 pm: <b>Multi-functional wireless impedance sensor nodes for structural health monitoring</b>, Jiyoung Min, Korea Advanced Institute of Science and Technology (Korea, Republic of); Seunghee Park, Sungkyunkwan Univ. (Korea, Republic of); Chung-Bang Yun, Korea Advanced Institute of Science and Technology (Korea, Republic of); Byunghun Song, Korea Electronics Technology Institute (Korea, Republic of) ..... [7647-80]</p> <p>2:30 pm: <b>* Flexure-based mobile sensor design with application in structural damage identification</b>, Dapeng Zhu, Xiaohua Yi, Jiajie Guo, Yang Wang, Kok-Meng Lee, Georgia Institute of Technology (United States) ..... [7647-81]</p> <p>2:50 pm: <b>* Agent-based computational topology formation for automated modal analysis in dense wireless sensing networks</b>, Andrew Zimmerman, Jerome P. Lynch, Univ. of Michigan (United States) ..... [7647-82]</p> <p>Coffee Break. .... 3:10 to 3:40 pm</p>	<p style="text-align: center;"><b>SESSION 10b</b></p> <p style="text-align: center;"><b>Room: Pacific Salon VI-VII Wed. 1:30 to 3:10 pm</b></p> <p style="text-align: center;"><b>Smart Materials</b></p> <p><i>Session Chairs: Ryan S. Elliott, Univ. of Minnesota; Jong Tang, Univ. of Connecticut</i></p> <p>1:30 pm: <b>Pressure adaptive honeycomb: a new adaptive structure for aerospace applications</b>, Roelof Vos, Delft Univ. of Technology (Netherlands); Ronald M. Barrett, The Univ. of Kansas (United States)[7647-83]</p> <p>1:50 pm: <b>Detailed studies on the formation of piezoelectric -phase of PVDF at different hot-stretching conditions</b>, Anjana Jain, Jayanth Kumar, National Aerospace Labs. (India); D. Roy Mahapatra, Indian Institute of Science (India); H. Kumar, Defence Research and Development Organisation (India) ..... [7647-84]</p> <p>2:10 pm: <b>Thermodynamic modeling of martensitic phase transformations</b>, Venkata S. Guthikonda, Ryan S. Elliott, Univ. of Minnesota (United States) ... [7647-85]</p> <p>2:30 pm: <b>Characterization of strain recovery behavior of shape memory polymer by nanoscratching test</b>, Huali Zhang, Yanju Liu, Jinsong Leng, Harbin Institute of Technology (China) . [7647-86]</p> <p>2:50 pm: <b>Novel fabrication technology for three-dimensional high surface area pyrolyzed structures</b>, Vinh Ho, Gobind S. Bisht, Lawrence Kulinsky, Marc J. Madou, Univ. of California, Irvine (United States) ..... [7647-87]</p> <p>Coffee Break. .... 3:10 to 3:40 pm</p>	<p style="text-align: center;"><b>SESSION 10</b></p> <p style="text-align: center;"><b>Room: Royal Palm IV Wed. 1:30 to 3:10 pm</b></p> <p style="text-align: center;"><b>Sensor Signal Processing and Optimization</b></p> <p><i>Session Chair: Mannur J. Sundaresan, North Carolina A&amp;T State Univ.</i></p> <p>1:30 pm: <b>Bayesian probabilistic structural modeling for optimal sensor placement in ultrasonic guided wave-based structural health monitoring</b>, Eric B. Flynn, Michael D. Todd, Univ. of California, San Diego (United States) ..... [7648-38]</p> <p>1:50 pm: <b>Optimal sensor placement on a composite wing</b>, Clyde K. Coelho, Aditi Chattopadhyay, Arizona State Univ. (United States) ..... [7648-39]</p> <p>2:10 pm: <b>The role of embedded sensors in damage assessment in composite laminates</b>, Chun Myung Park, Siqi Xu, Kara J. Peters, Mohammed A. Zikry, North Carolina State Univ. (United States) ..... [7648-40]</p> <p>2:30 pm: <b>Adaptive agent population management using evolutionary algorithms</b>, Bo Chen, Wenjia Liu, Michigan Technological Univ. (United States) ..... [7648-41]</p> <p>2:50 pm: <b>Global management of smart structures in distributed systems</b>, Peter S. Sapaty, National Academy of Sciences of Ukraine (Ukraine) ..... [7648-42]</p> <p>• Conference End</p>	<p style="text-align: center;"><b>SESSION 7</b></p> <p style="text-align: center;"><b>Room: Royal Palm V Wed. 1:30 to 3:10 pm</b></p> <p style="text-align: center;"><b>Acoustic/Ultrasound Characterization II</b></p> <p><i>Session Chairs: Xiaoning Jiang, North Carolina State Univ.; Didem Ozevin, Univ. of Illinois at Chicago</i></p> <p>1:30 pm: <b>Lamb wave excitation and detection with smart fasteners for structural health monitoring</b>, Hwan-Sik Yoon, Tennessee Technological Univ. (United States) ..... [7649-37]</p> <p>1:50 pm: <b>Active data selection for adaptive online structural damage estimation</b>, Debejo Chakraborty, Narayan V. Kovalai, Antonia Papandreou-Suppappola, Aditi Chattopadhyay, Arizona State Univ. (United States) ..... [7649-38]</p> <p>2:10 pm: <b>Inverse problem for material non destructive analysis by ultrasound</b>, Fairouz Bettayeb, CSC, Research Ctr. on Welding and Control (Algeria) ..... [7649-39]</p> <p>2:30 pm: <b>Ultrasonic NDE for the characterization of metallic structures and natural materials</b>, Michele Sale, Saipem S.p.A (Italy); Piervincenzo Rizzo, Univ. of Pittsburgh (United States); Alessandro Marzani, Univ. di Bologna (Italy) ..... [7649-40]</p> <p>2:50 pm: <b>Instrumentation for EMAT based non-destructive testing</b>, Premshankar K. Dubey, Ashok Kumar, National Physical Lab. (India) ..... [7649-41]</p> <p>Coffee Break. .... 3:10 to 3:40 pm</p>	<p style="text-align: center;"><b>SESSION 10a</b></p> <p style="text-align: center;"><b>Room: Royal Palm I Wed. 1:30 to 3:10 pm</b></p> <p style="text-align: center;"><b>Guided Waves VII: Modeling</b></p> <p><i>Session Chairs: Wolfgang Grill, Univ. Leipzig (Germany); Jennifer E. Michaels, Georgia Institute of Technology</i></p> <p>1:30 pm: <b>Generalized representations and universal aspects of Lamb wave dispersion relations</b>, U. Amjad, Khurram S. Tarar, Univ. Leipzig (Germany); A. Shelke, Tribikram Kundu, The Univ. of Arizona (United States); Wolfgang Grill, Univ. Leipzig (Germany) ..... [7650-85]</p> <p>1:50 pm: <b>A time domain spectral element model for piezoelectric excitation of Lamb waves in isotropic plates</b>, Ramy Mohamed, Patrice Masson, Univ. de Sherbrooke (Canada) ..... [7650-86]</p> <p>2:10 pm: <b>Simulation and experimental validation of guided-wave excitation and propagation in composite plates</b>, Kalyan S. Nadella, Carlos E. S. Cesnik, Ken I. Salas, Univ. of Michigan (United States) [7650-87]</p> <p>2:30 pm: <b>Modeling coupled piezo-elastodynamic behavior of piezoelectric actuators for guided wave propagation</b>, Guoliang Huang, Fei Song, Univ. of Arkansas at Little Rock (United States) ..... [7650-88]</p> <p>2:50 pm: <b>Modeling of transient Lamb wave propagation in a honeycomb composite sandwich structure</b>, Sauvik Banerjee, Indian Institute of Technology, Bombay (India); Ajit K. Mal, Univ. of California, Los Angeles (United States) ..... [7650-89]</p> <p>Coffee Break. .... 3:10 to 3:40 pm</p>	<p style="text-align: center;"><b>SESSION 10b</b></p> <p style="text-align: center;"><b>Room: Royal Palm VI Wed. 1:30 to 3:10 pm</b></p> <p style="text-align: center;"><b>Bridge Monitoring II</b></p> <p><i>Session Chairs: Shivan Haran, Arkansas State Univ.; Paul D. Panetta, Applied Research Associates, Inc.</i></p> <p>1:30 pm: <b>Vulnerability analysis for design of bridge health monitoring system</b>, Li-Min Sun, Tongji Univ. (China); Gang Yu, Tongji Univ. (China) and Shanghai Municipal Engineering Design General Institute (China) ..... [7650-90]</p> <p>1:50 pm: <b>Temperature effects on modal parameters and its experimental validation</b>, Zhihua Min, Li-Min Sun, Tongji Univ. (China) ..... [7650-91]</p> <p>2:10 pm: <b>Effect analysis of environmental factors on structural modal parameters of cable-stayed bridge</b>, Zhihua Min, Li-Min Sun, Tongji Univ. (China) ..... [7650-92]</p> <p>2:30 pm: <b>Time-series models for identifying damage location in structural members subjected to ambient vibrations</b>, Amir A. Mosavi, Rudolf Seracino, Sami H. Rizkalla, North Carolina State Univ. (United States) ..... [7650-93]</p> <p>2:50 pm: <b>A novel non-parametric sequential probability ratio test method for structural condition assessment</b>, Zhihua Min, Li-Min Sun, Tongji Univ. (China) ..... [7650-94]</p> <p>Coffee Break. .... 3:10 to 3:40 pm</p>

Conference 7642

SESSION 9a

Room: Pacific Salon I-III  
Wed. 3:40 to 6:00 pm

**Modeling and Analysis of EAP**

Session Chairs: **Kwang J. Kim**, Univ. of Nevada, Reno; **Thomas Wallmersperger**, Univ. Stuttgart (Germany)

3:40 pm: **Multi-scale mechanical modeling of composite electroactive polymer tubular actuators**, Peng Wang, Benny Lassen, Richard W. Jones, Univ. of Southern Denmark (Denmark) . . . . . [7642-52]

4:00 pm: **Three-dimensional numerical implementation of a thermoelastic, finite deformation constitutive model for shape memory polymers**, Brent Volk, Dimitris C. Lagoudas, Duncan J. Maitland, Texas A&M Univ. (United States) . . . . . [7642-53]

4:20 pm: **A model of the nonlinear capacitance and electrochemical behavior of ionic liquid-ionic polymer transducers**, Jacob D. Davidson, Nakhiah C. Goulbourne, Univ. of Michigan (United States) . . . . . [7642-54]

4:40 pm: **Optimal clamping conditions for linear strain terpolymer actuators**, Lee J. Gorny, The Pennsylvania State Univ. (United States); Brian Zellers, Strategic Polymer Sciences, Inc. (United States); Qiming M. Zhang, The Pennsylvania State Univ. (United States). . . . . [7642-55]

5:00 pm: **Thermo-chemo-electro-mechanical modeling of polyelectrolyte gels**, Thomas Wallmersperger, Karsten Keller, Bernd H. Kröplin, Univ. Stuttgart (Germany); Margarita Guenther, Gerald U. Gerlach, Technische Univ. Dresden (Germany) . . . . . [7642-56]

5:20 pm: **Electro-mechanical modeling of interpenetrating polymer network reinforced acrylic elastomer**, Arne Schmidt, EMPA (Switzerland); Edoardo Mazza, ETH Zürich (Switzerland); Gabor M. Kovacs, EMPA (Switzerland) . . . . . [7642-57]

5:40 pm: **A theoretical modeling of mechanical and electrical properties of enhanced dielectric elastomers**, Seyul Son, Virginia Polytechnic Institute and State Univ. (United States); Nakhiah C. Goulbourne, Univ. of Michigan (United States) . . . . . [7642-58]

SESSION 9b

Room: Sunset . . . . . Wed. 3:40 to 6:00 pm

**Ionic EAP III**

Session Chairs: **Emilio P. Calius**, Industrial Research Ltd. (New Zealand); **Kwang J. Kim**, Univ. of Nevada, Reno

3:40 pm: **Training of artificial muscles based on conducting polymers**, Keiichi Kaneto, Hikaru Hashimoto, Kyushu Institute of Technology (Japan) . . . . . [7642-59]

4:00 pm: **DNA hydrogel for bioinspired actuators**, Chang Kee Lee, Seon Jeong Kim, Hanyang Univ. (Korea, Republic of) . . . . . [7642-60]

4:20 pm: **Optimisation of bio-inspired multi-segment IPMC cilia**, Sina Sareh, Andrew T. Conn, Jonathan M. Rossiter, Univ. of Bristol (United Kingdom) . . . . . [7642-61]

4:40 pm: **Mechanical characterization of conducting polymer actuated neural probes under physiological settings**, Eugene D. Daneshvar, Mohammad Reza Abidian, Univ. of Michigan (United States); Elisabeth Smela, Univ. of Maryland, College Park (United States); Daryl R. Kipke, Univ. of Michigan (United States) . . . . . [7642-62]

5:00 pm: **Robust PID force control of IPMC actuators**, Shigenori Sano, Susumu Sato, Toyohashi Univ. of Technology (Japan); Kentaro Takagi, Nagoya Univ. (Japan) and RIKEN (Japan); Naoki Uchiyama, Toyohashi Univ. of Technology (Japan); Kinji Asaka, National Institute of Advanced Industrial Science and Technology (Japan) . . . . . [7642-63]

5:20 pm: **Fabrication of multiwalled carbon nanotube polydimethylsiloxane nanocomposite polymer flexible microelectrodes for microfluidics and MEMS**, Ajit Khosla, Bonnie L. Gray, Simon Fraser Univ. (Canada) . . . . . [7642-64]

5:40 pm: **Anthropomorphic robotic face with servo-driven muscle system: a comparative analysis with EAP systems**, Nicholas D. Thayer, Shashank Priya, Virginia Polytechnic Institute and State Univ. (United States) . . . . . [7642-87]

Conference 7643

SESSION 9a

Room: Sunrise  
Wed. 3:40 to 5:40 pm

**Modeling, Simulations, Signal Processing, and Controls I**

Session Chair: **Mehrdad N. Ghasemi-Nejhad**, Univ. of Hawaii'i

3:40 pm: **Post-buckled precompressed (PBP) solid state adaptive rotor**, Ronald M. Barrett, Ryan Barnhart, Lauren Kerth, The Univ. of Kansas (United States) . . . . . [7643-75]

4:00 pm: **Robustness of orthogonal eigenstructure control to actuators failure**, Mohammad Rastgaar Aagaah, Massachusetts Institute of Technology (United States); Mehdi Ahmadian, Virginia Polytechnic Institute and State Univ. (United States) . . [7643-76]

4:20 pm: **Shim stack deflection analysis in hydraulic dampers using energy methods**, Alireza Farjoud, Mehdi Ahmadian, Virginia Polytechnic Institute and State Univ. (United States) . . [7643-77]

4:40 pm: **Free space optical coupling of embedded reflection-based fiber Bragg grating sensors through panel surfaces**, Liang Qiu, Michael E. Teitelbaum, Keith W. Goossen, Dirk Heider, Univ. of Delaware (United States); Daniel J. O'Brien, Eric D. Wetzel, Army Research Lab. (United States) [7643-78]

5:00 pm: **Vibration based analysis of an increasing delamination in a carbon/epoxy composite structure**, Mohammad Mehdizadeh, Sabu J. John, RMIT Univ. (Australia) . . . . . [7643-79]

5:20 pm: **Modeling and control for a planar robot with one rigid link and one flexible link**, Juan F. Peza-Solis, Gerardo Silva-Navarro, Rafael Castro-Linares, Ctr. de Investigación y de Estudios Avanzados (Mexico) . . . . . [7643-80]

SESSION 9b

Room: Towne  
Wed. 3:40 to 5:40 pm

**Aircraft, MAV/UAV, and Morphing Systems**

Session Chair: **Mehrdad N. Ghasemi-Nejhad**, Univ. of Hawaii'i

3:40 pm: **Configuration of a shear web based actuation system**, Franz Josef Natterer, Deutsches Zentrum für Luft- und Raumfahrt e.V. (Germany) . . . . . [7643-81]

4:00 pm: **Piezoelectrically actuated insect scale flapping wing**, Sujoy Mukherjee, Ranjan Ganguli, Indian Institute of Science (India) . . . . . [7643-82]

4:20 pm: **Active vibration control of piezoelectric mount system for UAV camera equipment**, J. Oh, J. W. Sohn, S. Choi, Inha Univ. (Korea, Republic of) . . . . . [7643-83]

4:40 pm: **Modeling and experimental validation of a bistable mechanism for chord extension morphing rotors**, Terrence E. Johnson, Mary I. Frecker, Farhan Gandhi, The Pennsylvania State Univ. (United States) . . . . . [7643-84]

5:00 pm: **Aircraft dynamics and wind tunnel testing of two linked UAV systems**, Edgar A. Cuiji, Ephraim Garcia, Cornell Univ. (United States) . . . . . [7643-85]

5:20 pm: **Ornithopter transition trajectories**, John M. Dietl, Ephraim Garcia, Cornell Univ. (United States) . . . . . [7643-86]

Conference 7644

SESSION 10

Room: Royal Palm II  
Wed. 3:40 to 6:00 pm

**Active Nanocomposites**

Session Chairs: **Lisa M. Weiland**, Univ. of Pittsburgh; **Jaehwan Kim**, Inha Univ. (Korea, Republic of)

3:40 pm: **Giant piezoelectric effect in nanocomposites with aligned PZT nanowires**, Clark C. Andrews, Yirong Lin, Henry A. Sodano, Arizona State Univ. (United States) . . . . . [7644-48]

4:00 pm: **Nonlinear actuation response in polyvinylidene fluoride (PVDF)-based nanocomposites**, Sujay J. Deshmukh, Zoubaida Ounaies, Texas A&M Univ. (United States) [7644-49]

4:20 pm: **Microwave absorbing properties of nanocomposites with surface treated ferrite nanoparticles as filler**, Anna Jänis, Swedish Defence Research Agency (Sweden); Richard T. Olsson, Royal Institute of Technology (Sweden) . . . . . [7644-50]

4:40 pm: **Nano-clay/poly(vinylidene fluoride) composite films as sensor and actuator element**, Go Murasawa, Daisuke Wakabayashi, Eiji Yamada, Akihiro Nishioka, Ken Miyata, Tomonori Koda, Yamagata Univ. (Japan) . . . . . [7644-51]

5:00 pm: **Investigations of the key mechanism of carbon-nanotube actuators and their dependencies**, Sebastian M. Geier, Deutsches Zentrum für Luft- und Raumfahrt e.V. (Germany) . . . . . [7644-56]

5:20 pm: **Carbon nanotubes/ short carbon fiber nanocomposites for lightning strike protection**, Chunxia Wu, Yanju Liu, Jinsong Leng, Harbin Institute of Technology (China) . . . . . [7644-53]

5:40 pm: **Electrothermal actuation of high-performance polyimide nanocomposites**, A. T. Sellinger, D. H. Wang, L. S. Tan, Richard A. Vaia, Air Force Research Lab. (United States) . . . . . [7644-54]

Conference 7646	Conference 7647	Conference 7649	Conference 7650
SESSION 13	SESSION 11a	SESSION 11b	SESSION 11a
<b>Room: Royal Palm III</b> <b>Wed. 3:30 to 5:30 pm</b>	<b>Room: Pacific Salon IV-V</b> <b>Wed. 3:40 to 6:00 pm</b>	<b>Room: Pacific Salon VI-VII</b> <b>Wed. 3:40 to 6:00 pm</b>	<b>Room: Royal Palm I</b> <b>Wed. 3:40 to 5:00 pm</b>
<b>Modeling and Characterization</b>	<b>Fiber Optic Sensors and Applications I</b>	<b>Multi-domain Modeling</b>	<b>Guided Waves VIII: Damage Detection</b>
<i>Session Chair: Linfeng Chen, Univ. of Arkansas</i>	<i>Session Chairs: Ki Soo Kim, Hongik Univ. (Korea, Republic of); Assaf Klar, Technion-Israel Institute of Technology (Israel)</i>	<i>Session Chairs: Uwe Marschner, Technische Univ. Dresden (Germany); Victor Giurgiutiu, Univ. of South Carolina</i>	<i>Session Chairs: Wolfgang Grill, Univ. Leipzig (Germany); Jennifer E. Michaels, Georgia Institute of Technology</i>
3:30 pm: <b>Wave propagation and structural dynamics in graphene nanoribbons</b> , Fabrizio L. Scarpa, Univ. of Bristol (United Kingdom); Massimo Ruzzene, Georgia Institute of Technology (United States); Sondipon Adhikari, Rajib Chowdhury, Swansea Univ. (United Kingdom) ..... [7646-43]	3:40 pm: <b>Pavement roughness monitoring method using fiber optic vibration sensors</b> , Ki Soo Kim, Hongik Univ. (Korea, Republic of); In Kyoon Yoo, Yong Baek, Korea Institute of Construction Technology (Korea, Republic of) ..... [7647-88]	3:40 pm: <b>Modeling and simulation of heterogeneous electronic system based on smart sensors for aerospace structures health monitoring</b> , Paula L. Alvarez, Raúl Aragonés, Joan Oliver, Univ. Autònoma de Barcelona (Spain); Carles Ferrer, Univ. Autònoma de Barcelona (Spain) and CNM-IMB (CSIC) (Spain) ..... [7647-95]	3:40 pm: <b>The influence of disbond defects on Lamb wave testing in GLARE composites</b> , Qiaojian Huang, Brad Regez, Sridhar Krishnaswamy, Northwestern Univ. (United States) ..... [7650-95]
3:50 pm: <b>Effect of thickness on characteristics of ZnO thin films prepared by sol-gel process</b> ( <i>Invited Paper</i> ), Jyoti Nayak, Kwang Sun Kang, Yi Chen, Kyung Ho Yoo, Jaehwan Kim, Inha Univ. (Korea, Republic of) ..... [7646-44]	4:00 pm: <b>Development and laboratory validation of a low-cost time-of-fly fiber optic sensor</b> , Giorgio Fontana, Giovanni Soncini, Univ. degli Studi di Trento (Italy); Michele Corrà, Tretac S.r.l. (Italy); Matteo Pozzi, Daniele Zonta, Univ. degli Studi di Trento (Italy) ..... [7647-89]	4:00 pm: <b>On the combination of asymptotic and direct approaches to the modeling of plates with piezoelectric actuators and sensors</b> , Yury M. Vetyukov, Michael Krommer, Johannes Kepler Univ. Linz (Austria) ..... [7647-96]	4:00 pm: <b>Application of line scanning thermography for the detection of interlaminar disbonds in sandwich composite structures</b> , Obdulia Ley, Physical Acoustics Corp. (United States); Simon Chung, Jaco Schutte, Anthony Caiazzo, Materials Sciences Corp. (United States); Bruce Bandos, Naval Surface Warfare Ctr. Carderock Div. (United States); Valery F. Godinez, Physical Acoustics Corp. (United States) ..... [7649-43]
4:30 pm: <b>Characterization of micro-scale surface features using partial differential equations</b> , Gabriela Gonzalez Castro, John Sweeney, Hassan Ugail, Ben Whiteside, Robert Spares, Univ. of Bradford (United Kingdom) ..... [7646-45]	4:20 pm: <b>Measures for identifying cracks within reinforced concrete beams using BOTDR</b> , Assaf Klar, Yiska Goldfeld, Ziv Chares, Technion-Israel Institute of Technology (Israel) ..... [7647-90]	4:20 pm: <b>* Acoustic emission detection and energy transduction with piezoelectric wafer active sensors</b> , Bin Lin, Victor Giurgiutiu, Univ. of South Carolina (United States) ..... [7647-97]	4:20 pm: <b>Damage detection in adhesively bonded lap joint under impact load: finite element modeling and simulation</b> , Jinho Woo, Won-Bae Na, Juwon Lee, Pukyong National Univ. (Korea, Republic of) [7650-97]
4:50 pm: <b>SERS from ellipsoidal nanoparticles</b> , Gautam Mukhopadhyay, Shruti R. Puri, Pragati Mukhopadhyay, Indian Institute of Technology, Bombay (India) ..... [7646-46]	4:40 pm: <b>Monitoring of stress distribution along a ground anchor using BOTDA</b> , Michael R. Iten, Alexander M. Puzrin, ETH Zürich (Switzerland) ..... [7647-91]	4:40 pm: <b>Shear lag solution for structurally attached active sensors</b> , Giola Santoni-Bottai, Victor Giurgiutiu, Univ. of South Carolina (United States) ..... [7647-98]	4:20 pm: <b>Understanding a reference-free impedance method using collocated PZT transducers</b> , Eun Jin Kim, Dong-A Univ. (Korea, Republic of); Min Koo Kim, Hoon Sohn, Korea Advanced Institute of Science and Technology (Korea, Republic of); Hyun Woo Park, Dong-A Univ. (Korea, Republic of) ..... [7650-98]
5:10 pm: <b>Mathematical modeling for the design of porous coronary stents: nano- and microporous stents v. macroporous stents</b> , Anwer Habib, Emory Univ. (United States) ..... [7646-47]	5:00 pm: <b>Study on the reliability of distributed optical fiber sensors under fatigue load</b> , Shiwei Song, Caiqian Yang, Southeast Univ. (China); Zhishen Wu, Ibaraki Univ. (Korea, Democratic Peoples Republic of); Sheng Shen, Southeast Univ. (China) ..... [7647-92]	5:00 pm: <b>Conductor width independence case of the self-resonance quality factor of semiadditive planar coils on a magnetoelastic substrate</b> , Uwe Marschner, Eric Starke, Christian Wenzel, Ulrich Merkel, Andreas Jahn, Ning Liu, Technische Univ. Dresden (Germany); Alison B. Flatau, Univ. of Maryland, College Park (United States); Wolf-Joachim Fischer, Technische Univ. Dresden (Germany) ..... [7647-99]	4:40 pm: <b>Sensor optimization for progressive damage diagnosis in complex structures</b> , Wenfan Zhou, Narayan V. Kovvali, Antonia Papandreou-Suppappola, Aditi Chattopadhyay, Arizona State Univ. (United States) ..... [7650-99]
	5:20 pm: <b>Development of an optical fiber sensor to monitoring the formation of cracks in concrete structures</b> , Karina Rodríguez Carmona, Alfredo M. Lucero, Ctr. de Investigación en Materiales Avanzados, S.C. (Mexico) ..... [7647-93]	5:20 pm: <b>Electromechanical network modeling applied to magnetoelastic sensor design</b> , Uwe Marschner, Technische Univ. Dresden (Germany); Jin-Hyeong Yoo, Univ. of Maryland, College Park (United States); Eric Starke, Technische Univ. Dresden (Germany); Frank Graham, Chaitanya Mudivarthi, Univ. of Maryland, College Park (United States); Wolf-Joachim Fischer, Technische Univ. Dresden (Germany) ..... [7647-100]	4:40 pm: <b>Warped frequency transform analysis of ultrasonic guided waves in long bones</b> , Luca De Marchi, Univ. di Bologna (Italy); Kailiang Xu, Dean Ta, Fudan Univ. (China); Alessandro Marzani, Nicolò Speciale, Univ. di Bologna (Italy) [7650-103]
	5:40 pm: <b>Optical fiber chemical sensors with sol-gel derived nanomaterials for monitoring high temperature/high pressure reactions in clean energy technologies</b> , Shiquan Tao, West Texas A&M Univ. (United States) ..... [7647-191]	5:40 pm: <b>Optical fiber chemical sensors with sol-gel derived nanomaterials for monitoring high temperature/high pressure reactions in clean energy technologies</b> , Shiquan Tao, West Texas A&M Univ. (United States) ..... [7647-191]	5:00 pm: <b>Correlation between acoustic emission activity and failure patterns of the anterior cruciate ligament under uniaxial tension</b> , Nektaria-Marianti Barkoula, Dimitrios G. Aggelis, Nikolaos K. Paschos, Dimitrios Gkartzonikas, Alkis Paipetis, Theodore E. Matikas, Anastasios D. Georgoulis, Univ. of Ioannina (Greece) ..... [7650-104]
			5:20 pm: <b>Smart mobility solution for patient home monitoring</b> , Jithesh Sathyan, Mohammed Rijas, Infosys Technologies Ltd. (India) ..... [7650-105]
			5:40 pm: <b>Design of effective in-silico adjusting method to support a doctor about the plan of administering medicine</b> , Yuichi Kida, Ohu Univ. (Japan); Takuro Kida, Tokyo Institute of Technology (Japan) ..... [7650-106]

Conference 7642

Conference 7643


Conference 7644

**Room: Pacific Salon I-III · 8:00 to 9:05 am**  
**Thursday Announcements, Funding Agency Talk, and Plenary Presentation**

**8:00 to 8:05 am**  
**Announcements**

**8:05 to 8:20 am**  
**Funding Agency Talk: Current and Future Programs and Initiatives**

**Plenary Presentation ············ 8:20 to 9:05 am**  
**Ways and Options for Getting Structural Health Monitoring into Engineering Applications**



**Christian Boller, et al.**, Fraunhofer Institute of Non-Destructive Testing, Saarbrücken/Dresden (Germany) and Saarland Univ., Saarbrücken (Germany)  
 See page 5 for more information.

**SESSION 10a**

**Room: Pacific Salon I-III**  
**Thurs. 9:10 to 10:00 am**

**Application of EAP I**

*Session Chairs:* **Emilio P. Calius**, Industrial Research Ltd. (New Zealand); **Roy D. Kornbluh**, SRI International

9:10 am: **Dielectric electro active polymers: development of an industry** (*Invited Paper*), Michael J. Tryson, Danfoss PolyPower A/S (United States); Hans-Erik Kill, Danfoss PolyPower A/S (Denmark) . . . . . [7642-66]

9:40 am: **A hybrid microbial dielectric elastomer generator for autonomous robots**, Iain A. Anderson, The Univ. of Auckland (New Zealand); Ioannis Ieropoulos, Bristol Robotics Lab. (United Kingdom); Thomas G. McKay, Benjamin M. O'Brien, The Univ. of Auckland (New Zealand); Chris Melhuish, Bristol Robotics Lab. (United Kingdom) . . . . . [7642-67]  
 Coffee Break . . . . . 10:00 to 10:30 am

**SESSION 10b**

**Room: Sunset . . . Thurs. 9:10 to 10:10 am**

**Control of EAP Actuators I**

*Session Chairs:* **Keiichi Kaneto**, Kyushu Institute of Technology (Japan); **Lenore Rasmussen**, Ras Labs., LLC

9:10 am: **Feedback control of BISMAR actuators through active temperature sensing**, Alex Villanueva, Shashank Priya, Virginia Polytechnic Institute and State Univ. (United States) . . [7642-68]

9:30 am: **Biomimetic control for DEA arrays**, Benjamin M. O'Brien, Todd A. Gisby, Sheng Quan Xie, The Univ. of Auckland (New Zealand); Emilio P. Calius, Industrial Research Ltd. (New Zealand); Iain A. Anderson, The Univ. of Auckland (New Zealand) . . . . . [7642-69]

9:50 am: **Control of twisting motion of a multi-electrode IPMC actuator**, Youngsoo Jung, Sang-Mun Kim, Kwang J. Kim, Kam K. Leang, Univ. of Nevada, Reno (United States) . . . . . [7642-70]  
 Coffee Break . . . . . 10:00 to 10:30 am

**SESSION 10a**

**Room: Sunrise**  
**Thurs. 9:10 am to 1:00 pm**

**SMA- and Piezo-based Materials and Systems III: Piezoelectrics**

*Session Chair:* **Mehrdad N. Ghasemi-Nejhad**, Univ. of Hawai'i

9:10 am: **Adaptive control of base-isolated buildings using piezoelectric friction dampers against near-field earthquake**, Osman E. Ozbulut, Maryam Bitaraf, Stefan Hurlerbaas, Texas A&M Univ. (United States) . . . . . [7643-87]

9:30 am: **Vibration absorption in a building like structure by means of piezoelectric patches and positive acceleration feedback**, Max A. Rios, Gerardo Silva-Navarro, Ctr. de Investigación y de Estudios Avanzados (Mexico) . . . . . [7643-88]

9:50 am: **Using coupled piezoelectric circuits to enhance damage detection of periodic structures**, Ji Zhao, Jiong Tang, Univ. of Connecticut (United States) . . . . . [7643-89]  
 Coffee Break . . . . . 10:10 to 10:40 am

**SESSION 11**

**Room: Royal Palm II**  
**Thurs. 9:10 to 10:10 am**

**Active Composites I**

*Session Chairs:* **VishnuBaba Sundaresan**, Virginia Commonwealth Univ.; **Pavel M. Chapiro**, Sandia National Labs.

9:10 am: **Development and control design for macro fiber composite actuators**, Michael Stuebner, Ralph C. Smith, North Carolina State Univ. (United States) . . . . . [7644-55]

9:25 am: **Micromechanical analysis of viscoelastic damping performance of active piezo-carbon fiber polymer composites**, Qingli Dai, Kenny Ng, Michigan Technological Univ. (United States) . . . . . [7644-57]

9:40 am: **Magnetomechanical properties of magnetostrictive composites with high volume fraction Terfenol-D powder**, Daniel Lewandowski, Jerzy Kaleta, Rafal Mech, Wroclaw Univ. of Technology (Poland) . . . . . [7644-58]

9:55 am: **Non-linearity in piezo-fiber reinforced composites: an asymptotic approach**, Srikanth S. Padhee, Dineshkumar Harursampath, Indian Institute of Science (India) . . . . . [7644-88]  
 Coffee Break . . . . . 10:10 to 10:40 am

Publish with SPIE and advance your research globally.



SPIEDigitalLibrary.org

Conference 7646

Conference 7647

Conference 7649

Conference 7650

Room: Pacific Salon I-III · 8:00 to 9:05 am  
**Thursday Announcements, Funding Agency Talk,  
 and Plenary Presentation**

8:00 to 8:05 am  
**Announcements**

8:05 to 8:20 am  
**Funding Agency Talk: Current and Future Programs  
 and Initiatives**

Plenary Presentation ..... 8:20 to 9:05 am

**Ways and Options for Getting Structural Health  
 Monitoring into Engineering Applications**



**Christian Boller, et al.**, Fraunhofer Institute of Non-Destructive Testing, Saarbrücken/Dresden (Germany) and Saarland Univ., Saarbrücken (Germany)

See page 5 for more information.

SESSION 14

Room: Royal Palm III  
 Thurs. 9:10 to 10:10 am

**Applications III**

Session Chair: **Pratyush Rai**, Univ. of Arkansas

9:10 am: **Comprehensive design and process flow configuration for micro and nano tech devices**, Kai Hahn, Thilo Schmidt, Matthias Mielke, Univ. Siegen (Germany); Dirk Ortloff, Jens Popp, Process Relations GmbH (Germany); Rainer Brück, Univ. Siegen (Germany) ..... [7646-48]

9:30 am: **Smart energy management system**, Aniruddha A. Desai, Jugdutt J. Singh, La Trobe Univ. (Australia) [7646-49]

9:50 am: **Implementation of capacitive RF MEMS switches into a monolithic GaN on silicon microwave technology**, Afshin Ziaei, Matthieu Lebaillif, Thales Research & Technology (France) ..... [7646-50]

Coffee Break ..... 10:10 to 10:40 am

SESSION 12a

Room: Pacific Salon IV-V  
 Thurs. 9:10 to 10:10 am

**Energy Harvesting**

Session Chair: **Christian U. Grosse**, Univ. Stuttgart (Germany)

9:10 am: **Modeling and analysis of hybrid energy storage systems for wireless sensor networks**, Hengzhao Yang, Ying Zhang, Georgia Institute of Technology (United States) ..... [7647-101]

9:30 am: **Power harvesting from microbial fuel cell**, Peter Frank, Cassandra McFadden, Xiong Yu, Case Western Reserve Univ. (United States) ..... [7647-102]

9:50 am: **A combination of energy harvesting methods to power wireless sensor networks efficiently**, Christian U. Grosse, Markus Krueger, Univ. Stuttgart (Germany); Steven D. Glaser, Univ. of California, Berkeley (United States) ..... [7647-103]

Coffee Break ..... 10:10 to 10:40 am

SESSION 12b

Room: Pacific Salon VI-VII  
 Thurs. 9:10 to 10:10 am

**Smart Sensors and Materials II**

Session Chair: **Fausto Acernese**, Univ. degli Studi di Salerno (Italy)

9:10 am: **A new architecture for the implementation of tunable mechanical monolithic horizontal sensors**, Fausto Acernese, Univ. degli Studi di Salerno (Italy); Rosario De Rosa, Univ. degli Studi di Napoli Federico II (Italy); Gerardo Giordano, Rocco Romano, Univ. degli Studi di Salerno (Italy); Fabrizio Barone, Istituto Nazionale di Fisica Nucleare (Italy) ..... [7647-104]

9:30 am: **Mechanism governing surface stress development associated with hybridization of monomolecular DNA film and formation of alkanethiol SAM on gold surfaces**, Kyungho Kang, Yue Zhao, Pranav Shrotriya, Iowa State Univ. (United States) ..... [7647-105]

9:50 am: **Development of nano-based sensors for the detection of improvised explosive devices**, Brian Zientek, Univ. of Illinois at Chicago (United States) and Argonne National Lab. (United States); Hsien-Hau Wang, Argonne National Lab. (United States); Ernesto Indacochea, Univ. of Illinois at Chicago (United States)[7647-158]

Coffee Break ..... 10:10 to 10:40 am

SESSION 12c

Room: Royal Palm IV  
 Thurs. 9:10 to 10:10 am

**Modeling and Mechanics**

Session Chair: **Gang Liu**, Chongqing Univ. (China)

9:10 am: **Damage detection based on nonlinear prediction model to large-span bridges**, Gang Liu, Zong Min Huang, Chongqing Univ. (China) ..... [7647-107]

9:30 am: **Field vibration tests-based model update for system identification of Wondongcheon railway bridge**, Duc-Duy Ho, Jeong-Tae Kim, Jae-Hyung Park, Dong-Soo Hong, Khac-Duy Nguyen, Pukyong National Univ. (Korea, Republic of)[7647-108]

9:50 am: **Application of nonlinear observer in hysteretic model updating**, Wei Song, Shirley J. Dyke, Purdue Univ. (United States) ..... [7647-109]

Coffee Break ..... 10:10 to 10:40 am

SESSION 9

Room: Royal Palm V  
 Thurs. 9:10 to 10:10 am

**Wireless Radar NDE Technologies**

Session Chairs: **Tzu-Yang Yu**, Univ. of Massachusetts Lowell; **Ying Zhang**, Georgia Institute of Technology

9:10 am: **A tunable impulse ultra-wide-band sensor for civil infrastructure sensing applications**, Cam Nguyen, Jeongwoo Han, Texas A&M Univ. (United States) ..... [7649-46]

9:30 am: **A 35-GHz radar for sensing applications**, Cam Nguyen, Joongsuk Park, Texas A&M Univ. (United States) ..... [7649-47]

9:50 am: **Estimation of kernels mass ratio to total in-shell peanuts using low-cost RF impedance meter**, Chari V. Kandala, Jaya Sundaram, Brad Hinson, USDA Agricultural Research Service (United States) ..... [7649-48]

Coffee Break ..... 10:10 to 10:40 am

SESSION 12

Room: Royal Palm I  
 Thurs. 9:10 to 10:10 am

**Nonlinear Analysis and Techniques I**

Session Chairs: **Sridhar Krishnaswamy**, Northwestern Univ.; **Paul D. Panetta**, Applied Research Associates, Inc.

9:10 am: **Crack detection in glass plates using nonlinear acoustics with low-profile piezoceramic transducers**, Ruztamreen B. Jenal, Wieslaw J. Staszewski, The Univ. of Sheffield (United Kingdom).... [7650-107]

9:30 am: **Effect of boundary conditions on nonlinear acoustics used for impact damage detection in composite structures**, Francesco Aymerich, Univ. degli Studi di Cagliari (Italy); Wieslaw J. Staszewski, The Univ. of Sheffield (United Kingdom) ..... [7650-109]

9:50 am: **Investigation of the threshold behavior of subharmonics for damage detection of a structure with a breathing crack**, David R. Johnson, Jun-Sik Kim, Kon-Well Wang, Univ. of Michigan (United States) ..... [7650-108]

Coffee Break ..... 10:10 to 10:40 am

Conference 7642

SESSION 11a

Room: Pacific Salon I-III  
Thurs. 10:30 am to 12:10 pm

Application of EAP II

10:30 am: **Polypyrrole composite actuator synthesis, characterization, and application for Jellyfish unmanned underwater vehicle and robotic face.** Yonas T. Tadesse, Jaclyn Brennan, Colin F. Smith, Alex Villanueva, Shashank Priya, Virginia Polytechnic Institute and State Univ. (United States) ..... [7642-71]

10:50 am: **Large planar dielectric elastomer actuators for fish-like propulsion of an airship** (*Invited Paper*), Christa Jordi, Silvain A. Michel, EMPA (Switzerland); Alexander Bormann, Christian Gebhardt, Aeroix (Germany); Gabor M. Kovacs, EMPA (Switzerland) ..... [7642-72]

11:10 am: **Dielectric elastomer actuators with zero-energy fixity**, Jonathan M. Rossiter, Univ. of Bristol (United Kingdom); Kazuto Takashima, Toshiharu Mukai, RIKEN (Japan) ..... [7642-73]

11:30 am: **Jamming as an enabling technology for soft robotics**, Erik Steltz, Annan Mozeika, iRobot Corp. (United States) ..... [7642-74]

11:50 am: **Performance of multi-segment dielectric elastomer machines**, Emilio P. Calius, Industrial Research Ltd. (New Zealand); Benjamin M. O'Brien, Todd A. Gisby, Thomas G. McKay, Iain A. Anderson, The Univ. of Auckland (New Zealand) ..... [7642-75]

Lunch Break ..... 12:10 to 1:30 pm

SESSION 11b

Room: Sunset  
Thurs. 10:30 am to 12:10 pm

Other Types of EAP Materials II

*Session Chairs: Geoffrey Maxwell Spinks, Univ. of Wollongong (Australia); Elisabeth Smela, Univ. of Maryland, College Park*

10:30 am: **Hydrogel-based piezoresistive biochemical microsensors**, Margarita Guenther, Volker Schulz, Gerald U. Gerlach, Technische Univ. Dresden (Germany); Thomas Wallmersperger, Univ. Stuttgart (Germany); Florian Solzbacher, Jules J. Magda, Prashant Tathireddy, Genyao Lin, Michael P. Orthner, The Univ. of Utah (United States) [7642-76]

10:50 am: **Flexible strain sensor for air muscles using polypyrrole coated rubber**, Arief P. Tjahyono, Kean C. Aw, Jadranka Travas-Sejdic, Kwong-Chi Li, The Univ. of Auckland (New Zealand) ..... [7642-77]

11:10 am: **Multifunctional shape memory polymers and their composites: fundamentals and applications**, Jinsong Leng, Yanju Liu D.D.S., Shanyi Du, Harbin Institute of Technology (China) [7642-78]

11:30 am: **Electromechanical characteristics of actuators based on carbide-derived carbon**, Janno Torop, Friedrich Kaasik, Univ. of Tartu (Estonia); Takushi Sugino, National Institute of Advanced Industrial Science (Japan); Alvo Aabloo, Univ. of Tartu (Estonia); Kinji Asaka, National Institute of Advanced Industrial Science (Japan) ... [7642-79]

11:50 am: **Liquid crystal elastomer composite with optimum actuation amplitude**, Yan Yan Huang, Yan Ji, Eugene B. Terentjev, Univ. of Cambridge (United Kingdom) ..... [7642-80]

Lunch Break ..... 12:10 to 1:30 pm

Conference 7643

SESSION 10a Continued

10:40 am: **Integration of encapsulated piezoelectric actuators in highly loaded CFRP structures**, Florian Bachmann, Paolo Ermanni, ETH Zürich (Switzerland) ..... [7643-90]

11:00 am: **An active non-contact radial and axial bearing system actuated by high power piezoelectric transducers**, Su Zhao, Joerg Wallaschek, Leibniz Univ. Hannover (Germany) ..... [7643-91]

11:20 am: **Semi-solid state adaptive impedance composites for HIRF protection**, Richard B. Bramlette, Michael T. Brennon, Ronald M. Barrett, The Univ. of Kansas (United States) ..... [7643-92]

11:40 am: **Multi-cell active acoustic metamaterial with programmable bulk's modulus**, Amr M. Baz, Univ. of Maryland, College Park (United States); Wael N. Akl, Nile Univ. (Egypt) ..... [7643-93]

12:00 pm: **Effects of piezoelectric nonlinearity on helicopter vibration reduction**, Ozge Ozdemir Ozgumus, Istanbul Teknik Univ. (Turkey); Dewey H. Hodges, Georgia Institute of Technology (United States) ..... [7643-94]

12:20 pm: **Fabrication of a piezofiber/aluminum composite and its characterization**, Hiroshi Asanuma, Takamitsu Chiba, Jun Kunikata, Chiba Univ. (Japan); Hiroshi Sato, National Institute of Advanced Industrial Science and Technology (Japan); Mehrdad N. Ghasemi Nejhad, Univ. of Hawaii (United States) ..... [7643-95]

12:40 pm: **Design, fabrication, and experimental results of a peristaltic micropump using LIPCAs with flexibly supported diaphragms**, Anh-Tuan Tran-Le, Nam-Seo Goo, Konkuk Univ. (Korea, Republic of) ..... [7643-145]

• Conference End

SESSION 10b

Room: Towne  
Thurs. 10:40 am to 12:40 pm

Modeling, Simulations, Signal Processing, and Controls II

*Session Chair: Mehrdad N. Ghasemi-Nejhad, Univ. of Hawaii'i*

10:40 am: **The innovative direct driving volume control based AMD system for structural vibration control**, Chunwei Zhang, Harbin Institute of Technology (China) ..... [7643-96]

11:00 am: **Analytical solutions for the optimal series tuned mass dampers**, Lei Zuo, Stony Brook Univ. (United States) ..... [7643-97]

11:20 am: **Innovative hybrid mass damper system for structural vibration control with energy harvesting capabilities**, Chunwei Zhang, Harbin Institute of Technology (China) ..... [7643-98]

11:40 am: **Parameter optimization and experimental verifications of displacement feedback based time delay compensation**, Chunwei Zhang, Harbin Institute of Technology (China) ..... [7643-99]

12:20 pm: **Modeling and simulation of an amplified structural damping system in a seismically-excited truss tower**, Ken Walsh, Ohio Univ. (United States); Kyle Cronin, Florida State Univ. (United States); Michelle Rambo-Roddenberry, Florida A&M Univ. (United States) ..... [7643-101]

Conference 7644

SESSION 12

Room: Royal Palm II  
Thurs. 10:40 am to 12:00 pm

Active Composites II

*Session Chairs: Sergio Luis dos Santos e Lucato, Teledyne Scientific Co.; Christopher S. Lynch, Univ. of California, Los Angeles*

10:40 am: **Mechanically-tunable composite filter at low frequencies**, Sara Wheeland, Alireza V. Amirkhizi, Sia Nemat-Nasser, Univ. of California, San Diego (United States) ..... [7644-59]

11:00 am: **Mechanically tunable plasmon frequency using a spring array**, Crystal J. Schuil, Alireza V. Amirkhizi, Siavouche Nemat-Nasser, Univ. of California, San Diego (United States) ... [7644-60]

11:20 am: **Strain sensing applicability of macro fiber composites**, David M. Pisani, Christopher S. Lynch, Sike Liu, Univ. of California, Los Angeles (United States) ..... [7644-61]

11:40 am: **Influence of content level and particle size of nickel powders on piezoresistivity of smart cement-based composites**, Baoguo Han, Jinping Ou, Harbin Institute of Technology (China) [7644-62]

Lunch Break ..... 12:00 to 1:30 pm

Get a free trial subscription.  
Ask your librarian.



SPIE Digital Library.org

Conference 7646	Conference 7647	Conference 7649	Conference 7650		
<p style="text-align: center;"><b>SESSION 15</b></p> <p style="text-align: center;"><b>Room: Royal Palm III</b> Thurs. 10:40 am to 1:00 pm</p> <p style="text-align: center;"><b>Applications IV</b> <i>Session Chair: Pratyush Rai, Univ. of Arkansas</i></p> <p>10:40 am: <b>A very high Q-factor inductor using MEMS technology</b>, Nazuhusna Khalid, La Trobe Univ. (Australia) [7646-51]</p> <p>11:00 am: <b>Annealing temperature effect of GaN thin layer Schottky diodes</b> (<i>Invited Paper</i>), Kyung Ho Yoo, Kwang Sun Kang, Yi Chen, Nayak Jyoti, Jaehwan Kim, Inha Univ. (Korea, Republic of) . . . . . [7646-52]</p> <p>11:40 am: <b>Thermal indicating paints for ammunition health monitoring</b>, James L. Zunino III, U.S. Army Armament Research, Development and Engineering Ctr. (United States); Zafar Iqbal, New Jersey Institute of Technology (United States) . . . . . [7646-53]</p> <p>12:00 pm: <b>Fabrication of UV-micro-patternable permanent micro magnets for lab on a chip and MEMS</b>, Ajit Khosla, Bonnie L. Gray, D. B. Leznoff, Simon Fraser Univ. (Canada); J. Herchenroeder, David Miller, Magnequench International Inc. (United States) . . . . . [7646-54]</p> <p>12:20 pm: <b>Nanowire-organic thin film transistor integration and scale up towards developing sensor array for biomedical sensing applications</b>, Prashanth S. Kumar, Phillip T. Hankins, Pratyush Rai, Vijay K. Varadan, Univ. of Arkansas (United States) . . . . . [7646-55]</p> <p>12:40 pm: <b>Magnetic nanocomposites for drug delivery with controlled release</b>, Linfeng Chen, Jining Xie, Vijay K. Varadan, Univ. of Arkansas (United States) [7646-56]</p> <p>• Conference End</p>	<p style="text-align: center;"><b>SESSION 13a</b></p> <p style="text-align: center;"><b>Room: Pacific Salon IV-V</b> Thurs. 10:40 am to 12:00 pm</p> <p style="text-align: center;"><b>Signal Processing and Damage Detection II</b> <i>Session Chairs: Hongwei Huang, Tongji Univ. (China); Hong Wan, Southeast Univ. (China)</i></p> <p>10:40 am: <b>Damage identification of large-Scale structures with incomplete measurements</b>, Hongwei Huang, Tongji Univ. (China); Jann N. Yang, Univ. of California, Irvine (United States) [7647-110]</p> <p>11:00 am: <b>Data processing strategies for health monitoring of a long span suspension bridge</b>, Jian Zhang, Drexel Univ. (United States). . . . . [7647-111]</p> <p>11:20 am: <b>A new substructure method for condition assessment of highway bridges under moving vehicles</b>, Xinqun Zhu, Brian Uy, Univ. of Western Sydney (Australia) . . . . . [7647-112]</p> <p>11:40 am: <b>Identification of modal macro-strain vector based on distributed dynamic macro-strain under ambient excitation</b>, Wan Hong, Southeast Univ. (China); Zhishen Wu, Ibaraki Univ. (Japan); Caiqian Yang, Gang Wu, Sheng Shen, Southeast Univ. (China) . . . . . [7647-113]</p> <p>Lunch Break . . . . . 12:00 to 1:30 pm</p>	<p style="text-align: center;"><b>SESSION 13b</b></p> <p style="text-align: center;"><b>Room: Pacific Salon VI-VII</b> Thurs. 10:40 am to 12:00 pm</p> <p style="text-align: center;"><b>Actuators</b> <i>Session Chairs: Mircea Badescu, Jet Propulsion Lab.; Constantinos Mavroidis, Northeastern Univ.</i></p> <p>10:40 am: <b>Haptic interfaces using dielectric electroactive polymers</b>, Muzaffer Y. Ozsecen, Constantinos Mavroidis, Mark Sivak, Northeastern Univ. (United States) . . . . . [7647-114]</p> <p>11:00 am: <b>Design of a quick response SMA actuated segmented nut for space release applications</b>, Xiaoyong Zhang, Xiaojun Yan, BeiHang Univ. (China); Qiaolong Yang, China Academy of Space Technology (China) . . . . . [7647-115]</p> <p>11:20 am: <b>Ultrasonic/sonic drill for high temperature application</b>, Xiaoqi Bao, James Scott, Yoseph Bar-Cohen, Stewart Sherrit, Scott Widholm, Mircea Badescu, Jet Propulsion Lab. (United States); Tom Shrout, Beth Jones, The Pennsylvania State Univ. (United States) . . . . . [7647-116]</p> <p>11:40 am: <b>Shape memory polymer actuator technology</b>, Frank Auffinger, Cornerstone Research Group, Inc. (United States) . . . . . [7647-117]</p> <p>Lunch Break . . . . . 12:00 to 1:30 pm</p>	<p style="text-align: center;"><b>SESSION 13c</b></p> <p style="text-align: center;"><b>Room: Royal Palm IV</b> Thurs. 10:40 am to 12:00 pm</p> <p style="text-align: center;"><b>Fiber Optic Sensors and Applications II</b> <i>Session Chairs: Hyung-Joon Bang, Korea Institute of Energy Research (Korea, Republic of); Sheng Shen, Southeast Univ. (China)</i></p> <p>10:40 am: <b>Experimental verification for the accuracy of a distributed sensitive fiber optic sensor under small strain variation and temperature variation</b>, Sheng Shen, Southeast Univ. (China); Zhishen Wu, Ibaraki Univ. (Japan); Caiqian Yang, Shiwei Song, Gang Wu, Southeast Univ. (China) . . . . . [7647-118]</p> <p>11:00 am: <b>Mathematical modeling of the SMA-FBG large-strain sensor</b>, Dongsheng Li, Dalian Univ. of Technology (China) . . . . . [7647-119]</p> <p>11:20 am: <b>A high speed, portable, multi-function, weigh-in-motion (WIM) sensing system and a high performance optical fiber Bragg rating (FBG) demodulator</b>, Hongtao Zhang, Zhanxiong Wei, Lingling Fan, Stevens Institute of Technology (United States); Shangming Yang, Yantai Univ. (China); Pengfei Wang, Hong-Liang Cui, Stevens Institute of Technology (United States) . . . . . [7647-120]</p> <p>11:40 am: <b>Study on the characteristics of wavelet decomposed details of low-velocity impact induced AE signals in composite laminates using fiber Bragg grating sensors</b>, Hyung-Joon Bang, Korea Institute of Energy Research (Korea, Republic of); Chun-Gon Kim, Korea Advanced Institute of Science and Technology (Korea, Republic of) [7647-121]</p> <p>Lunch Break . . . . . 12:00 to 1:30 pm</p>	<p style="text-align: center;"><b>SESSION 10</b></p> <p style="text-align: center;"><b>Room: Royal Palm V</b> Thurs. 10:40 am to 12:00 pm</p> <p style="text-align: center;"><b>Civil Infrastructure Health Monitoring I</b> <i>Session Chairs: Ming L. Wang, Northeastern Univ.; Tzu Yang Yu, Univ. of Massachusetts Lowell</i></p> <p>10:40 am: <b>Comprehensive condition assessment of bridge decks by multimodal NDE</b>, Nenad Gucunski, Ruediger Feldmann, Francisco Romero, Sabine Kruschwitz, Hooman Parvardeh, Rutgers, The State Univ. of New Jersey (United States) . . . . . [7649-49]</p> <p>11:00 am: <b>A pragmatic and innovative approach for civil infrastructure condition management: structural behavior monitoring</b>, Genda Chen, Missouri Univ. of Science and Technology (United States) . . . . . [7649-50]</p> <p>11:20 am: <b>Damage inspection of fiber reinforced polymer-concrete systems using a distant acoustic-laser NDE technique</b>, Tzu-Yang Yu, Univ. of Massachusetts Lowell (United States); Robert W. Haupt, MIT Lincoln Lab. (United States) . . . . . [7649-51]</p> <p>11:40 am: <b>The role of terrestrial 3D LiDAR scan in bridge health monitoring</b>, Wanqiu Liu, Shenen Chen, The Univ. of North Carolina at Charlotte (United States); Allen Sajedi, FARO Technologies Inc. (United States); Edd Hauser, The Univ. of North Carolina at Charlotte (United States) . . . . . [7649-52]</p> <p>Lunch Break . . . . . 12:00 to 1:30 pm</p>	<p style="text-align: center;"><b>SESSION 13</b></p> <p style="text-align: center;"><b>Room: Royal Palm I</b> Thurs. 10:40 to 11:40 am</p> <p style="text-align: center;"><b>Nonlinear Analysis and Techniques II</b> <i>Session Chairs: Guoliang Huang, Univ. of Arkansas at Little Rock; Won-Bae Na, Pukyong National Univ. (Korea, Republic of)</i></p> <p>10:40 am: <b>Stress dependent diffuse ultrasonic backscatter coefficient for polycrystalline media</b>, Joseph A. Turner, Univ. of Nebraska-Lincoln (United States); Goutam Ghoshal, Univ. of Illinois at Urbana-Champaign (United States) . . . . . [7650-110]</p> <p>11:00 am: <b>Detection and localization of contact-type damages via nonlinear impedance modulation of piezoelectric materials bonded on a beam structure</b>, Arata Masuda, Junsuke Aoki, Daisuke Iba, Akira Sone, Kyoto Institute of Technology (Japan) . . . . . [7650-112]</p> <p>11:20 am: <b>Dynamics characterization and health monitoring of membrane structures by time-frequency analysis</b>, Xin Qian, Univ. of Missouri-Columbia (United States); Xingwen Du, Harbin Institute of Technology (China); Perngjin F. Pai, Univ. of Missouri-Columbia (United States) . . . . . [7650-113]</p> <p>Lunch Break . . . . . 11:40 am to 1:10 pm</p>

**Conference 7642**

**SESSION 12a**

**Room: Pacific Salon I-III**  
**Thurs. 1:30 to 4:20 pm**

**Control of EAP Actuators II**

*Session Chairs:* **Benjamin M. O'Brien**, The Univ. of Auckland (New Zealand); **Michael J. Tryson**, Danfoss PolyPower A/S

1:30 pm: **Nonlinear force control of dielectric electroactive polymer actuators**, Muzaffer Y. Ozsecen, Constantinos Mavroidis, Northeastern Univ. (United States) . . . . . [7642-81]

1:50 pm: **Closed loop control of a rotational joint driven by two antagonistic dielectric elastomer actuators**, Marco Randazzo, Matteo Fumagalli, Giorgio Metta, Giulio Sandini, Italian Institute of Technology (Italy) . . . . . [7642-82]

2:10 pm: **Active vibration control using DEAP actuators**, Rahimullah Sarban, Danfoss PolyPower A/S (Denmark); Richard W. Jones, Benny Lassen, Univ. of Southern Denmark (Denmark) . . . [7642-83]

2:30 pm: **Hysteresis compensation for an open-loop controlled tubular actuator**, Jakob Oubaek, Danfoss PolyPower A/S (Denmark); Richard W. Jones, Univ. of Southern Denmark (Denmark); Rahimullah Sarban, Danfoss PolyPower A/S (Denmark) . . . . . [7642-84]

Coffee Break . . . . . 2:50 to 3:20 pm

**SESSION 12b**

**Room: Sunset**  
**Thurs. 1:30 to 4:20 pm**

**Application of EAP III**

*Session Chairs:* **Ravi Shankar**, Intel Corp.; **Gerald U. Gerlach**, Technische Univ. Dresden (Germany)

1:30 pm: **Feasibility analysis of a dielectric elastomer-based ankle-foot orthotic**, Amit P. Mulgaonkar, Martin O. Culjat, Warren S. Grundfest M.D., Qibing Pei, Univ. of California, Los Angeles (United States) . . . . . [7642-89]

1:50 pm: **Development of a deformable mirror based on conductive polymer actuator arrays for use in adaptive optics**, Aaron D. Price, Hani E. Naguib, Foued Ben Amara, Univ. of Toronto (Canada) . . . . . [7642-90]

2:10 pm: **A universal dielectric elastomer generator for improved energy harvesting**, Paul Brochu, Xiaofan Niu, Wei Yuan, Qibing Pei, Univ. of California, Los Angeles (United States) . . . [7642-91]

2:30 pm: **Array of lenses with individually tunable focal-length based on transparent ion-implanted EAP**, Muhamed Niklaus, Herbert R. Shea, Ecole Polytechnique Fédérale de Lausanne (Switzerland) . . . . . [7642-92]

Coffee Break . . . . . 2:50 to 3:20 pm

**Conference 7644**

**SESSION 13**

**Room: Royal Palm II**  
**Thurs. 1:30 to 3:10 pm**

**Active Polymers II**

*Session Chairs:* **Stefan S. Seelecke**, North Carolina State Univ.; **Jonghwan Suhr**, Univ. of Nevada, Reno

1:30 pm: **Rapid nanoimprinting and piezoresponse force microscopy of ferroelectric poly(vinylidene fluoride-trifluoroethylene) copolymer films**, Yuanming Liu, Jianguo Li, Univ. of Washington (United States) . . . . . [7644-63]

1:50 pm: **Voltage creep effect on actuation behavior of cellulose electro-active paper (EAPap)**, Gyu-Young Yun, Joo-Hyung Kim, Jaehwan Kim, Inha Univ. (Korea, Republic of); Chulho Yang, Andong National Univ. (Korea, Republic of) . . . . . [7644-64]

2:10 pm: **Modeling the transduction of IPMC in 3D configurations**, David Pugal, Kwang J. Kim, Univ. of Nevada, Reno (United States); Alvo Aabloo, Univ. of Tartu (Estonia) . . . . . [7644-65]

2:30 pm: **Finite element modeling of the electromechanical coupling in ionic polymer transducers**, Barbar J. Akle, Wassim Habchi, Lebanese American Univ. (Lebanon); Thomas Wallmersperger, Univ. Stuttgart (Germany); Donald J. Leo, Virginia Polytechnic Institute and State Univ. (United States) . . . . . [7644-66]

2:50 pm: **Actuation and sensing of a dielectric EAP actuator**, Alexander York, Micah Hodgins, Stefan S. Seelecke, North Carolina State Univ. (United States) . . . . . [7644-67]

Coffee Break . . . . . 3:10 to 3:40 pm





Conference 7647	Conference 7647	Conference 7647	Conference 7649	Conference 7650
<b>SESSION 14a</b>  <b>Room: Pacific Salon IV-V</b> <b>Thurs. 1:30 to 3:10 pm</b>  <b>Bridge Inspection and Monitoring Systems</b> <i>Session Chairs: Chung-Bang Yun,</i> Korea Advanced Institute of Science and Technology (Korea, Republic of); <b>Shenen Chen,</b> The Univ. of North Carolina at Charlotte  1:30 pm: <b>Dynamic characteristics of a thousands-meter scale cable-stayed bridge,</b> Jianfeng Liu, Qiwei Zhang, Tongji Univ. (China) . . . . . [7647-122]  1:50 pm: <b>Small-format fly-over photography for bridge monitoring,</b> Shenen Chen, Corey Rice, The Univ. of North Carolina at Charlotte (United States); Chuck Boyle, Boyle Consulting Engineering LLC (United States); Edd Hauser, The Univ. of North Carolina at Charlotte (United States) . . . . . [7647-123]  2:10 pm: <b>A computer vision-based approach for structural displacement measurement,</b> Yunfeng Ji, Tongji Univ. (China) . . . . . [7647-124]  2:30 pm: <b>* Full-scale bridge health monitoring using a receptance-based method,</b> Shin Ae Jang, Sung-Han Sim, Billie F. Spencer, Jr., Univ. of Illinois at Urbana-Champaign (United States) . . . . . [7647-125]  2:50 pm: <b>US-Korea collaborative research for bridge monitoring test beds,</b> Chung-Bang Yun, Hoon Sohn, Korea Advanced Institute of Science and Technology (Korea, Republic of); Jong-Jae Lee, Sejong Univ. (Korea, Republic of); Seunghee Park, Sungkyunkwan Univ. (Korea, Republic of); Ming L. Wang, Northeastern Univ. (United States); Yunfeng Zhang, Univ. of Maryland, College Park (United States); Jerome P. Lynch, Univ. of Michigan (United States) . . . . . [7647-126]  Coffee Break . . . . . 3:10 to 3:40 pm	<b>SESSION 14b</b>  <b>Room: Pacific Salon VI-VII</b> <b>Thurs. 1:30 to 3:10 pm</b>  <b>Image-based Sensing</b> <i>Session Chair: Anjana Jain,</i> National Aerospace Labs. (India)  1:30 pm: <b>* Luminescent photoelastic coating image analysis and strain separation on a three-dimensional grid,</b> Ergin Esirgomez, James P. Hubner, The Univ. of Alabama (United States) . . . . . [7647-127]  1:50 pm: <b>Progress on developing acoustic-infrared NDE imaging,</b> Xiaoyan Han, Wayne State Univ. (United States) . . . . . [7647-128]  2:10 pm: <b>Broad-area detection of structural irregularities in composites using fibre Bragg gratings,</b> Claire E. Davis, Patrick Norman, Scott D. Moss, Defence Science and Technology Organisation (Australia); Colin P. Ratcliffe, U.S. Naval Academy (United States); Roger M. Crane, Naval Surface Warfare Ctr. (United States) . . . . . [7647-129]  2:30 pm: <b>Real time NDE 3D image sensor for harsh electromagnetic environment,</b> George E. Dvoglenco, ITT Technical Institute (United States); Michal Bodnar, Joseph Prokop, Czech Technical Univ. in Prague (Czech Republic); Ying Wu, Shanghai Jing Na Luo Décor Design Engineering Co. (China) . . . . . [7647-130]  2:50 pm: <b>* An optical fiber-based corrosion detection sensor based on laser light reflection,</b> Haiying Huang, Manjunatha Shenoy, The Univ. of Texas at Arlington (United States) . . . . . [7647-39]  Coffee Break . . . . . 3:10 to 3:40 pm	<b>SESSION 14c</b>  <b>Room: Royal Palm IV</b> <b>Thurs. 1:30 to 3:10 pm</b>  <b>Wave Propagation and Damage Detection</b> <i>Session Chairs: Shuang Hou,</i> Dalian Univ. of Technology (China); <b>Yuanwei Jin,</b> Univ. of Maryland, Eastern Shore  1:30 pm: <b>Experimental research on active health monitoring of eccentric compression concrete columns based on piezoelectric wave-theory,</b> Shi Yan, Yanyu Meng, Wei Sun, Shenyang Jianzhu Univ. (China) . . . . . [7647-131]  1:50 pm: <b>A distributed seismic damage sensing network using piezoceramic-based smart aggregates for RC building structures,</b> Shuang Hou, Haibin Zhang, Dalian Univ. of Technology (China) . . . . . [7647-132]  2:10 pm: <b>Guided wave-based reference-free crack detection using a single dual-PZT,</b> Yunkyu An, Hoon Sohn, Korea Advanced Institute of Science and Technology (Korea, Republic of) . . . . . [7647-133]  2:30 pm: <b>Time reversal for damage detection in pipes,</b> Joel Harley, Nicholas A. O'Donoghue, Yujie Ying, James H. Garrett, Jr., Carnegie Mellon Univ. (United States); Yuanwei Jin, Univ. of Maryland, Eastern Shore (United States); José M. F. Moura, Irving J. Oppenheim, Lucio Soibelman, Carnegie Mellon Univ. (United States) . . . . . [7647-134]  2:50 pm: <b>Sensor network based pipe-defect imaging and monitoring using guided wave signals,</b> Yuanwei Jin, Univ. of Maryland, Eastern Shore (United States); Lin He, Harbin Institute of Technology (China) . . . . . [7647-135]  Coffee Break . . . . . 3:10 to 3:40 pm	<b>SESSION 11</b>  <b>Room: Royal Palm V</b> <b>Thurs. 1:30 to 5:20 pm</b>  <b>Civil Infrastructure Health Monitoring II</b> <i>Session Chairs: Tzu-Yang Yu,</i> Univ. of Massachusetts at Lowell; <b>Ming L. Wang,</b> Northeastern Univ.  1:30 pm: <b>Identification and health monitoring of an instrumented building using earthquake response data,</b> Hasan S. Ulusoy, Maria Q. Feng, Univ. of California, Irvine (United States); Paul J. Fanning, Univ. College Dublin (Ireland) . . . . . [7649-53]  1:50 pm: <b>Structural behavior of a cable stayed bridge through the use of a long-term health monitoring system,</b> Yinghong Cao, Ming L. Wang, Northeastern Univ. (United States) . . . . . [7649-54]  2:10 pm: <b>Damage detection of the bridge structures using genetic algorithms,</b> Reza Baghaei, Maria Q. Feng, Univ. of California, Irvine (United States) . . . . . [7649-55]  2:30 pm: <b>Assessment of tendon duct integrity in concrete with ultrasonic imaging methods,</b> Karl J. Langenberg, Klaus Mayer, Univ. Kassel (Germany) . . . . . [7649-56]  2:50 pm: <b>Segmentation of laser range image for pipe anomaly detection,</b> Zheng Liu, Dennis Krysz, National Research Council Canada (Canada) . . . . . [7649-57]  Coffee Break . . . . . 3:10 to 3:40 pm	<b>SESSION 14</b>  <b>Room: Royal Palm I</b> <b>Thurs. 1:10 to 2:50 pm</b>  <b>Sensor Network and Array</b> <i>Session Chairs: Henrique L. Reis,</i> Univ. of Illinois at Urbana-Champaign; <b>Sauvik Banerjee,</b> Indian Institute of Technology, Bombay (India)  1:10 pm: <b>Autofocus for sparse array imaging,</b> Anthony J. Croxford, Alan J. Hunter, Univ. of Bristol (United Kingdom) . . . . . [7650-114]  1:30 pm: <b>Efficient data capture and post-processing for real-time imaging using an ultrasonic array,</b> Ludovic Moreau, Alan J. Hunter, Paul D. Wilcox, Bruce W. Drinkwater, Univ. of Bristol (United Kingdom) . . . . . [7650-115]  1:50 pm: <b>Structural health monitoring of an impulsively loaded structure using wave-propagation based instantaneous baseline,</b> Jacob C. Dodson, Virginia Polytechnic Institute and State Univ. (United States); Jason R. Foley, Air Force Research Lab. (United States); Daniel J. Inman, Sr., Virginia Polytechnic Institute and State Univ. (United States) . . . . . [7650-116]  2:10 pm: <b>Immune-inspired sensor network fault detection and self-healing,</b> Bo Chen, Chuanzhi Zang, Michigan Technological Univ. (United States) . . . . . [7650-117]  2:30 pm: <b>Combined distributed and concentrated transducer network for failure indication,</b> Wieslaw M. Ostachowicz, Gdynia Maritime Academy (Poland); Tomasz Wandowski, Pawel Malinowski, Polska Akademia Nauk (Poland) . . . . . [7650-118]  • Conference End

**Conference 7642**

**SESSION 12a Continued**

3:20 pm: **Flexible enhanced energy density composites for dielectric elastomer actuators**, Hristiyan Stoyanov, Matthias Kollosche, Denis N. McCarthy, Guggi Kofod, Univ. Potsdam (Germany) . . . . . [7642-85]

3:40 pm: **Generation fuzzy rules and learning algorithms for swimming fish robot using IPMC actuators**, Jang Hyun Kim, Chul-Jin Kim, Hyun-Seok Yang, Jin-Bae Park, Yonsei Univ. (Korea, Republic of) . . . . . [7642-86]

4:00 pm: **Anthropomorphic robotic face with servo-driven muscle system: a comparative analysis with EAP systems**, Nicholas D. Thayer, Shashank Priya, Virginia Polytechnic Institute and State Univ. (United States) . . . . . [7642-87]

**SESSION 12b Continued**

3:20 pm: **Biomimetic small scale variable focal length lens unit using electro-active polymer actuators**, Baek-Chul Kim, Huu Lam Vuong Nguyen, Misuk Cho, Young Kwan Lee, Jae-Do Nam, Hyouk Ryeol Choi, Hyungpil Moon, Ja Choon Koo, Sungkyunkwan Univ. (Korea, Republic of) [7642-93]

3:40 pm: **Active skin on steering wheel**, Huu Lam Vuong Nguyen, Huu Chuc Nguyen, Duk Sang Kim, Kuang Jun An, Hong Phuc Vuong, Ja Choon Koo, Young Kwan Lee, Jae-Do Nam, Hyouk Ryeol Choi, Sungkyunkwan Univ. (Korea, Republic of) [7642-94]

4:00 pm: **Multilayered low voltage P(VDF-TrFE) actuators built on flexible printed circuit board for microbot applications**, Erik N. Edqvist, Uppsala Univ. (Sweden) . . . . . [7642-95]

• Conference End

**Conference 7644**

**SESSION 14**

**Room: Royal Palm II  
Thurs. 3:40 to 5:20 pm**

**Mechanics of Composites**

*Session Chairs: Zoubeida Ounaies, Texas A&M Univ.; Jianguy Li, Univ. of Washington*

3:40 pm: **The effect of scaling on performance of elastomer composite actuators**, Larry D. Peel, Texas A&M Univ.-Kingsville (United States); Jeffery W. Baur, Dean C. Foster, David Phillips, Amber McClung, Air Force Research Lab. (United States) . . . . . [7644-68]

4:00 pm: **Effect of particle size and volume fraction on tensile properties of fly ash/polyurea composites**, Jing Qiao, Harbin Institute of Technology (China) and Univ. of California, San Diego (United States); Alireza V. Amirkhizi, Siavouche Nemat-Nasser, Univ. of California, San Diego (United States) . . . . . [7644-69]

4:20 pm: **Ballistic performance of polyurea-coated armor grade ceramic tiles**, Ahsan Samiee, Univ. of California, San Diego (United States) . . . . . [7644-70]

4:40 pm: **Three-dimensional piezoelectricity solution for piezolaminated angle-ply cylindrical shells featuring imperfect interfacial bonding**, S. Kapuria, Indian Institute of Technology Delhi (India); A. Kumar, Indian Institute of Technology, Delhi (India) . . . . . [7644-99]

5:00 pm: **Interface damage analysis of braided composites subjected to axial tensile loading**, Jun Liang, Guodong Fang, Qi Lu, Yu Wang, Harbin Institute of Technology (China) . . . . . [7644-71]

5:20 pm: **Bending mechanical properties of metal honeycomb sandwich structure with interface connection defects**, Xianghao Kong, Xiaodong He, Liping Shi, Harbin Institute of Technology (China) . . . . . [7644-72]

• Conference End

**SPIE iPhone App**  
Free at the app store  
Search: SPIE



**What? When?**  
Find anything happening at the conference.

**Who?**  
Find anyone at the conference.

**Who's exhibiting?**  
Find your key vendors on the exhibit floor.

**Final Program**  
In the palm of your hand.

**Have an extra hour?**  
A simple way to find any presentation, course or special event—at any hour.

**My Schedule**  
Lay out your schedule for the week.

**Search**  
Quickly search the entire conference program.



Conference 7647

SESSION 15a

Room: Pacific Salon IV-V  
Thurs. 3:40 to 6:00 pm

Damping and Response Modification

Session Chairs: **Shaikh Faruque Ali**, Univ. Henri Poincaré Nancy (France); **Bin Wu**, Harbin Institute of Technology (China)

3:40 pm: **Adaptive backstepping based MR damper monitoring for structural applications**, Shaikh Faruque Ali, Univ. Henri Poincaré Nancy (France); Sondipon Adhikari, Swansea Univ. (United Kingdom) ..... [7647-136]

4:00 pm: **An experimental study of active base isolation control for seismic protection**, Chia-Ming Chang, Billie F. Spencer, Jr., Univ. of Illinois at Urbana-Champaign (United States) ..... [7647-137]

4:20 pm: **Performance of an offshore platform with MR dampers subjected to ice and earthquake**, Bin Wu, Pengfei Shi, Qianying Wang, Xinchun Guan, Jinping Ou, Harbin Institute of Technology (China) ..... [7647-138]

4:40 pm: **Performance evaluation of shape memory alloy-based rubber isolation systems for seismic response mitigation of bridges**, Osman E. Ozbulut, Stefan Hurlbaus, Texas A&M Univ. (United States) ..... [7647-139]

5:00 pm: **Vibration control and energy harvesting by using an electromechanical tuned mass damper**, Giovanni Caruso, Consiglio Nazionale delle Ricerche (Italy); Othman Ben Mekki, National Engineering School of Tunis (Tunisia); Frederic Bourquin, Lab. Central des Ponts et Chaussées (France) ..... [7647-140]

5:20 pm: **Controllable outrigger damping system for high rise building with MR dampers**, Zhihao Wang, Hunan Univ. (China) and Univ. of Illinois at Urbana-Champaign (United States); Chia-Ming Chang, Billie F. Spencer, Jr., Univ. of Illinois at Urbana-Champaign (United States); Zhengqing Chen, Hunan Univ. (China) ..... [7647-141]

5:40 pm: **A general numerical solution to optimal nonlinear stochastic structural control problem**, Wei Song, Shirley J. Dyke, Purdue Univ. (United States) ..... [7647-142]

SESSION 15b

Room: Pacific Salon VI-VII  
Thurs. 3:30 to 6:10 pm

Wireless Sensors and Energy Harvesting

Session Chairs: **David W. Greve**, Carnegie Mellon Univ.; **Fuh-Gwo Yuan**, North Carolina State Univ.

3:30 pm: **Design of a miniature wind turbine for powering wireless sensors**, Fujun Xu, Donghua Univ. (China) and North Carolina State Univ. (United States); Fuh-Gwo Yuan, Jingzhen Hu, North Carolina State Univ. (United States) ..... [7647-143]

3:50 pm: **Unpowered passive sensor for crack detection and measurement**, Srikar Deshmukh, Irshad Mohammad, Haiying Huang, The Univ. of Texas at Arlington (United States) ..... [7647-144]

4:10 pm: **Surface acoustic wave devices for wireless strain measurement**, Tao-Lun Chin, Peng Zheng, David W. Greve, Irving J. Oppenheim, Carnegie Mellon Univ. (United States) ..... [7647-145]

4:30 pm: **Composite materials with self contained wireless sensing networks**, Kristin L. Schaaf, Robert Kim, Siavouche Nemat-Nasser, Univ. of California, San Diego (United States) ..... [7647-146]

4:50 pm: **Detachable acoustic electric feedthrough for power and two-way data transfer**, Scott D. Moss, Jeremy Skippen, Michael J. Konak, Ian G. Powlesland, Stephen C. Galea, Defence Science and Technology Organisation (Australia) ..... [7647-147]

5:10 pm: **Infrasonic energy harvesting for embedded structural health monitoring micro-sensors**, Chenling Huang, Nizar Lajnef, Shantanu Chakrabarty, Michigan State Univ. (United States) ..... [7647-148]

5:30 pm: **Feasibility study of wind power generator for wireless smart sensor node in cable-stayed bridge**, Jong-Woong Park, In-ho Kim, Hyung-Jo Jung, Korea Advanced Institute of Science and Technology (Korea, Republic of); Hongki Jo, Billie F. Spencer, Jr., Univ. of Illinois at Urbana-Champaign (United States) ..... [7647-172]

SESSION 15c

Room: Royal Palm IV  
Thurs. 3:40 to 6:00 pm

SHM/Damage Detection Methods II

Session Chairs: **Henrique L. Reis**, Univ. of Illinois at Urbana-Champaign; **Jann N. Yang**, Univ. of California, Irvine

3:40 pm: **Environmental urban runoff monitoring**, Byunggu Yu, Pradeep K. Behera, Seon Ho Kim, Paul Cotae, Juan F. Ramirez Rochac, Travis Branham, Univ. of the District of Columbia (United States) ..... [7647-149]

4:00 pm: **Magneto-inductive waveguide as a passive wireless sensor net for structural health monitoring**, Ye Chen, Praveenkumar Pasupathy, Dean P. Neikirk, Sharon L. Wood, The Univ. of Texas at Austin (United States) ..... [7647-150]

4:20 pm: **Impedance-based beam damage identification using spectral elements**, Zhigang Guo, Zhi Sun, Tongji Univ. (China) ..... [7647-151]

4:40 pm: **Detection and assessment of wood decay using X-ray computer tomography**, Henrique L. Reis, Megan McGovern, Univ. of Illinois at Urbana-Champaign (United States); George Chen, U.S. Dept. of Agriculture (United States); Frank C. Beall, Univ. of California, Berkeley (United States) ..... [7647-152]

5:00 pm: **Experimental demonstration of the QQSSE damage detection technique based on finite-element approach**, Jann N. Yang, Ye Xia, Univ. of California, Irvine (United States); Chin-Hsiung Loh, National Taiwan Univ. (Taiwan) ..... [7647-153]

5:20 pm: **A study on building an experimental system of PVDF sensor for structural local monitoring on a bridge model**, Yan Yu, Yang Wang, Yonghui An, Jinping Ou, Dalian Univ. of Technology (China) ..... [7647-154]

5:40 pm: **Experimental research on damage detection of large thin aluminum plate based on Lamb wave**, Shi Yan, Naizhi Zhao, Shenyang Jianzhu Univ. (China) ..... [7647-155]

• Conference End

Conference 7649

SESSION 11 Continued

3:40 pm: **Monitoring early age microstructure development of cementitious materials using bender elements**, Jinying Zhu, Min Jae Jung, Seong-Hoon Kee, The Univ. of Texas at Austin (United States) ..... [7649-58]

4:00 pm: **Efficient analysis of response variation in mistuned periodic structures using order reduction**, Jiong Tang, Univ. of Connecticut (United States) ..... [7649-59]

4:20 pm: **Damage detection of a condensation pipeline joint in-service**, Julie Briand, Davood Rezaei, Farid Taheri, Dalhousie Univ. (Canada) ..... [7649-60]

4:40 pm: **Combined use of thermography and ultrasound for characterization of subsurface cracks in concrete**, Maria Strantzsa, Evangelos Z. Kordatos, Theodore E. Matikas, Dimitrios G. Aggelis, Univ. of Ioannina (Greece) ..... [7649-61]

5:00 pm: **Ultrasonic wave attenuation measurement for nondestructive evaluation of concrete**, Hong Jae Yim, Korea Advanced Institute of Science and Technology (Korea, Republic of); Jae Hong Kim, Northwestern Univ. (United States); Hyo-Kyoung Kwak, Korea Advanced Institute of Science and Technology (Korea, Republic of) ..... [7649-76]

• Conference End

Get a free trial subscription.  
Ask your librarian.



SPIE Digital Library  
SPIEDigitalLibrary.org

\* Indicates papers that will also be presented in the special NSF Poster Session.

# Index of Authors, Chairs, and Committee Members

## A

**Aabloo, Alvo** [7642-28]S7a, [7642-46]S8b, [7642-79]S11b, [7644-65]S13  
**Abbey, Brian** [7644-09]S3  
**Abdelkhalik, Ossama** [7647-22]S3b  
**Abdelrahman, Amro** [7650-66]S7b  
**Abdul-Aziz, Ali** [7650-45]S5b  
**Abel, Julianna M.** [7643-16]S2b  
**Abidian, Mohammad Reza** [7642-62]S9b  
**Abo El Dahab, Mohamed M.** [7644-91]SPS1  
**Abou-Elnour, Ali** [7648-16]S4  
**Acernese, Fausto** 7647 S12b  
**SessChr.** [7647-104]S12b, [7647-156]SPS1, [7647-157]SPS1, [7647-161]SPS1, [7650-119]SPS1, [7650-120]SPS1  
**Ackler, Harold D.** [7644-23]S5  
**Adamovsky, Grigory** 7648 ProgComm  
**Adams, Douglas E.** 7650 ProgComm  
**Addinal, Raphael** [7642-44]S8a  
**Adewuyi, Adekunle P.** [7647-56]S7a  
**Adhikari, Sondipon** [7646-43]S13, [7647-136]S15a  
**Aga, Zelalem A.** [7644-28]S6  
**Aggelis, Dimitrios G.** [7649-34]S6, [7649-35]S6, [7649-61]S11, [7650-104]S11b  
**Agha, Gul** [7647-78]S10a  
**Agnes, Gregory S.** 7643 ProgComm  
**Ahmadian, Mehdi** 7643 ProgComm, [7643-26]S3b, [7643-34]S4a, [7643-41]S4b, [7643-76]S9a, [7643-77]S9a  
**Ahmed Mohamed, Esam T.** [7650-66]S7b  
**Aird, Chris** [7645-03]S1  
**Ajmera, Pratul K.** 7646 ProgComm  
**Akbari, Samin** [7642-14]S4  
**Akhras, George** 7644 S6 SessChr, [7644-27]S6  
**Akl, Wael N.** [7643-20]S3a, [7643-93]S10a  
**Akle, Barbar J.** 7642 ProgComm, 7642 S8b SessChr, [7642-02]S1, [7644-66]S13  
**Aktan, A. Emin** 7649 S4 SessChr, 7649 S5 SessChr, 7649 ProgComm, [7649-04]S1  
**Alam, Md. Tariqul** [7650-17]S2b  
**Al-Arife, Khaled M.** [7646-34]S11  
**Alarifi, Hani** [7645-37]SPS1  
**Al-Hussain, Khaleel** [7643-20]S3a  
**Ali, Bashir** [7649-33]S6  
**Ali, Mohammod** [7647-29]S15b  
**Ali, Shaikh Faruque** 7647 S15a

**SessChr.** [7647-136]S15a  
**Al-Shamma'a, Ahmed I.** [7648-20]S5, [7648-43]SPS1  
**Alvarez, Paula L.** [7647-95]S11b  
**Alvarez-Chavez, Jose A.** [7646-57]SPS1  
**Alvi, Farrukh** [7643-67]S8a  
**Amaya, Ivan** [7650-44]S5b  
**Amirkhizi, Alireza V.** [7644-59]S12, [7644-60]S12, [7644-69]S14, [7650-09]S2a  
**Amjad, U.** [7650-11]S2a, [7650-16]S2b, [7650-63]S7a, [7650-78]S9a, [7650-85]S10a  
**An, Kuang Jun** [7642-12]S4, [7642-20]S6, [7642-94]S12b  
**An, Linan** [7647-31]S4b  
**An, Yonghui** [7647-154]S15c  
**An, Yunkyu** [7647-133]S14c  
**Anderson, Eric H.** 7643 ProgComm, 7645 ProgComm  
**Anderson, Iain A.** 7642 S5 SessChr, [7642-36]S7b, [7642-39]S7b, [7642-67]S10a, [7642-69]S10b, [7642-75]S11a  
**Andrews, Clark C.** [7644-48]S10  
**Anghel, Marian** [7647-51]S7a  
**Annamdas, Venu G. M.** [7647-71]S9a, 7647 S9a SessChr  
**Ansari, Farhad** 7648 ProgComm, 7649 ProgComm, [7649-17]S4, [7649-26]S5, [7649-27]S5, [7649-28]S5  
**Anselment, Christian** [7643-111]SPS1  
**Anton, Steve** [7650-35]S4a, [7643-13]S2a  
**Aoki, Junsuke** [7650-112]S13  
**Arafa, Mustafa H.** [7643-20]S3a  
**Aragonés, Raúl** [7647-95]S11b  
**Arakawa, Yoshihiro** [7646-25]S9  
**Ardelean, Emil V.** 7645 ProgComm, [7645-30]S7  
**Arias Castro, Luis Antonio** [7648-04]S1  
**Arias-Montiel, Manuel** [7643-105]SPS1  
**Arndt, Karl-Friedrich** [7642-13]S4, [7642-115]SPS1  
**Arritt, Brandon J.** 7645 ProgComm  
**Arumugam, Kumaravel** [7644-87]SPS1  
**Asada, H. Harry** 7647 ProgComm  
**Asaka, Kinji** [7642-63]S9b, [7642-79]S11b  
**Asamene, Kassahun** [7649-33]S6  
**Asanuma, Hiroshi** 7643 ProgComm, [7643-95]S10a, [7644-78]SPS1  
**Ascione, George** [7642-32]S7a  
**Atulasimha, Jayasimha** 7644 S8 SessChr, [7644-40]S8

**Auffinger, Frank** [7647-117]S13b  
**Avitabile, Peter** [7650-65]S7b  
**Aw, Kean C.** [7642-77]S11b  
**Aymerich, Francesco** [7650-109]S12

## B

**Baaklini, George Y.** 7648 ProgComm, 7649 ProgComm, [7650-45]S5b  
**Babu?ka, Vit** [7645-30]S7  
**Bachmann, Florian** [7643-90]S10a  
**Bäcker, Dennis** [7647-76]S9b  
**Badescu, Mircea** 7647 S13b SessChr, [7647-48]S6b, [7647-116]S13b  
**Badhulika, Sushmee** [7646-19]S7  
**Bae, Joonbum** [7647-20]S3b  
**Bae, You H.** [7646-14]S6  
**Baek, Yong** [7647-88]S11a  
**Baghaei, Reza** [7649-55]S11  
**Bai, Xian-Xu** [7643-122]SPS1  
**Baier, Horst J.** 7648 ProgComm  
**Baier, Horst J.** [7648-06]S2  
**Bakis, Charles E.** [7643-65]S8a  
**Bal, Harpreet K.** [7647-49]S6b  
**Balachandran, Balakumar** 7647 S7b SessChr, [7647-59]S7b  
**Balakrisnan, Bavani** [7642-17]S5  
**Balogun, Oluwaseyi** [7648-01]S1  
**Bandos, Bruce** [7649-43]S8  
**Banerjee, Sauvik** 7650 S14 SessChr, [7650-89]S10a  
**Banerjee, Sourav** 7647 ProgComm, [7647-37]S5b, 7650 ProgComm, 7650 S6b SessChr, 7650 S4a SessChr, [7650-36]S4a, [7650-50]S6a, [7650-54]S6b, [7650-57]S6b, [7650-64]S7a  
**Bang, Hyung-Joon** 7647 S13c SessChr, [7647-121]S13c, [7647-160]SPS1  
**Bank, Lawrence** 7649 ProgComm  
**Banks, Bentley O.** [7647-04]S2a  
**Banks, Curtis E.** 7648 S5 SessChr, [7648-05]S2  
**Bao, Xiaoqi** [7647-48]S6b, [7647-116]S13b  
**Bao, Xiaoyi** 7648 ProgComm  
**Bao, Yuequan** [7650-127]SPS1  
**Baravelli, Emanuele** [7650-13]S2a  
**Bar-Cohen, Yoseph** SC634 Inst, 7642 S3 SessChr, 7642 S1 SessChr, 7642 Chr, [7642-04]S2, [7647-46]S6b, [7647-48]S6b, [7647-116]S13b, 7649 ProgComm, 7650 ProgComm, [7650-26]S3b  
**Barkoula, Nektaria-Marianthi** [7649-34]S6, [7649-35]S6, [7649-45]S8, [7650-104]S11b  
**Barnes, April** [7647-07]S2a  
**Barnes, Brian M.** [7645-23]S5  
**Barnes, Katherine A.** [7650-79]S9a

**Barnes, Timothy A.** [7650-55]S6b  
**Barnhart, Ryan** [7643-75]S9a  
**Barone, Fabrizio** [7647-104]S12b, [7647-156]SPS1, [7647-157]SPS1, [7647-161]SPS1, [7650-119]SPS1, [7650-120]SPS1  
**Barrett, Ronald M.** [7643-07]S1b, [7643-75]S9a, [7643-92]S10a, [7643-108]SPS1, [7643-116]SPS1, [7647-83]S10b  
**Bartelt, Hartmut** 7648 ProgComm  
**Bartoli, Ivan** [7650-05]S1b, [7650-71]S8a  
**Barton, David K.** [7643-33]S4a  
**Bart-Smith, Hilary** [7643-60]S7a  
**Basaran, Burak** [7644-19]S5, [7644-21]S5, [7644-36]S7  
**Basrour, Skandar** [7642-111]SPS1  
**Batterbee, David C.** [7645-19]S4  
**Baughman, Ray H.** 7642 ProgComm, [7642-03]S1, [7642-41]S8a  
**Baur, Jeffery W.** [7644-68]S14  
**Baz, Amr M.** 7643 ProgComm, [7643-20]S3a, [7643-93]S10a, 7647 ProgComm  
**Bazzi, Imad** [7645-20]S5  
**Beall, Frank C.** [7647-57]S7a, [7647-152]S15c  
**Beard, Shawn J.** [7647-37]S5b, 7649 S2 SessChr, 7649 S1 SessChr, [7649-29]S5, [7650-54]S6b, [7650-57]S6b, [7650-64]S7a  
**Beck, Benjamin S.** [7643-25]S3b  
**Becnel, Andrew** [7643-40]S4b  
**Bedekar, Vishwas** [7643-21]S3a  
**Behera, Pradeep K.** [7647-149]S15c  
**Behrens, Sam** [7643-09]S2a, [7643-50]S6  
**Bell, Richard** [7648-22]S6  
**Bement, Matthew** [7647-51]S7a  
**Ben Amara, Foued** [7642-90]S12b  
**Ben Mekki, Othman** [7647-140]S15a  
**Benslimane, Mohamed** [7642-110]SPS1  
**Bettayeb, Fairouz** [7649-39]S7  
**Bharadwaj, Shravan** [7645-27]S6  
**Bhattacharya, Bishakh** [7648-13]S3  
**Bhattacharyya, Abhijit** 7644 ProgComm  
**Bhushan, Bharat** [7642-01]S1  
**Bigelow, Glen S.** [7644-26]S5  
**Biggs, Silmon J.** [7642-15]S4  
**Bischur, Enrico** [7643-110]SPS1  
**Bisht, Gobind S.** [7647-87]S10b  
**Bitaraf, Maryam** [7643-87]S10a  
**Blackshire, James L.** 7648 ProgComm

**Blazejewski, Wojciech** [7647-38]S5b  
**Blazie, Deane B.** 7642 S2 SessChr, [7642-05]S2  
**Bodnar, Michal** [7647-130]S14b  
**Boller, Christian** 7645 ProgComm, [SS10PL3-01]S  
**Bonavolonta, Carmela** [7649-15]S3  
**Bonitz, Robert** [7647-46]S6b  
**Booker, Julian D.** [7645-03]S1  
**Bormann, Alexander** [7642-72]S11a  
**Bosman, Erwin** [7648-24]S6  
**Both, Jan** [7648-06]S2  
**Botta, Fabio** [7645-35]S7  
**Boucher, M.** [7643-113]SPS1  
**Bouda, Václav** 7642 ProgComm  
**Bourquin, Frederic** [7647-140]S15a  
**Boyle, Chuck** [7647-123]S14a  
**Bradshaw, Aaron** [7650-28]S3b  
**Bramlette, Richard B.** [7643-92]S10a  
**Brandell, Daniel** [7642-46]S8b  
**Branham, Travis** [7647-149]S15c  
**Brentley, Christina L.** 7646 S7 SessChr, [7646-01]S1, [7646-16]S7  
**Brei, Diann E.** 7643 ProgComm, [7643-16]S2b, 7645 ProgComm, 7645 S5 SessChr, [7645-23]S5  
**Brennan, Jaclyn** [7642-71]S11a  
**Brennison, Michael T.** [7643-92]S10a, [7643-116]SPS1  
**Bressers, Scott** [7643-114]SPS1, [7644-96]S4  
**Breukers, Robert** [7642-109]SPS1  
**Brewster, Stephen** 7642 S8b SessChr  
**Briand, Julie** [7649-60]S11  
**Brigham, John C.** [7645-06]S2  
**Brochu, Paul** [7642-91]S12b  
**Brodzeli, Zourab** [7647-49]S6b  
**Brönnimann, Rolf** 7648 ProgComm  
**Browne, Alan L.** 7645 ProgComm, 7645 S4 SessChr, [7645-20]S5  
**Bruck, Jerry** [7650-22]S3a  
**Brück, Rainer** [7646-48]S14  
**Brunetto, Paola** [7642-28]S7a  
**Bruno, Nick** [7643-129]S4b  
**Bryant, Matthew J.** [7643-44]S5, [7643-45]S5  
**Bryson, Lindsey S.** 7647 S2a SessChr, [7647-07]S2a  
**Bucht, André** [7645-22]S5  
**Bunget, Gheorghe** [7643-123]SPS1  
**Burela, Ramesh Gupta** [7642-33]S7b  
**Burke, William** [7643-41]S4b  
**Burrow, Stephen G.** [7643-33]S4a  
**Burrows, Susan E.** [7649-44]S8  
**Burton, Brett R.** [7645-27]S6  
**Buyukozturk, Oral** 7649 ProgComm  
**Byrne, Robert H.** [7642-109]SPS1

# Index of Authors, Chairs, and Committee Members

**Bold** = SPIE Member

## C

Cabrera-Amado, Alvaro [7643-38]S4b  
Cagnol, John [7645-40]SPS1  
Cai, Shuri [7650-125]SPS1  
Cai, Zhijiang [7645-38]SPS1  
Caiazza, Anthony [7649-43]S8  
Caicedo, Juan 7647 S5b SessChr,  
[7647-29]S15b, [7649-25]S5  
Calius, Emilio P. 7642 ProgComm, 7642  
S9b SessChr, 7642 S10a SessChr,  
[7642-36]S7b, [7642-39]S7b, [7642-  
69]S10b, [7642-75]S11a  
Calkins, Frederick T. [7645-34]S7  
Camilli, Nicholas R. [7650-27]S3b  
Campanella, Humberto [7642-48]S8b  
**Campo, Eva M.** [7642-48]S8b  
Cantoni, Stefania [7649-15]S3  
Cao, Yinghong [7647-65]S8a, [7649-54]  
S11  
Carletta, Joan [7648-18]S5  
Carlomagno, Giovanni M. [7649-15]S3  
Carlos, Mark F. [7649-24]S5  
Carlson, Clinton [7645-02]S1  
Carman, Gregory P. 7643 ProgComm,  
[7643-47]S5, [7643-49]S6, 7644  
ProgComm, [7650-100]S11b  
**Carpi, Federico** 7642 ProgComm, 7642  
S4 SessChr, [7642-11]S4  
Carr, Gary [7650-71]S8a  
Carter, William B. [7645-20]S5  
**Caruntu, Dumitru** [7647-193]S5b  
Caruso, Giovanni [7647-140]S15a  
**Casadei, Filippo** [7650-49]S6a  
Casadevall i Solvas, Xavier [7642-116]  
SPS1  
Casciati, Fabio 7647 ProgComm  
**Castano, Lina M.** [7647-35]S5a  
Castro-Linares, Rafael [7643-80]S9a  
Cebeci, Hulya [7642-42]S8a  
Ceriotti, Matteo [7647-19]S3a  
Cesnik, Carlos E. S. [7650-87]S10a  
Chaddah, P. [7644-98]SPS1  
Chadderdon, Spencer L. [7648-02]S1,  
[7648-03]S1  
**Chakrabarti, Suryarghya** [7645-17]S4  
Chakrabarty, Shantanu [7647-148]S15b  
Chakraborti, Parthasarathi [7642-07]S2  
Chakraborty, Debeyjo [7649-38]S7  
**Chang, Chia-Ming** [7647-137]S15a,  
[7647-141]S15a  
Chang, Chih-Chen 7647 ProgComm,  
[7647-66]S8a  
Chang, Fu-Kuo 7649 ProgComm,  
7650 ProgComm, [7650-47]S5b,  
[SS10PL1-02]S  
Chang, Tom [7649-29]S5  
Chang, Zensheu [7647-48]S6b  
**Chaplya, Pavel M.** 7644 ProgComm,

7644 S11 SessChr  
Chares, Ziv [7647-90]S11a  
**Chase, Steven** 7649 ProgComm  
**Chattopadhyay, Aditi** 7643 ProgComm,  
[7644-83]SPS1, [7648-33]S8, [7648-  
39]S10, 7649 S3 SessChr, [7649-02]  
S1, [7649-10]S3, [7649-38]S7, [7650-  
99]S11a  
Chatzigeorgiou, George [7644-26]S5,  
[7644-34]S7  
**Chen, Bo** [7647-22]S3b, [7647-79]S10a,  
[7648-41]S10, [7650-117]S14  
Chen, Chia-Hui [7647-64]S8a  
Chen, Chia-Ling [7647-68]S8b  
Chen, Genda [7648-28]S7, [7648-29]  
S7, 7649 S8 SessChr, [7649-01]S1,  
[7649-06]S2, [7649-50]S10, [7650-18]  
S2b  
Chen, George [7647-152]S15c  
Chen, Huai [7643-14]S2b  
Chen, Julie [7643-115]S7a  
Chen, Linfeng 7646 S13 SessChr,  
[7646-02]S2, [7646-56]S15  
Chen, Peter C. 7645 ProgComm  
**Chen, Shenen** 7647 S14a SessChr,  
[7647-123]S14a, [7649-52]S10  
Chen, Sihai [7645-33]S7  
**Chen, Weimin** [7650-08]S1b, [7650-38]  
S4b  
Chen, Xian [7644-24]S5  
Chen, Ye [7647-150]S15c  
Chen, Yi [7646-04]S2, [7646-44]S13,  
[7646-52]S15  
Chen, Yijin [7645-36]S7  
Chen, Zheng [7642-30]S7a  
Chen, Zhengqing [7643-118]SPS1,  
[7647-141]S15a  
Chen, Zhi-Qiang [7649-74]SPS1  
Cheng, Hongbo [7644-89]SPS1  
Cheng, Liang [7647-17]S3a, [7647-45]  
S6a, [7647-169]SPS1  
Chiba, Takamitsu [7643-95]S10a  
Chigrinov, Vladimir G. [7647-49]S6b  
Chin, Tao-Lun [7647-145]S15b  
Cho, Chongdu [7644-31]S6, [7644-33]  
S6  
Cho, Misuk [7642-93]S12b  
Cho, Soojin [7647-06]S2a  
Choi, Hyouk Ryeol 7642 S7a SessChr,  
[7642-12]S4, [7642-20]S6, [7642-40]  
S, [7642-93]S12b, [7642-94]S12b  
**Choi, Sang H.** 7646 CoChr, 7646 S3  
SessChr, 7646 S4 SessChr, [7646-06]  
S4, [7646-10]S5, [7646-26]S9, [7646-  
27]S9, [7646-36]S11  
Choi, Seung-Bok 7643 ProgComm  
Chopra, Nikhil [7647-59]S7b  
Chou, Pai [7649-22]S5, [7649-23]S5  
Chouinard, Patrick [7642-26]S6

Chowdhury, Rajib [7646-43]S13  
Chun, Young-Jae [7650-100]S11b  
Chung, Howard 7649 ProgComm,  
[7649-29]S5  
Chung, Joseph [7647-16]S3a  
Chung, Simon [7649-43]S8  
**Ciocanel, Constantin** [7643-42]S4b,  
[7643-129]S4b, 7644 ProgComm,  
[7644-35]S7  
Clark, Jonathan [7643-67]S8a  
Clark, William W. 7643 ProgComm,  
7645 S2 SessChr, [7645-06]S2  
Clarke, Josh [7644-39]S8  
Coccia, Stefano [7650-71]S8a  
Cococcioni, Matteo [7647-168]SPS1  
**Coelho, Clyde K.** [7648-39]S10, [7649-  
02]S1  
Colby, Ralph H. [7642-43]S8a  
Collet, Manuel [7650-51]S6a  
Collins, Brittany [7645-32]S7  
**Collins, Stephen F.** [7647-49]S6b  
Conn, Andrew T. [7642-22]S6, [7642-61]  
S9b  
Constantinou, Peter [7643-30]S4a,  
[7645-03]S1  
Cook, Preston [7643-123]SPS1  
Coombs, Douglas M. [7645-30]S7  
Corrà, Michele [7647-19]S3a, [7647-89]  
S11a  
Cotae, Paul [7647-149]S15c  
Courtney, Charles R. [7650-82]S9b  
Craft, Michael J. [7643-26]S3b, [7643-  
41]S4b  
Crane, Roger M. [7647-129]S14b  
Cravens, Scott [7643-108]SPS1  
**Creasy, M. Austin** [7643-72]S8b  
Cronin, Kyle [7643-101]S10b  
Croxford, Anthony J. [7649-65]SPS1,  
7650 S2a SessChr, 7650 S6a  
SessChr, [7650-114]S14  
Cui, Hong-Liang [7643-102]SPS1,  
[7647-120]S13c  
Cui, Edgar A. [7643-85]S9b  
Culjat, Martin O. [7642-89]S12b  
**Culshaw, Brian** 7648 ProgComm,  
[7648-32]S8  
Cunefare, Kenneth A. [7643-25]S3b,  
[7650-51]S6a  
Cutkosky, Mark [7642-117]SPS1  
Czulak, Andrzej [7647-38]S5b

## D

Dai, Qingli [7644-57]S11  
Dai, Yongbo [7648-09]S2  
Dai, Zhendong [7642-31]S7a, [7642-  
118]SPS1  
**Daneshvar, Eugene D.** [7642-62]S9b  
Dantele, Andreas [7647-25]S3b, [7650-  
03]S1a

**Dapino, Marcelo J.** 7644 ProgComm,  
7644 S8 SessChr, 7645 S5 SessChr,  
7645 ProgComm, [7645-17]S4,  
[7645-26]S6, [7645-27]S6  
Daraio, Chiara [7647-28]S4a  
Das, Samik [7647-37]S5b, 7650 S2b  
SessChr, [7650-47]S5b  
Das, Samik [7650-50]S6a  
Dastoor, Sanjay [7642-117]SPS1  
Datta, Supratik [7647-40]S5b  
Daue, Thomas P. [7643-43]S5  
Daunert, Sylvia [7642-116]SPS1  
**Davidson, Jacob D.** [7642-54]S9a  
Davidson, Joshua P. [7643-51]S6  
Davis, Claire E. [7647-129]S14b  
Davis, L. Porter 7645 ProgComm  
de Loutour, Oliver R. [7647-171]SPS1  
De Marchi, Luca [7650-13]S2a, [7650-  
103]S11b  
De Marqui, Carlos [7643-22]S3a  
de Oliveira, Rui [7644-20]S5  
De Rosa, Rosario [7647-104]S12b,  
[7647-156]SPS1, [7647-157]SPS1  
De Rossi, Danilo [7642-11]S4  
de Villoria, Roberto G. [7642-42]S8a  
Ded, Gurdish [7644-19]S5, [7644-21]S5  
Delaney, Kieran [7648-25]S6  
Delville, Remi [7644-24]S5  
Deng, Gang [7648-09]S2  
Depeyre, Sophie [7645-40]SPS1  
Desai, Aniruddha A. [7646-49]S14  
Desai, Uri [7644-26]S5  
DeSalvo, Riccardo [7647-157]SPS1  
Deshmukh, Srikanth [7647-144]S15b  
Deshmukh, Sujay J. [7644-49]S10  
Desimio, Martin P. [7650-01]S1a, [7650-  
20]S3a, [7650-23]S3a  
Di Spigna, Neil H. [7642-07]S2  
Diallo, Alseny [7646-25]S9  
Diamond, Dermot [7642-109]SPS1  
Diaz, Aaron A. 7649 CoChr  
Dickens, Tarik J. [7649-05]S2  
Dietl, John M. [7643-86]S9b  
Diglio, Paul J. [7642-06]S2  
Ding, Haitao [7642-31]S7a, [7642-118]  
SPS1  
Ding, Xiao [7645-33]S7  
Dixon, Steve M. [7649-44]S8  
Dobie, Gordon [7650-46]S5b  
**Dodson, Jacob C.** [7650-116]S14  
Dokmeci, Mehmet R. [7647-68]S8b  
Dolci, Luisa S. [7642-116]SPS1  
Dondi, Denis [7647-43]S6a  
Dong, Huijuan [7648-30]S7  
Dong, Wen [7644-04]S1  
Dong, Xufeng [7644-30]S6  
Döring, Sebastian [7642-107]SPS1  
dos Santos e Lucato, Sergio L. 7644

ProgComm, 7644 S12 SessChr  
Douglas, Darryl [7647-32]S4b  
**Dovgalenko, George E.** [7647-130]  
S14b  
Doyle, Derek T. [7650-12]S2a, [7650-77]  
S9a  
Drinkwater, Bruce W. [7649-65]SPS1,  
[7650-52]S6a, [7650-115]S14  
Drossel, Welf-Guntram [7644-77]SPS1  
D'Souza, Kiran X. [7647-21]S3b  
Du, Haiping [7643-36]S4b  
Du, Shanyi [7642-78]S11b  
Du, Xingwen [7650-113]S13  
Duan, Hongbiao [7647-30]S4b  
Duan, Zhongdong [7650-83]S9b  
Dubey, Premshankar K. [7649-41]S7  
Dultz, Wolfgang [7646-38]S11  
**Duncan, Andrew J.** [7642-02]S1  
Düring, Lukas [7642-18]S5  
Dyke, Shirley J. 7647 ProgComm,  
[7647-109]S12c, [7647-142]S15a  
Dykman, Mark I. [7647-23]S3b

## E

Ebel, William J. [7650-68]S7b  
Ecke, Wolfgang 7648 CoChr, 7648 S1  
SessChr  
Edqvist, Erik N. [7642-95]S12b  
**Edwards, Eugene** 7646 S9 SessChr,  
[7646-01]S1, [7646-16]S7  
Edwards, William C. 7646 ProgComm  
Elahinia, Mohammad H. 7643 CoChr,  
[7643-42]S4b, [7643-125]S1b  
Elliott, Ryan S. 7647 S10b SessChr,  
[7647-85]S10b, [7647-168]SPS1  
El-Nady, Ahmed M. [7644-90]SPS1  
Elsayed, Ashraf [7650-30]S3b  
Emami-Naeini, Abbas [7649-21]S4  
Enderlein, Marco [7644-85]SPS1  
Engholm, Marcus [7649-36]S6  
Engle, Dorothy [7646-38]S11  
Epureanu, Bogdan I. [7647-21]S3b  
Ermanni, Paolo [7643-90]S10a  
**Erturk, Alper** [7643-13]S2a, [7643-22]  
S3a  
Esam, A. M. [7650-78]S9a, [7650-80]S9a  
**Esirgemez, Ergin** [7647-127]S14b  
Esterline, Albert C. [7648-37]S9  
Esteve, Jaume [7642-48]S8b

## F

Faidley, LeAnn E. 7644 S6 SessChr,  
[7644-28]S6, [7645-25]S6  
Fan, Fei [7647-49]S6b  
Fan, Lingling [7643-102]SPS1, [7647-  
120]S13c

# Index of Authors, Chairs, and Committee Members

**Fan, Xiang** [7644-07]S2  
Fang, Austin [7643-44]S5, [7643-45]S5  
Fang, Bo [7643-54]S7a, [7646-62]SPS1  
Fang, Daining [7644-13]S3  
Fang, Guodong [7644-71]S14  
**Fang, Hui** [7649-66]SPS1  
Fang, Shaoli [7642-03]S1  
Fanning, Paul J. [7649-53]S11  
Farinholt, Kevin M. 7645 CoChr, 7645  
ProgComm, 7645 S1 SessChr, [7645-  
02]S1, [7645-04]S1, [7650-02]S1a  
Farjoud, Alireza [7643-41]S4b, [7643-77]  
S9a  
Farrar, Charles R. [7645-02]S1, [7645-  
04]S1, 7647 S7a SessChr, [7647-43]  
S6a, [7647-51]S7a, [7650-02]S1a,  
[7650-84]S9b  
Fateh, Mahmood [7650-71]S8a  
Favini, Eric A. [7643-115]S7a  
Fehrman, Brian C. [7650-79]S9a  
Feigenbaum, Heidi P. [7644-35]S7  
Feldmann, Ruediger [7649-49]S10  
Feng, Maria Q. [7649-53]S11, [7649-55]  
S11  
Feng, Xin [7649-26]S5, [7649-27]S5,  
[7649-28]S5  
Fernandez-Otero, Toribio 7642 S8a  
SessChr, 7642 ProgComm, [7642-29]  
S7a  
Ferrari, Silvia 7647 ProgComm  
Ferrer, Carles [7647-95]S11b  
Figueiras, Joaquim [7650-84]S9b  
Figueiredo, Eloi F. [7647-43]S6a, [7650-  
02]S1a, [7650-84]S9b  
Finlayson, Richard D. 7648 ProgComm  
Fischer, Wolf-Joachim [7644-32]S6,  
[7644-97]SPS1, [7647-40]S5b, [7647-  
99]S11b, [7647-100]S11b  
Fisher, Michael J. [7645-08]S2  
Flatau, Alison B. 7643 ProgComm,  
[7644-32]S6, [7644-97]SPS1, 7647  
S4b SessChr, 7647 ProgComm,  
[7647-32]S4b, [7647-40]S5b, [7647-  
99]S11b  
Flewitt, Peter [7645-03]S1  
Flittner, Klaus [7642-10]S4, [7642-37]  
S7b, [7642-104]SPS1  
Flowers, George T. [7643-66]S8a  
**Flynn, Eric B.** [7647-43]S6a, [7648-38]  
S10  
Foley, Jason R. [7650-116]S14  
**Fontaine, Mike** [7643-01]S1a  
Fontana, Giorgio [7647-89]S11a  
Foroughi, Javad [7642-03]S1, [7642-41]  
S8a  
Foster, Dean C. [7644-15]S4, [7644-68]  
S14  
Fowler, Anthony [7643-50]S6  
Frank, Peter [7647-102]S12a

Frankenstein, Bernd [7649-32]S6  
Franzon, Paul D. [7642-07]S2  
Freckler, Mary I. [7643-84]S9b  
Frediani, Gabriele [7642-11]S4  
Fromme, Paul 7647 S2b SessChr,  
[7647-12]S2b, [7650-56]S6b  
Fujino, Yoza 7647 ProgComm, [7647-  
42]S6a  
Fulcher, Jared [7644-15]S4  
Fumagalli, Matteo [7642-82]S12a  
Furst, Stephen J. [7643-18]S2b

## G

Galea, Stephen C. [7643-47]S5, [7647-  
147]S15b  
Gandhi, Farhan 7643 ProgComm,  
[7643-84]S9b  
Gandhi, Prasanna S. [7644-14]S3  
Ganguli, Ranjan [7643-82]S9b  
Ganor, Yaniv [7643-17]S2b  
Gao, Robert X. 7647 ProgComm  
Gao, Xiaoxia [7650-08]S1b  
Garcia, Ephraim 7643 ProgComm,  
[7643-44]S5, [7643-45]S5, [7643-48]  
S6, [7643-85]S9b, [7643-86]S9b,  
[7645-07]S2  
Garcia, Michael E. [7643-71]S8b  
Garden, Ricki [7647-28]S4a  
Garrett, James H. [7647-134]S14c,  
[7647-164]SPS1  
Gasior, Pawel [7647-38]S5b, [7650-37]  
S4b  
Gebhardt, Christian [7642-72]S11a  
Geeng, Franklin [7645-07]S2  
Geier, Sebastian M. [7644-56]S10  
Genest, Marc [7649-70]SPS1  
Geng, Xuecang [7649-30]S6  
Gent, Alan N. [7642-103]SPS1  
Gentile, Charles A. [7642-32]S7a  
Georgoulis, Anastasios D. [7650-104]  
S11b  
Gerlach, Gerald U. 7642 S12b SessChr,  
[7642-56]S9a, [7642-76]S11b, 7648  
ProgComm  
Gervais, Anthony [7647-55]S7a  
Ghandehari, Masoud 7649 ProgComm  
Ghantasala, Muralidhar K. [7644-44]S9  
Gharavi, Nafiseh [7642-114]SPS1  
Ghasemi, Hamid 7649 ProgComm  
Ghasemi Nejhad, Mehrdad N. [7643-95]  
S10a, 7643 S1a SessChr, 7643 S1b  
SessChr, 7643 S2a SessChr, 7643  
S2b SessChr, 7643 S3b SessChr,  
7643 S3a SessChr, 7643 S4a  
SessChr, 7643 S4b SessChr, 7643 S5  
SessChr, 7643 S6 SessChr, 7643 S7a  
SessChr, 7643 S8a SessChr, 7643  
S9a SessChr, 7643 S10a SessChr,

7643 S7b SessChr, 7643 S8b  
SessChr, 7643 S9b SessChr, 7643  
S10b SessChr, 7643 Chr, [7643-59]  
S7a  
Ghosh, Dipta B. [7647-168]SPS1  
Ghosh, Tushar K. [7642-07]S2  
Ghoshal, Goutam [7650-72]S8a, [7650-  
110]S13  
**Gibson, Richard S.** [7648-14]S4  
Gigineishvili, Vlasi [7650-41]S5a, [7650-  
53]S6b  
Giordano, Gerardo [7647-104]S12b,  
[7647-156]SPS1, [7647-157]SPS1  
Giraud-Audine, Christophe [7643-06]  
S1b  
Giraud, Olivier 7650 ProgComm, 7650  
S4b SessChr, 7650 S7b SessChr,  
[7650-70]S7b  
**Gisby, Todd A.** [7642-36]S7b, [7642-69]  
S10b, [7642-75]S11a  
Giurgiutiu, Victor 7643 ProgComm, 7647  
CoChr, 7647 S1 SessChr, 7647 S11b  
SessChr, [7647-70]S9a, [7647-97]  
S11b, [7647-98]S11b, [7648-31]S8,  
[7649-25]S5, 7650 ProgComm, 7650  
S5b SessChr  
Gkartzonikas, Dimitrios [7650-104]S11b  
Glanz, Carsten [7642-44]S8a  
Glaser, Steven D. 7647 ProgComm,  
7647 S6b SessChr, [7647-47]S6b,  
[7647-103]S12a  
Glisic, Branko [7648-26]S7  
Godinez, Valery F. [7649-24]S5, [7649-  
43]S8  
Goethals, Pauwel [7648-24]S6  
Goh, Chun-Kiat [7642-38]S7b  
Goldfeld, Yiska [7647-90]S11a  
Gollins, Kenneth [7647-55]S7a  
Golshan Ebrahimi, Nadereh [7650-39]  
S4b  
Goncalves, Fernando D. 7643  
ProgComm  
Gong, Xiao-Yan 7645 ProgComm  
Gonzalez Castro, Gabriela [7646-45]S13  
Goo, Nam-Seo [7643-64]S7b, [7643-  
119]SPS1, [7643-145]S10a  
Gooding, James C. [7645-30]S7  
Goold, Ryan [7645-31]S7  
Goossen, Keith W. [7643-78]S9a  
**Gordaninejad, Faramarz** 7643  
ProgComm, [7643-39]S4b, 7647  
ProgComm  
Gorny, Lee J. [7642-06]S2, [7642-08]S2,  
[7642-55]S9a  
Goulbourne, Nakhiah C. [7642-54]S9a,  
[7642-58]S9a, 7643 ProgComm  
Goykhman, Yuriy [7649-20]S4  
Graf, Christian [7642-120]S7b  
Graff, Karl [7645-26]S6

Graham, Frank [7647-100]S11b  
Grammatikos, Sotiris [7649-45]S8  
Grant, Joseph 7648 ProgComm  
Grasso, Salvatore [7647-161]SPS1  
Gravatt, Lynn M. [7645-34]S7  
Gray, Bonnie L. [7642-64]S9b, [7646-54]  
S15  
Graziani, Salvatore [7642-28]S7a  
Green, Russell A. [7650-28]S3b  
Greve, David W. 7647 S15b SessChr,  
[7647-145]S15b, [7647-164]SPS1  
Griffin, Steve 7645 ProgComm  
Grill, W. [7650-11]S2a, [7650-16]S2b,  
[7650-63]S7a, [7650-78]S9a, 7650  
ProgComm, 7650 S7a SessChr, 7650  
S10a SessChr, 7650 S11a SessChr,  
7650 S1a SessChr, [7650-66]S7b,  
[7650-80]S9a, [7650-85]S10a, [7650-  
102]S11b  
Groche, Peter [7643-55]S7a  
Grosse, Christian U. 7647 S12a  
SessChr, [7647-103]S12a  
Grummon, David S. [7644-22]S5  
**Grundfest, Warren S.** [7642-89]S12b  
Gu, Haichang [7650-31]S3b  
Gu, Xinchun [7644-30]S6, [7644-82]  
SPS1, [7647-138]S15a  
Gucunski, Nenad 7649 ProgComm,  
7649 S4 SessChr, 7649 S5 SessChr,  
[7649-49]S10  
Guenther, Margarita [7642-56]S9a,  
[7642-76]S11b  
Guerreiro, Nelson [7646-13]S5  
**Guers, Manton J.** [7650-58]S7a  
Guna, Stefan V. [7647-19]S3a  
Guo, Dongjie [7642-31]S7a, [7642-118]  
SPS1  
Guo, Hongtao [7643-37]S4b  
Guo, Jiajie [7647-81]S10a  
Guo, Zhigang [7647-151]S15c  
Guthikonda, Venkata S. [7647-85]S10b  
Gyekenyesi, Andrew L. 7649 ProgComm

## H

Ha, Dong S. [7650-34]S4a, [7650-43]  
S5a  
Ha, Ngoc-San [7643-64]S7b  
Habchi, Wassim [7644-66]S13  
Habel, Wolfgang R. 7648 ProgComm  
**Habib, A.** [7650-63]S7a  
**Habib, Anwer** [7646-47]S13  
**Habib, Khaleed J.** [7649-73]SPS1  
Hackenberger, Wesley S. [7649-30]S6  
Hackney, Drew A. [7648-12]S3, [7649-  
42]S8  
Hahn, K. [7650-11]S2a  
Hahn, Kai [7646-48]S14  
**Hahnen, Ryan M.** [7645-26]S6

Hajzargarbashi, Talieh [7650-10]S2a  
Haldar, Krishnendu [7644-34]S7, [7644-  
36]S7  
Han, Baoguo [7644-62]S12, 7647 S5a  
SessChr, [7647-36]S5a  
Han, Jeongwoo [7649-46]S9  
Han, Xiaoyan 7647 ProgComm, [7647-  
128]S14b  
Han, Xu [7643-02]S1a  
Hangekar, Rohan [7643-18]S2b  
Hankins, Phillip T. [7646-16]S7, [7646-  
55]S15  
Hanselka, Holger 7645 ProgComm,  
[7647-63]S7b  
**Hansen, Sean E.** [7650-32]S3b  
Hansma, Paul K. [7647-106]S12b  
Hao, Hong [7647-72]S9a  
Hao, Qingduo [7647-34]S5a  
Haran, Shivan 7650 ProgComm, 7650  
S10b SessChr, 7650 S3b SessChr,  
[7650-06]S1b, [7650-30]S3b, [7650-  
81]S9b  
Harley, Joel [7647-134]S14c  
Harms, Jan [7647-157]SPS1  
Harrison, Joycelyn S. [7646-13]S5,  
[7650-64]S7a  
Hartl, Darren J. 7644 S4 SessChr,  
[7644-22]S5  
**Harursampath, Dineshkumar** [7642-  
33]S7b, [7644-88]S11  
Hasegawa, Satoshi [7647-11]S2b  
Hashimoto, Hikaru [7642-59]S9b  
Hassan, Mohd N. [7643-113]SPS1  
Hatchell, Brian K. [7650-44]S5b  
Hatemi, Aydin [7644-21]S5  
Haupt, Robert W. [7649-51]S10  
Hauser, Edd [7647-123]S14a, [7649-52]  
S10  
Hauswirth, Dominik [7648-27]S7  
**Havens, Ernie** 7645 ProgComm, 7645  
S3 SessChr, [7645-13]S3  
Havens, Teresa E. [7645-13]S3  
Hayward, Gordon [7650-46]S5b  
He, Jianping [7648-28]S7  
He, Lin [7647-135]S14c  
He, Qingsong [7642-31]S7a, [7642-118]  
SPS1  
He, Song [7645-40]SPS1  
He, Xiaodong [7644-72]S14  
Heflin, James R. [7642-100]SPS1  
Hegaze, Moutaz M. [7644-90]SPS1,  
[7644-91]SPS1  
Heidari, Somayah [7643-32]S4a  
Heider, Dirk [7643-78]S9a  
**Henderson, Benjamin K.** 7645  
ProgComm, 7647 ProgComm  
Henry, Christopher P. 7644 ProgComm,  
[7645-20]S5  
Hensel, Sebastian [7644-77]SPS1

# Index of Authors, Chairs, and Committee Members

**Bold** = SPIE Member

Hensman, James [7650-46]S5b  
Henstridge, Meredith [7646-38]S11  
Hentschel, Dieter [7649-32]S6  
Herath, Chamini [7647-58]S7b  
Herchenroeder, J. [7646-54]S15  
Herold, Sven [7642-34]S7b  
Herrera, Guillermo [7645-20]S5  
Heuer, Henning [7648-36]S9, [7649-14]S3  
**Hiche, Cristobal** [7649-02]S1  
Hiemenz, Gregory J. [7643-40]S4b  
Hillis, Andrew J. [7650-82]S9b  
Hillmann, Susanne [7648-36]S9  
Hilton, Robert J. [7646-03]S2, [7646-66]SPS1  
Hindle, Timothy A. [7645-31]S7  
Hinson, Brad [7649-48]S9  
Hirsch, Soeren [7650-61]S7a  
Hitchcock, Roger N. [7642-15]S4  
Ho, Duc-Duy [7647-108]S12c  
Ho, Vinh [7642-116]SPS1, [7647-87]S10b  
Hoang, Nga [7643-36]S4b  
Hodges, Dewey H. [7643-94]S10a  
Hodgins, Micah [7644-67]S13, [7644-95]SPS1  
Hofmann, Felix [7644-09]S3  
Hogue, Joshua M. [7643-67]S8a  
**Hong, Dong-Soo** [7647-108]S12c  
Hong, Soon Man [7642-98]SPS1, [7642-101]SPS1  
Hong, Wan [7647-113]S13a  
Hong, Wei [7644-43]S9  
Hook, Loyd R. [7646-24]S8  
Horn, Walter [7650-75]S8b  
Hosaka, Kosuke [7642-102]SPS1  
Hou, Shuang 7647 S14c SessChr, [7647-132]S14c  
Houle, Nate [7643-60]S7a  
Hreha, Richard D. [7645-32]S7  
Hsu, Chin-Jui [7643-49]S6  
Hu, Anming [7645-37]SPS1  
Hu, Jingzhen [7647-143]S15b, [7647-167]SPS1  
Hu, Qingli [7647-165]SPS1, [7648-44]SPS1  
Hu, Shunren [7650-08]S1b  
Hu, Wei [7643-40]S4b  
Huan, Gong [7648-46]SPS1  
Huang, Alex Q. [7647-167]SPS1  
Huang, Chenling [7647-148]S15b  
Huang, Guoliang 7650 ProgComm, 7650 S13 SessChr, 7650 S6a SessChr, [7650-42]S5a, [7650-81]S9b, [7650-88]S10a  
Huang, Haiying 7647 ProgComm, [7647-39]S14b, [7647-144]S15b  
Huang, Hongwei 7647 S13a SessChr, [7647-110]S13a

Huang, Jerry Q. 7647 ProgComm  
Huang, Minghua [7648-28]S7  
Huang, Qiaojian [7650-95]S11a  
Huang, Yan Yan [7642-80]S11b  
Huang, Ying [7649-01]S1  
Huang, Yong [7650-127]SPS1, [7650-128]SPS1  
Huang, Yonghu [7644-82]SPS1  
Huang, Zong Min [7647-107]S12c  
**Hubbard, James** [7646-13]S5  
Huber, John E. 7644 S3 SessChr, [7644-09]S3, [7644-10]S3  
**Hubner, James P.** [7647-127]S14b  
Hunter, Alan J. [7650-114]S14, [7650-115]S14  
Huo, Haibin [7647-170]SPS1  
Hurlebaus, Stefan [7643-05]S1b, [7643-87]S10a, [7647-139]S15a  
Hurley, David H. [7647-55]S7a  
**Huston, Dryver R.** 7647 S7a SessChr, [7647-55]S7a  
Hwang, Hwisim [7644-12]S3  
Hwang, Yoon Koog [7650-123]SPS1  
Hyde, Tristram T. 7643 ProgComm

## I

Iba, Daisuke [7650-112]S13  
Ieiri, Masataka [7647-42]S6a  
Ieropoulos, Ioannis [7642-67]S10a  
Ikegami, Roy 7647 S5b SessChr, [7647-37]S5b  
Inaudi, Daniele 7648 ProgComm  
**Indacochea, Ernesto** [7647-158]SPS1  
**Inman, Daniel J.** 7643 ProgComm, [7643-13]S2a, [7643-22]S3a, [7643-31]S4a, 7644 ProgComm, [7649-24]S5, [7650-34]S4a, [7650-35]S4a, [7650-43]S5a, [7650-116]S14  
Iqbal, Zafar [7646-53]S15  
**Iten, Michael R.** [7647-91]S11a, [7648-27]S7  
Ito, Takamichi [7642-102]SPS1  
Iwahori, Yutaka [7647-75]S9b  
Iwanaga, Shiho [7646-10]S5

## J

Jager, Edwin 7642 ProgComm  
Jahn, Andreas [7647-99]S11b  
Jain, Anjana 7647 S14b SessChr, [7647-84]S10b  
Jain, Vaibhav [7642-100]SPS1  
James, Richard D. [7643-17]S2b, [7644-24]S5  
Janapati, Vishnu [7650-47]S5b  
Jang, Jong Won [7642-40]S  
Jang, Sang-Dong [7646-11]S5

**Jang, Shin Ae** [7647-06]S2a, [7647-125]S14a  
Jänis, Anna [7644-50]S10  
**Jannessary, Reyhaneh** [7643-69]S8a  
Janoyan, Kerop D. 7648 ProgComm  
**Jata, Kumar V.** 7647 ProgComm, 7650 CoChr, 7650 S9b SessChr, 7650 S6b SessChr  
Javadi, Sara [7642-47]S8b  
Jean-Mistral, Claire [7642-111]SPS1  
Jen, Cheng-Kuei [7648-35]S9  
Jenal, Ruztamreen B. [7650-107]S12  
Jeon, Haemin [7650-67]S7b  
Ji, Hongli [7643-104]SPS1  
Ji, Yan [7642-80]S11b  
Ji, Yunfeng [7647-124]S14a  
Jia, Junfeng [7643-03]S1a  
**Jiang, Xiaoning** 7649 ProgComm, 7649 S7 SessChr, 7649 S6 SessChr, [7649-30]S6  
Jin, Sung Moon [7642-12]S4  
Jin, X. [7647-29]S15b  
Jin, Yuanwei 7647 S14c SessChr, [7647-134]S14c, [7647-135]S14c  
Jo, Choonghee [7644-45]S9  
Jo, Hongki [7647-05]S2a, [7647-06]S2a, [7647-172]S15b  
Johanson, Urmas [7642-46]S8b  
John, Sabu J. [7643-79]S9a, [7645-28]S6  
Johnson, Conor D. 7643 ProgComm  
Johnson, David R. [7650-108]S12  
Johnson, Nancy L. 7645 ProgComm, 7645 S6 SessChr, [7645-20]S5  
Johnson, Terrence E. [7643-84]S9b  
Jones, Beth [7647-116]S13b  
Jones, Jonathan D. [7647-13]S3a  
Jones, Richard W. [7642-52]S9a, [7642-83]S12a, [7642-84]S12a, [7642-96]SPS1, [7642-97]SPS1  
Jones, Sean 7646 ProgComm  
Joo, Bong-Chul [7650-123]SPS1  
Jordi, Christa [7642-72]S11a  
Joshi, Chad H. 7645 ProgComm  
Joshi, Keyur [7643-53]S6  
Joshi, Ravindra P. 7646 ProgComm  
Joshi, Shiv [7645-06]S2  
Ju, Yung-chul [7647-160]SPS1  
Jun, He [7648-30]S7  
Jung, Bong-Bu [7646-63]SPS1  
Jung, Hyung-Jo [7647-06]S2a, [7647-172]S15b  
Jung, Jakob [7645-22]S5  
Jung, Jongdae [7650-67]S7b  
Jung, Min Jae [7649-58]S11  
Jung, Youngsoo [7642-70]S10b  
Juntarapaso, Yada [7650-101]S11b  
Just, Daniel [7643-111]SPS1  
Jyoti, Nayak [7646-52]S15

## K

Kaal, William [7642-34]S7b  
Kaasik, Friedrich [7642-79]S11b  
Kaleta, Jerzy [7644-29]S6, [7644-58]S11, [7647-38]S5b, [7649-69]SPS1, [7650-37]S4b  
Kaloop, Mosbeh [7650-07]S1b  
Kamanyi, Albert E. [7650-80]S9a  
Kamlah, Marc 7644 ProgComm, 7644 S1 SessChr, [7644-01]S1  
**Kandala, Chari V.** [7649-48]S9  
Kaneto, Keichi 7642 ProgComm, 7642 S10b SessChr, [7642-59]S9b  
Kang, Inpil [7646-20]S7  
Kang, Jin Ho [7646-13]S5  
Kang, Kwang Sun 7646 S2 SessChr, [7646-04]S2, [7646-44]S13, [7646-52]S15  
Kang, Kyungho [7647-105]S12b  
Kannan, Somasundar [7643-06]S1b  
Kanner, Oren [7643-17]S2b  
Kao, Imin M. [7647-61]S7b  
Kapoor, Hitesh [7649-11]S3, [7649-12]S3  
Kapuria, Satosh [7644-99]S  
**Karaca, Haluk E.** 7644 S7 SessChr, [7644-19]S5, [7644-21]S5  
Karaman, Ibrahim 7644 ProgComm, 7644 S7 SessChr, [7644-26]S5, [7644-36]S7  
Karami, Mohammad A. [7643-31]S4a  
Karki, Hamad [7647-59]S7b  
Kasturi, Prakash S. [7643-56]S7a  
Katayama, Tsutao [7644-12]S3  
Kavlicoglu, Barkan M. [7645-18]S4  
Kee, Seong-Hoon [7649-58]S11  
Keller, Karsten [7642-56]S9a  
Kelly, Gerard [7647-03]S2a  
Kemp, Trevor [7643-60]S7a  
Kerenyi, Kornel [7647-48]S6b  
Kerth, Lauren [7643-75]S9a  
Keyes, Jeremiah [7646-03]S2, [7646-66]SPS1  
Khalid, Nazuhusna [7646-51]S15  
Kher, Shubhalaxmi [7650-06]S1b  
**Khosla, Ajit** [7642-64]S9b, [7646-54]S15  
**Kida, Takuro** [7650-106]S11b  
**Kida, Yuichi** [7650-106]S11b  
Kiil, Hans-Erik 7642 S7a SessChr, [7642-66]S10a, [7642-110]SPS1  
Kim, Baek-Chul [7642-93]S12b  
Kim, Bongjun [7644-33]S6  
**Kim, Byeongil** [7645-29]S6  
Kim, Byungsoo [7647-162]SPS1, [7648-45]SPS1  
Kim, Chul-Jin [7642-45]S8a, [7642-86]S12a

Kim, Chun-Gon [7647-121]S13c  
Kim, Duk Sang [7642-12]S4, [7642-20]S6, [7642-94]S12b  
Kim, Eun Jin [7650-24]S3a, [7650-98]S11a  
Kim, Gap-Yong [7645-25]S6  
Kim, Gi-Woo [7643-70]S8b  
Kim, Heung Soo [7646-08]S5  
Kim, Hyun-Jung [7646-26]S9  
Kim, In-ho [7647-172]S15b  
Kim, Jae Eun [7643-23]S3a  
Kim, Jae Hong [7649-76]S11  
Kim, Jae Young [7642-103]SPS1  
Kim, Jaehwan 7642 ProgComm, 7644 S10 SessChr, [7644-64]S13, 7646 CoChr, [7646-04]S2, [7646-11]S5, [7646-27]S9, [7646-31]S10, [7646-33]S10, [7646-44]S13, [7646-52]S15  
Kim, Jang Hyun [7642-86]S12a  
Kim, Jeong-Tae 7647 S2a SessChr, 7647 S8a SessChr, 7647 ProgComm, [7647-53]S7a, [7647-108]S12c  
Kim, Jin Ho [7646-20]S7  
Kim, Jinwook [7647-162]SPS1  
Kim, Joo-Hyung [7644-64]S13, [7646-11]S5, [7646-33]S10  
Kim, Jungyun [7646-08]S5  
Kim, Junhee [7650-28]S3b  
Kim, Jun-Sik [7650-108]S12  
Kim, Ki Soo 7647 S11a SessChr  
Kim, Ki Soo [7647-88]S11a, 7647 ProgComm  
**Kim, Kwang J.** 7642 ProgComm, 7642 S9b SessChr, 7642 S9a SessChr, [7642-27]S7a, [7642-27]S10b, [7642-112]SPS1, [7644-65]S13  
Kim, Min Koo [7650-24]S3a, [7650-98]S11a  
Kim, Robert [7647-146]S15b  
Kim, Sang-Mun [7642-70]S10b  
Kim, Seon Ho [7647-149]S15c  
Kim, Seon Jeong [7642-60]S9b  
Kim, Seung Bum [7648-33]S8  
Kim, Seung Jo 7643 ProgComm  
Kim, Yoon Young [7643-23]S3a  
Kim, Young Hee [7642-103]SPS1  
Kim, Young Min [7646-16]S7  
King, Glen C. [7646-10]S5, [7646-26]S9  
Kipke, Daryl R. [7642-62]S9b  
Kipple, Allison [7643-129]S4b  
Kirchner, William [7650-74]S8b  
Kiremidjian, Garo K. 7649 ProgComm  
Klar, Assaf 7647 S11a SessChr, [7647-90]S11a  
Klein, Marcus [7648-36]S9  
Knecht, Martin [7647-193]S5b  
Knight, Christopher G. [7643-51]S6  
**Knopf, George K.** [7646-34]S11, [7646-37]S11

# Index of Authors, Chairs, and Committee Members

Ko, Jan-Ming 7647 ProgComm  
Kobayashi, Makiko [7648-35]S9  
Koda, Tomonori [7644-51]S10  
Koehler, Bernd [7650-129]SPS1  
**Koenen, Jan** [7647-63]S7b  
Kofod, Guggi 7642 S6 SessChr, [7642-16]S5, [7642-85]S12a, [7642-106]SPS1, [7642-107]SPS1  
Koh, Jung-Hyuk [7646-11]S5  
Koh, YeonWan 7648 ProgComm  
Köhler, Bernd [7648-34]S9  
Kolaric, Ivica [7642-44]S8a  
Koledintseva, Marina [7650-18]S2b  
Kollosche, Matthias [7642-16]S5, [7642-85]S12a, [7642-106]SPS1, [7642-107]SPS1  
Komurasaki, Kimiya 7646 ProgComm, [7646-25]S9  
Konak, Michael J. [7647-147]S15b  
Konda, Rajini B. [7646-12]S5  
Kong, Kyoungchul [7647-20]S3b  
Kong, Na [7650-34]S4a  
Kong, Xianghao [7644-72]S14  
Kontsos, Antonios [7644-02]S1  
Koo, Chong Min [7642-98]SPS1  
Koo, Ja Choon [7642-12]S4, [7642-20]S6, [7642-40]S, [7642-93]S12b, [7642-94]S12b  
Koo, Jeong-Hoi 7643 ProgComm  
Korak, Johannes [7647-25]S3b, [7650-03]S1a  
Kordatos, Evangelos Z. [7649-45]S8, [7649-61]S11  
Korde, Umesh A. [7643-01]S1a, [7650-79]S9a  
Kornbluh, Roy D. 7642 ProgComm, 7642 S10a SessChr  
Korsunsky, Alexander M. [7644-09]S3  
Koshioka, Yasuhiro [7647-11]S2b, [7647-75]S9b  
Kosidlo, Urszula [7642-44]S8a  
Kostson, Erik [7647-12]S2b  
Kosut, Robert L. [7649-21]S4  
Kovacs, Gabor K. 7642 ProgComm, 7642 S5 SessChr, [7642-18]S5, [7642-57]S9a, [7642-72]S11a  
Kovvali, Narayan V. [7649-38]S7, [7650-99]S11a  
Kozlov, Mikhail E. [7642-03]S1  
Kpotufe, Samory [7647-43]S6a  
**Kral, Zachary T.** [7650-75]S8b  
Kranz, Burkhard [7644-77]SPS1  
**Krishnaswamy, Sridhar** 7648 S2 SessChr, [7648-01]S1, 7650 S7b SessChr, 7650 S12 SessChr, 7650 ProgComm, [7650-60]S7a, [7650-95]S11a  
**Krohn, David A.** 7648 ProgComm  
Krommer, Michael [7647-96]S11b

Kröplin, Bernd H. [7642-56]S9a  
Krueger, Markus [7647-103]S12a  
Kruger, Silvio 7648 ProgComm, [7648-35]S9  
Krupa, Igor [7642-48]S8b  
Kruschwitz, Sabine [7649-49]S10  
**Kruse, Walter A.** [7650-41]S5a, [7650-53]S6b  
Kruusamäe, Karl [7642-28]S7a  
Kruusmaa, Maarja 7642 ProgComm, [7642-46]S8b  
Krys, Dennis [7649-57]S11  
Kube, Chris [7650-72]S8a  
**Kudva, Jayanth N.** 7645 ProgComm  
Kujawski, Mark P. [7642-24]S6  
Kukhalashvili, Davit [7650-55]S6b  
Kulinsky, Lawrence [7642-116]SPS1, [7647-87]S10b  
Kumar, Amit [7644-99]S  
Kumar, Amrita 7645 ProgComm, 7649 ProgComm, 7649 S1 SessChr, 7649 S2 SessChr  
Kumar, Anand [7648-13]S3  
Kumar, Ashok [7649-41]S7  
Kumar, H. [7647-84]S10b  
Kumar, Jayanth [7647-84]S10b  
Kumar, Parikshith K. [7644-26]S5  
Kumar, Prashanth S. [7646-32]S10, [7646-55]S15  
Kume, Masami [7647-75]S9b  
Kuna, Meinhard [7644-85]SPS1, [7647-76]S9b  
Kunchornsup, Wissawin [7642-65]S9b  
Kunchum, Shilpa [7648-18]S5  
**Kundu, Tribikram** 7650 Chr, 7650 S1a SessChr, [7650-10]S2a, [7650-50]S6a, [7650-85]S10a  
Kunikata, Jun [7643-95]S10a, [7644-78]SPS1  
Kunzmann, Jan [7643-43]S5  
Kushwaha, Pallavi [7644-98]SPS1  
Kwak, Hyo-Kyoung [7649-76]S11  
Kwon, Hyeokjun [7646-29]S9, [7646-30]S9  
Kwon, Hyeoksang [7647-162]SPS1  
Kwon, Il-bum [7647-27]S4a

## L

La Saponara, Valeria [7649-13]S3  
**Lagoudas, Dimitris C.** [7642-53]S9a, 7644 S5 SessChr, 7644 ProgComm, [7644-22]S5, [7644-26]S5, [7644-34]S7, [7644-36]S7  
Lajnef, Nizar [7647-148]S15b  
Lakhani, Archana [7644-98]SPS1  
Lallart, Mickael [7649-24]S5  
Lamon, Deben [7648-24]S6  
Lan, Chengming [7649-09]S2

Lan, Chunguang [7648-29]S7  
**Lan, Xin** [7645-16]S3, [7645-39]SPS1  
**Lan, Xinwei** [7647-30]S4b  
Landis, Chad M. 7644 ProgComm, 7644 S1 SessChr, [7644-02]S1, [7644-03]S1  
Lane, Steven A. [7645-30]S7  
Langenberg, Karl J. [7649-56]S11  
Langlois Demers, Dominique [7650-40]S5a  
Lanza di Scalea, Francesco 7647 ProgComm, [7647-62]S7b, 7650 ProgComm, 7650 S8a SessChr, 7650 S5a SessChr, 7650 S3a SessChr, [7650-05]S1b, [7650-71]S8a  
Lassen, Benny [7642-52]S9a, [7642-83]S12a, [7642-96]SPS1  
Lau, Gih-Keong [7642-38]S7b, [7643-61]S7b  
Law, Suiseong [7650-83]S9b  
Le, Chan H. [7643-63]S7b  
Leang, Kam K. [7642-70]S10b, 7644 ProgComm, 7644 S4 SessChr  
Lebaillif, Matthieu [7646-50]S14  
LeBlanc, Bruce [7650-65]S7b  
Lecko, David A. [7647-04]S2a  
Lee, Chang Kee [7642-60]S9b  
Lee, Chin Hyung [7650-123]SPS1  
Lee, Gi-Bbeum [7642-103]SPS1  
Lee, Haeng-Ki 7647 S9a SessChr, [7647-73]S9a  
Lee, Heung-Shik [7644-31]S6, [7644-33]S6  
Lee, Ho Cheol [7646-08]S5  
Lee, Hun-Keel [7646-63]SPS1  
Lee, Hyeonseok [7647-27]S4a  
Lee, Jong-Jae [7647-126]S14a  
Lee, Juwon [7650-97]S11a  
Lee, Kok-Meng [7647-81]S10a  
Lee, Kunik 7646 ProgComm, [7646-05]S3, [7646-10]S5, [7646-26]S9, [7646-36]S11  
Lee, Samuel C. [7646-21]S8, [7646-23]S8, [7646-24]S8  
Lee, Sang Jun [7650-19]S3a, [7650-21]S3a  
Lee, Seungmok [7650-67]S7b  
Lee, Soon-Gie [7648-18]S5  
Lee, Uhn 7646 ProgComm  
Lee, Young Kwan [7642-12]S4, [7642-40]S, [7642-93]S12b, [7642-94]S12b, [7642-20]S6  
Lei, Chihou 7644 S5 SessChr, [7644-25]S5  
Lei, Ying [7647-166]SPS1, [7648-48]SPS1  
**Leng, Jinsong** 7642 S1 SessChr, 7642 CoChr, [7642-25]S6, [7642-51]S8b, [7642-78]S11b, [7642-119]SPS1,

[7643-15]S2b, [7644-16]SPS1, [7644-53]S10, [7645-16]S3, [7645-36]S7, [7645-39]SPS1, [7647-86]S10b, 7648 ProgComm, [7648-09]S2  
Leo, Donald J. SympChair, 7642 S7b SessChr, [7642-02]S1, [7643-72]S8b, [7643-73]S8b, 7644 ProgComm, 7644 S9 SessChr, [7644-66]S13  
Leterrier, Yves [7642-19]S5  
Levard, Thomas [7642-06]S2  
Levi, Daniel S. [7650-100]S11b  
Lewandowski, Daniel [7644-29]S6, [7644-58]S11, [7649-69]SPS1  
Lewis, Nicole [7643-124]SPS1  
Ley, Obdulia [7649-43]S8  
Leznoff, D. B. [7646-54]S15  
Li, Bo [7642-35]S7b  
Li, Dongsheng [7647-119]S13c, [7649-63]S6, [7650-76]S8b  
Li, Holden K. H. [7643-61]S7b  
Li, Hong-Nan [7643-14]S2b, [7643-103]SPS1, [7643-120]SPS1  
Li, Hui [7642-50]S8b, [7649-07]S2, [7649-09]S2, [7649-68]SPS1, [7649-71]SPS1, [7650-07]S1b, [7650-127]SPS1, [7650-128]SPS1  
Li, Irene [7650-35]S4a  
Li, Jianguy 7644 CoChr, 7644 S3 SessChr, 7644 S14 SessChr, [7644-13]S3, [7644-25]S5, [7644-38]S8, [7644-42]S8, [7644-63]S13  
Li, Kwong-Chi [7642-77]S11b  
Li, Liangjun [7644-25]S5, [7644-42]S8  
Li, Peng [7647-41]S6a  
Li, Qun [7644-85]SPS1  
Li, Rui [7647-09]S2b  
Li, Sheng [7647-77]S9b, [7650-29]S3b  
Li, Shengli [7649-75]SPS1  
Li, Suyi [7643-70]S8b  
Li, Victor C. [7649-19]S4  
Li, Wenyuan [7644-03]S1  
Li, Xinxin 7646 ProgComm  
Li, Xiu-Ling [7643-120]SPS1  
Li, Xu [7647-169]SPS1  
Li, Yuanbing [7649-64]SPS1  
Li, Yuhang [7643-54]S7a  
Li, Yuhe [7643-127]SPS1  
Li, Zhen [7647-66]S8a  
Liang, Jun [7644-71]S14  
Liang, Junrui [7643-19]S3a  
Liao, Wei-Hsin 7643 ProgComm, [7643-19]S3a, [7643-37]S4b  
**Liea, Bogdan** [7647-14]S3a  
Lih, Shyh-Shiuh [7647-48]S6b  
Lim, Jee Young [7642-103]SPS1  
Lim, Kwon Taek [7646-20]S7  
Lim, Leong Chew [7644-14]S3  
Lim, Yee Yan [7647-74]S9b  
**Lin, Bin** [7647-97]S11b

**Lin, Chun-Hung** [7647-106]S12b  
Lin, Genyao [7642-76]S11b  
Lin, Jia-Chuan [7646-65]SPS1  
Lin, Jun-Hong [7642-42]S8a, [7642-43]S8a  
**Lin, Liu** [7650-38]S4b  
Lin, Minren [7642-08]S2, [7642-100]SPS1  
Lin, Yingzi [7647-67]S8b  
Lin, Yirong [7643-112]SPS1, [7644-11]S3, [7644-48]S10  
Lishchynska, Maryna [7648-25]S6  
Lissenden, Cliff J. 7647 S9b SessChr, [7647-77]S9b, [7650-29]S3b  
Liu, Ailin [7643-65]S8a  
Liu, Gang 7647 S12c SessChr, [7647-107]S12c  
**Liu, Haijun** [7647-24]S3b  
Liu, Jian [7647-31]S4b  
Liu, Jian [7650-04]S1a  
Liu, Jianfeng [7647-122]S14a  
Liu, Libo [7645-36]S7  
**Liu, Liwu** [7642-51]S8b, [7642-119]SPS1  
Liu, Ning [7647-99]S11b  
Liu, Ruijin [7649-30]S6  
Liu, Sheng [7642-08]S2, [7642-42]S8a, [7642-43]S8a, [7642-100]SPS1  
Liu, Shih-Chi 7647 ProgComm  
Liu, Sike [7644-08]S2, [7644-61]S12  
**Liu, Wanqiu** [7649-52]S10  
Liu, Wenjia [7648-41]S10  
Liu, Wenjuan [7642-43]S8a  
Liu, Wen-Liang 7642 ProgComm  
Liu, Yang [7642-42]S8a, [7642-43]S8a, [7642-100]SPS1  
Liu, Yang [7646-28]S9  
Liu, Yanju [7642-25]S6, [7642-51]S8b, [7642-78]S11b, [7642-119]SPS1, [7643-15]S2b, [7644-16]SPS1, [7644-53]S10, [7645-16]S3, [7645-36]S7, [7645-39]SPS1, [7647-86]S10b, [7648-09]S2  
Liu, Yanming [7645-18]S4  
Liu, Yi [7643-117]SPS1  
**Liu, Yingtao** [7644-83]SPS1  
**Liu, Yu** [7647-68]S8b  
Liu, Yuanming [7644-63]S13  
**Liu, Zheng** [7649-57]S11, [7649-70]SPS1  
Logan, Kathryn V. [7642-23]S6  
**Loh, Chin-Hsiung** 7647 ProgComm, [7647-15]S3a, [7647-64]S8a, [7647-153]S15c  
**Loh, Kenneth J.** 7647 S3a SessChr, [7647-14]S3a, [7649-13]S3  
**Lopez, Israel** [7647-60]S7b  
Lorenzen, Kim P. [7642-21]S6  
**Lotz, Peter** [7642-10]S4, [7642-37]S7b,



# Index of Authors, Chairs, and Committee Members

**Bold** = SPIE Member

[7642-104]SPS1  
Loveday, Philip W. [7650-73]S8a  
Lowdermilk, David S. [7649-04]S1  
Löwe, Christiane I. E. [7642-19]S5  
Lowenhar, Edward P. [7649-24]S5  
Loyola, Bryan [7649-13]S3  
**Lu, Haibao** [7642-49]S8b  
Lu, Kung-Chun [7647-15]S3a  
Lu, Qi [7644-71]S14  
Lu, Y. Charles [7644-15]S4  
**Lu, Yi** [7643-46]S5  
Lucero, Alfredo M. [7644-92]SPS1,  
[7647-93]S11a  
Lucking Bigué, Jean-Philippe [7642-26]  
S6  
**Luntz, Jonathan E.** [7643-16]S2b, 7645  
S6 SessChr, [7645-23]S5  
Lutz, Thomas J. [7647-07]S2a  
Lv, Chengang [7650-124]SPS1  
**Lynch, Christopher S.** 7644  
ProgComm, 7644 S12 SessChr,  
[7644-04]S1, [7644-08]S2, [7644-61]  
S12  
Lynch, Jerome P. 7647 CoChr, 7647  
S1 SessChr, 7647 S6a SessChr,  
7647 S10a SessChr, [7647-18]S3a,  
[7647-82]S10a, [7647-126]S14a, 7649  
ProgComm, 7649 S10 SessChr, 7649  
S11 SessChr, [7649-18]S4, [7649-19]  
S4, [7649-20]S4, 7650 ProgComm,  
7650 S1b SessChr, [7650-28]S3b,  
[7649-21]S4

## M

Ma, Kougen [7643-59]S7a  
Ma, Ou 7645 ProgComm  
Ma, Pyung Sik [7643-23]S3a  
Maas, Jürgen [7642-120]S7b  
Mabe, James H. [7645-34]S7  
Mabry, Nehemiah J. [7648-05]S2  
Mace, Brian [7642-97]SPS1  
Mackenzie, Liam [7650-46]S5b  
Madden, John D. W. SC634 Inst, 7642  
S6 SessChr, 7642 ProgComm, [7642-  
03]S1, [7642-41]S8a  
Maddux, Michael [7645-05]S2, [7645-  
09]S2  
Madou, Marc J. [7642-116]SPS1, [7647-  
87]S10b  
Mäeorg, Uno [7642-46]S8b  
Maeva, Elena [7650-101]S11b  
Magda, Jules J. [7642-76]S11b  
Mahadeva, Suresha K. [7646-33]S10  
Mahardika, Nanang [7643-107]S7b  
Mahin, Stephen A. 7647 ProgComm  
**Mahmoodi, S. Nima** [7643-26]S3b  
Maitland, Duncan J. [7642-53]S9a  
Majcherek, Soeren [7650-61]S7a

Makihata, Noritoshi [7647-42]S6a  
**Mal, Ajit K.** [7650-89]S10a  
Malinowski, Pawel [7650-118]S14  
Mancini, Derrick C. [7644-44]S9  
Mandepudi, Shiva [7644-23]S5  
Mandic, Vuk [7647-157]SPS1  
Mankame, Nilesh D. [7645-24]S5  
Manohar, Arun [7647-62]S7b  
Manoharan, N. 7646 ProgComm  
Månson, Jan-Anders E. [7642-19]S5,  
[7644-20]S5  
Manzo, Justin E. [7645-07]S2  
Mao, Chien-Hong [7647-64]S8a  
Mao, Zhu [7650-14]S2b  
Marotta, Steve [7650-44]S5b  
Marschner, Uwe [7644-32]S6, [7644-97]  
SPS1, 7647 S11b SessChr, [7647-40]  
S5b, [7647-99]S11b, [7647-100]S11b  
Martin, Richard E. 7649 ProgComm  
Martinez, Marcias [7650-57]S6b  
Martínez Manuel, Rodolfo [7648-04]S1  
Marulanda, J. [7647-29]S15b  
Marzani, Alessandro [7649-40]S7,  
[7650-13]S2a, [7650-103]S11b  
Mason, Alex A. [7648-20]S5, [7648-43]  
SPS1  
Masri, Sami F. 7647 ProgComm  
**Massad, Jordan E.** [7644-84]SPS1  
Masserey, Bernard [7647-12]S2b  
**Masson, Patrice** [7650-40]S5a, [7650-  
86]S10a  
Masuda, Arata [7650-112]S13  
Matikas, Theodore E. 7647 ProgComm,  
7648 CoChr, 7648 S7 SessChr, 7649  
ProgComm, [7649-34]S6, [7649-35]  
S6, [7649-45]S8, [7649-61]S11,  
[7650-104]S11b  
Matsuzaki, Yuji 7643 ProgComm  
Matta, Fabio [7649-24]S5, [7649-25]S5  
Matthews, Bryan [7650-45]S5b  
Matysek, Marc [7642-10]S4, [7642-37]  
S7b, [7642-104]SPS1  
Mauss, Fred [7650-44]S5b  
Mavroidis, Constantinos [7642-81]S12a,  
7647 S13b SessChr, [7647-114]S13b  
**May, Stephen F.** [7644-06]S2  
Mayer, Klaus [7649-56]S11  
Mazza, Edoardo [7642-57]S9a  
McCarthy, Denis N. [7642-16]S5, [7642-  
85]S12a  
McClung, Amber [7644-68]S14  
McDonald, Brian A. [7646-01]S1  
McFadden, Cassandra [7647-102]S12a  
McFerran, Jace [7645-13]S3  
McGarry, Scott A. [7643-09]S2a  
McGovern, Megan [7647-152]S15c  
**McKay, Thomas G.** [7642-39]S7b,  
[7642-67]S10a, [7642-75]S11a  
McKnight, Geoffrey P. 7645 ProgComm,

[7645-20]S5  
McLaskey, Gregory [7647-47]S6b  
McMickell, M. Brett 7645 Chr, 7645 S7  
SessChr, [7645-31]S7  
Mech, Rafal [7644-29]S6, [7644-58]S11  
Mechitov, Kirill [7647-06]S2a, [7647-78]  
S10a  
Mehdizadeh, Mohammad [7643-79]S9a  
Meilland, Philip [7645-40]SPS1  
Meixler, Lewis D. [7642-32]S7a  
Melhuish, Chris [7642-67]S10a  
Mellor, Phil H. [7645-03]S1, [7643-30]  
S4a  
Melnik, Roderick V. N. [7644-18]S5  
Melz, Tobias [7642-34]S7b  
Menacher, Markus [7643-110]SPS1  
**Mendez, Alexis** 7648 ProgComm  
Meng, Yanyu [7647-131]S14c  
Meola, Carosena [7649-15]S3  
Merkel, Ulrich [7647-99]S11b  
Metrovich, Brian [7649-25]S5  
Metta, Giorgio [7642-82]S12a  
**Meyendorf, Norbert G.** SympChair,  
7648 ProgComm, 7648 S8 SessChr,  
[7648-34]S9, [7650-129]SPS1  
Meyer, Jörg-Uwe [7642-99]SPS1  
Michaels, Jennifer E. 7650 ProgComm,  
7650 S2a SessChr, 7650 S10a  
SessChr, 7650 S5b SessChr, 7650  
S11a SessChr, [7650-19]S3a, [7650-  
21]S3a  
Michaels, Thomas E. [7650-19]S3a,  
[7650-21]S3a  
Michalowski, Radoslaw L. [7650-28]S3b  
Michaud, Véronique J. [7644-20]S5  
Micheau, Philippe [7650-40]S5a  
Michel, Bernd 7648 ProgComm  
Michel, Silvain A. [7642-18]S5, [7642-72]  
S11a  
Mielke, Matthias [7646-48]S14  
Miller, David [7646-54]S15  
Miller, Jeff W. 7648 ProgComm  
Miller, Nick J. [7647-23]S3b  
Miller, W. [7643-113]SPS1  
Min, James B. [7643-27]S3b  
Min, Jiyoung [7647-80]S10a  
Min, Zhihua [7650-91]S10b, [7650-92]  
S10b, [7650-94]S10b  
Minesugi, Kenji [7643-57]S7a  
**Mirfakhrai, Tissaphern** [7642-03]S1,  
[7642-41]S8a  
Miridonov, Serguei V. [7648-04]S1  
Misawa, Eduardo 7647 ProgComm  
Missinne, Jeroen [7648-24]S6  
**Mita, Akira** 7647 ProgComm  
Mitchell, Kyle K. [7650-68]S7b  
**Miyasaka, Chiaki** [7650-101]S11b  
Miyata, Ken [7644-51]S10  
Mlakar, Paul 7649 ProgComm

Mo, Changki [7645-06]S2  
Mo, Y. L. [7650-31]S3b  
Mohamed, Ramy [7650-86]S10a  
Mohammad, Irshad [7647-144]S15b  
Mohan, Seshadri X. 7646 ProgComm,  
[7646-07]S4  
Mohanchandra, Kotekar P. [7650-100]  
S11b  
Mohanty, Subhashish [7649-10]S3  
Molberg, Martin [7642-19]S5  
Mollov, Todor [7647-43]S6a  
Monroe, James [7644-26]S5  
Montazami, Reza [7642-100]SPS1  
Moon, Franklin L. [7649-04]S1  
Moon, Hyungpil [7642-40]S, [7642-93]  
S12b  
Moored, Keith W. [7643-60]S7a  
Moradi, Ali [7642-114]SPS1  
Moreau, Ludovic [7650-52]S6a, [7650-  
115]S14  
Morgan, Emam [7644-90]SPS1  
Mori, Kotaro [7644-73]SPS1  
Moritz, Tassilo [7643-111]SPS1  
Moro, Erik A. [7647-94]S11a, [7648-17]  
S5  
Mosavi, Amir A. [7650-93]S10b  
Moss, Scott D. [7643-47]S5, [7647-129]  
S14b, [7647-147]S15b  
Mossi, Karla M. 7644 S9 SessChr, 7644  
ProgComm, [7644-78]SPS1  
Motta, Alessandro [7650-120]SPS1  
Mottola, Leonardo [7647-19]S3a  
**Moura, José M. F.** [7647-134]S14c  
Mozeika, Annan [7642-74]S11a  
Mrad, Nezhir [7648-19]S5  
Mudivarthi, Chaitanya [7647-40]S5b,  
[7647-100]S11b  
Mueller, Ingolf [7650-47]S5b  
Mueller, Uwe C. [7648-06]S2  
Mufti, Aftab A. 7649 ProgComm  
Mukai, Toshiharu [7642-73]S11a, [7644-  
17]S4  
**Mukherjee, Sujoy** [7643-82]S9b  
Mukhopadhyay, Gautam [7646-46]S13  
Mukhopadhyay, Pragati [7646-46]S13  
**Mulgaonkar, Amit P.** [7642-89]S12b  
Munir, A. [7647-192]S4a  
Murasawa, Go [7644-51]S10  
Murauski, Anatoli [7647-49]S6b  
Murphy, Amy L. [7647-19]S3a  
**Murray, Richard T.** [7643-11]S2a,  
[7643-12]S2a, [7645-01]S1  
Myung, Hyun [7650-67]S7b

## N

Na, Suok-Min [7647-32]S4b  
Na, Won-Bae 7650 S1b SessChr, 7650

S13 SessChr, 7650 ProgComm,  
[7650-97]S11a  
Nadella, Kalyan S. [7650-87]S10a  
Nadukuru, Srinivasa [7650-28]S3b  
Nagai, Kanehiro [7647-11]S2b  
Nagarajaiah, Satish 7647 ProgComm  
Nagayama, Tomonori [7647-06]S2a,  
[7647-42]S6a  
Naghdabadi, Reza [7644-74]SPS1  
Nagode, Clément [7643-41]S4b  
Naguib, Hani E. [7642-90]S12b, [7644-  
45]S9  
Nagy, Peter B. [7649-65]SPS1  
Nah, Changwoon [7642-103]SPS1  
**Nakamachi, Eiji** [7644-12]S3  
Nakano, Kimihiko [7643-109]SPS1  
Nakasone, Paulo H. [7643-58]S7a  
Nam, Jae-Do 7642 ProgComm, [7642-  
12]S4, [7642-20]S6, [7642-40]S,  
[7642-93]S12b, [7642-94]S12b  
Nam, Si-Byung [7648-18]S5  
Nanni, Antonio [7649-24]S5  
Narita, Fumio [7644-73]SPS1  
Natesan, Natesan [7644-87]SPS1  
Natterer, Franz Josef [7643-81]S9b  
Nayak, Jyoti [7646-04]S2, [7646-44]S13  
Neikirk, Dean P. [7647-150]S15c  
Nelson, Carl A. [7650-32]S3b  
Nemat-Nasser, Sia [7644-59]S12, 7642  
ProgComm, [7644-47]S9, [7644-60]  
S12, [7644-69]S14, 7647 ProgComm,  
[7647-146]S15b, [7650-09]S2a  
Neubauer, Marcus [7643-02]S1a  
Neugebauer, Reimund [7645-22]S5  
Ng, Kenny [7644-57]S11  
**Nguyen, An-Dien** [7649-03]S1  
**Nguyen, Andrew** [7650-121]SPS1,  
[7650-122]SPS1  
Nguyen, Cam [7649-46]S9, [7649-47]S9  
Nguyen, Hai-Long [7643-12]S2a, [7645-  
01]S1  
Nguyen, Huu Chuc [7642-12]S4, [7642-  
20]S6, [7642-94]S12b  
Nguyen, Huu Lam Vuong [7642-12]S4,  
[7642-20]S6, [7642-93]S12b, [7642-  
94]S12b  
Nguyen, Khac-Duy [7647-108]S12c  
Nguyen, The M. [7643-42]S4b  
Ngwa, Wilfred [7650-80]S9a  
Ni, Xianglei [7647-28]S4a  
**Nielsen, Christian** [7644-47]S9  
Niemi, Eugene [7643-115]S7a  
**Niezrecki, Christopher** [7643-115]S7a,  
[7650-65]S7b  
Niklaus, Muhamed [7642-14]S4, [7642-  
92]S12b  
**Nikles, Marc** 7648 ProgComm  
Ning, Shurong [7645-137]S

# Index of Authors, Chairs, and Committee Members

Nishigaki, Tsutomu [7643-28]S3b  
Nishimura, Yoshihiro [7647-163]SPS1  
Nishioka, Akihiro [7644-51]S10  
Niu, Xiaofan [7642-91]S12b  
Noebe, Ronald D. [7644-19]S5, [7644-26]S5  
Nolan, James [7644-22]S5  
Norman, Patrick [7647-129]S14b  
Nucera, Claudio [7650-05]S1b

## O

Oates, William S. [7643-67]S8a, 7644 S2 SessChr, [7644-05]S2  
Oberdier, Larry M. [7649-20]S4  
**O'Brien, Benjamin M.** 7642 S12a SessChr, [7642-39]S7b, [7642-67]S10a, [7642-69]S10b, [7642-75]S11a  
O'Brien, Daniel J. [7643-78]S9a  
O'Connor, Sean [7650-28]S3b  
Oda, Akinori [7646-25]S9  
O'Donoghue, Nicholas A. [7647-134]S14c  
Officer, David L. [7642-109]SPS1  
Oh, Sechang [7646-16]S7, [7646-29]S9, [7646-30]S9  
O'Handley, Robert C. 7644 ProgComm  
Ohayon, Roger 7643 ProgComm, [7643-04]S1a  
Ohuri, Masanori [7643-109]SPS1  
Okoli, Okenwa O. [7649-05]S2  
Okuzaki, Hidenori [7642-102]SPS1  
Oliver, Joan [7647-95]S11b  
Olm, Claudio [7647-41]S6a  
Olson, Steven E. [7650-01]S1a, [7650-20]S3a, [7650-23]S3a  
Olsson, Richard T. [7644-50]S10  
Olugboji, Oluwafemi A. [7650-33]S3b  
Omasťová, Mária [7642-48]S8b  
Omenzetter, Piotr [7647-171]SPS1  
Onoda, Junjiro [7643-57]S7a  
**Oppenheim, Irving J.** 7647 ProgComm, [7647-134]S14c, [7647-145]S15b, [7647-164]SPS1  
Opris, Dorina M. [7642-19]S5  
Orthner, Michael P. [7642-76]S11b  
Ortloff, Dirk [7646-48]S14  
Osmont, Daniel R. [7643-04]S1a  
Ostachowicz, Wiesław M. [7650-118]S14  
Ou, Ge [7647-72]S9a  
Ou, Jinping [7643-03]S1a, [7644-30]S6, [7644-62]S12, [7644-82]SPS1, 7647 ProgComm, [7647-34]S5a, [7647-36]S5a, [7647-138]S15a, [7647-154]S15c, [7647-165]SPS1, [7648-28]S7, [7648-29]S7, [7648-44]SPS1, [7649-07]S2, [7649-71]SPS1, [7649-75]

SPS1, [7650-127]SPS1  
Oubaek, Jakob [7642-84]S12a  
Ouellette, Scott A. [7645-02]S1  
**Ounaies, Zoubeida** 7644 Chr, 7644 S14 SessChr, [7644-49]S10  
Oza, Nikunj [7650-45]S5b  
**Ozbulut, Osman E.** [7643-05]S1b, [7643-87]S10a, [7647-139]S15a  
Ozdemir, Tayfun [7649-20]S4  
Ozdemir Ozgurmus, Ozge [7643-94]S10a  
Ozevin, Didem [7647-70]S9a, 7649 ProgComm, 7649 S7 SessChr, 7649 S6 SessChr, [7649-24]S5  
Ozsecen, Muzaffer Y. [7642-81]S12a, [7647-114]S13b

## P

Padhee, Srikant S. [7644-88]S11  
Pagdon, Kelsey [7642-32]S7a  
Pagel, Kenny [7645-22]S5  
**Pai, Perngjin F.** 7650 ProgComm, 7650 S9a SessChr, 7650 S4b SessChr, [7650-15]S2b, [7650-113]S13  
Paipetis, Alkis [7650-104]S11b, [7649-34]S6, [7649-35]S6, [7649-45]S8  
Pakzad, Shamim N. [7647-17]S3a, [7647-45]S6a  
Palmer, Stuart B. [7649-44]S8  
Palmre, Viljar [7642-46]S8b  
Pamukcu, Sibel [7647-169]SPS1  
Panajotov, Krassimir [7648-24]S6  
Panetta, Paul D. 7650 ProgComm, 7650 S9a SessChr, 7650 S12 SessChr, 7650 S10b SessChr  
Papandreou-Suppappola, Antonia [7649-38]S7, [7650-99]S11a  
Paris, Deborah [7650-120]SPS1  
Park, Cheol [7646-13]S5  
**Park, Chun Myung** [7648-02]S1, [7648-03]S1, [7648-40]S10  
Park, Gyuhae 7643 ProgComm, 7645 ProgComm, 7645 S1 SessChr, [7645-02]S1, [7645-04]S1, [7647-43]S6a, [7647-51]S7a, [7650-02]S1a, [7650-84]S9b  
Park, Hoon C. [7643-63]S7b, [7643-107]S7b  
Park, Hyun Woo [7650-24]S3a, [7650-98]S11a  
Park, Hyun-Chul [7646-63]SPS1  
Park, Hyun-Jun [7647-16]S3a, [7647-27]S4a  
**Park, Jae-Hyung** [7647-53]S7a, [7647-108]S12c  
Park, Jin-Bae [7642-86]S12a  
Park, Jong-Woong [7647-172]S15b  
Park, Joongsuk [7649-47]S9

Park, Jung-Kyu [7645-21]S5  
Park, Ki Tae [7650-123]SPS1  
Park, No-Cheol [7642-45]S8a  
**Park, Seunghoon** [7647-80]S10a, [7647-126]S14a  
Park, Yeonjoon 7646 ProgComm, [7646-10]S5, [7646-26]S9, [7646-36]S11  
Park, Young-Pil [7642-45]S8a  
Parvardeh, Hooman [7649-49]S10  
Paschew, Georgi [7642-13]S4, [7642-115]SPS1  
Paschos, Nikolaos K. [7650-104]S11b  
Pascoe, Benjamin [7643-16]S2b  
Pasupathy, Praveenkumar [7647-150]S15c  
Patoor, Etienne [7643-06]S1b, 7644 ProgComm  
**Pawar, Sachin S.** [7648-12]S3, [7649-42]S8  
Pearse, Justin [7642-24]S6  
Peel, Larry D. [7644-68]S14  
Pei, Jin-Song [7647-13]S3a  
**Pei, Qibing** SC634 Inst, 7642 S2 SessChr, 7642 ProgComm, [7642-09]S4, [7642-89]S12b, [7642-91]S12b  
Pell, Brendan [7645-28]S6  
Peng, Yucheng [7647-50]S6b  
Pepe, Giovanni P. [7649-15]S3  
Pereira, Carlos M. [7643-12]S2a, [7645-01]S1  
Perry, Daniel T. [7648-14]S4  
**Peters, Kara J.** SympChair, 7648 Chr, 7648 S3 SessChr, [7648-02]S1, [7648-03]S1, [7648-12]S3, [7648-23]S6, [7648-40]S10, [7649-42]S8  
Petersen, Eric A. [7650-79]S9a  
Petrock, Anne Marie [7648-21]S6  
Peza-Solis, Juan F. [7643-80]S9a  
Pfeifer, Günther [7644-32]S6, [7644-97]SPS1, [7647-40]S5b  
Phillips, David [7644-68]S14  
**Phillips, Robert** [7650-05]S1b, [7650-71]S8a  
Picco, Gian Pietro [7647-19]S3a  
Pierce, Stephen G. [7650-46]S5b  
Pietsch, U. [7650-63]S7a  
Pisani, David M. [7644-61]S12  
Placko, Dominique 7650 ProgComm  
Plante, Jean-Sébastien [7642-26]S6  
Platz, Roland [7647-63]S7b  
Plummer, Christopher J. G. [7642-19]S5  
Pluta, M. [7650-63]S7a  
Pobering, Sebastian [7643-110]SPS1  
Pommerenke, David [7650-18]S2b  
Poole, Alan [7642-21]S6  
Popp, Jens [7646-48]S14  
Potnis, Prashant [7644-09]S3  
Pour-Ghaz, Mohammed [7650-28]S3b  
Powlesland, Ian G. [7643-47]S5, [7647-

147]S15b  
Pozzi, Matteo [7647-19]S3a, [7647-89]S11a  
**Pradhan, Aswini K.** 7646 ProgComm, 7646 S5 SessChr, [7646-09]S5  
**Price, Aaron D.** [7642-90]S12b  
Priya, Shashank [7642-68]S10b, [7642-71]S11a, [7642-87]S12a, [7642-88]S12b, [7643-21]S3a, [7643-53]S6, [7644-79]SPS1  
Proctor, Cyrus [7644-84]SPS1  
Prokop, Joseph [7647-130]S14b  
Proulx, Sylvain [7642-26]S6  
Przygoda, Aleksander [7650-37]S4b  
Puckett, Anthony [7647-94]S11a, [7648-17]S5  
Pugal, David [7644-65]S13  
**Punning, Andres** [7642-28]S7a, [7642-46]S8b  
Puri, Shruti R. [7646-46]S13  
**Puzrin, Alexander M.** [7647-91]S11a, [7648-27]S7

## Q

Qi, Min [7644-30]S6  
Qian, Hui [7643-14]S2b  
Qian, Xin [7650-113]S13  
Qiao, Guofu [7647-52]S7a  
Qiao, Jing [7644-69]S14  
Qing, Xinlin P. [7647-37]S5b, [7649-29]S5, [7650-35]S4a, [7650-54]S6b, [7650-57]S6b  
Qiu, Jinhao [7643-104]SPS1, [7650-04]S1a  
**Qiu, Liang** [7643-78]S9a  
Quaegebeur, Nicolas [7650-40]S5a  
Quarry, Michael J. [7650-27]S3b  
Quek, Ser-Tong 7647 ProgComm  
Quinn, Dane [7643-33]S4a  
Quinn, William [7647-03]S2a  
Quiñones, Ivett [7646-57]SPS1

## R

Radhakrishnan, Subramaniam 7642 ProgComm  
Ragusca, Huelya [7642-16]S5, [7642-106]SPS1  
Rahn, Christopher D. [7642-06]S2  
Rai, Pratyush 7646 S14 SessChr, 7646 S15 SessChr, [7646-32]S10, [7646-40]S12, [7646-55]S15  
Raja, Pramod [7643-39]S4b  
Rajan, Siddharth [7643-68]S8a  
**Rajendra, Duwarahan** [7648-37]S9  
Raju, Sethuraman [7644-87]SPS1  
Rakow, Alex S. [7649-03]S1

Rambo-Roddenberry, Michelle [7643-101]S10b  
**Ramesh, Prashanth** [7643-68]S8a  
Ramirez Rochac, Juan F. [7647-149]S15c  
Randazzo, Marco [7642-82]S12a  
Rashwan, Ola [7644-37]S7  
Rasmussen, Lenore 7642 S10b SessChr, [7642-32]S7a  
Rastegar, Jahangir S. [7643-11]S2a, [7643-12]S2a, [7645-01]S1  
Rastgaar Aagaah, Mohammad 7643 ProgComm, [7643-76]S9a  
Ratcliffe, Colin P. [7647-129]S14b  
Rauscher, Michael D. 7645 S3 SessChr, [7645-13]S3  
Rawat, Rajeev [7644-98]SPS1  
Razzaghi Kashani, Mehdi [7642-114]SPS1, 7642 ProgComm, [7642-47]S8b  
Regelbrugge, Marc E. 7645 ProgComm  
Regez, Brad [7650-95]S11a  
**Reis, Henrique L.** 7647 S15c SessChr, [7647-57]S7a, [7647-152]S15c, 7650 ProgComm, 7650 S3b SessChr, 7650 S9b SessChr, 7650 S14 SessChr  
Ren, Haizhou [7647-170]SPS1  
Reynaerts, Dominiek F. [7648-24]S6  
Reynolds, Whitney D. [7650-12]S2a, [7650-77]S9a  
Rezaei, Davood [7649-60]S11  
Rice, Corey [7647-123]S14a  
Rice, Jennifer A. [7647-05]S2a, [7647-06]S2a, [7647-78]S10a  
Richards, Gregory [7644-84]SPS1  
Richards, W. Lance 7645 ProgComm, 7645 S7 SessChr  
Richeson, Matthew [7644-78]SPS1  
Richter, Andreas [7642-13]S4, [7642-115]SPS1  
Ricoeur, Andreas 7647 S9b SessChr, [7647-76]S9b  
Riddick, Jaret [7646-06]S4  
Rigberg, David A. [7650-100]S11b  
Rijias, Mohammed [7650-105]S11b  
Rios, Max A. [7643-88]S10a  
Risse, Sebastian [7642-16]S5  
Rittenschober, Thomas [7647-25]S3b, [7650-03]S1a  
Rizkalla, Sami H. [7650-93]S10b  
Rizzo, Piervincenzo [7647-28]S4a, [7647-71]S9a, [7649-40]S7, [7650-22]S3a  
Robertson, Lawrence M. [7645-30]S7  
Rodriguez Carmona, Karina [7644-92]SPS1, [7647-93]S11a  
Roh, Yongrae 7646 ProgComm, [7647-162]SPS1, [7648-45]SPS1  
Roig, J. [7642-48]S8b

# Index of Authors, Chairs, and Committee Members

**Bold** = SPIE Member

Röllig, Mike [7648-36]S9  
Romano, Rocco [7647-104]S12b, [7647-156]SPS1, [7647-161]SPS1, [7650-119]SPS1, [7650-120]SPS1  
Romero, Francisco [7649-49]S10  
Rosca, Ian [7649-15]S3  
Roscher, Hans-Juergen [7643-111]SPS1  
Rose, Joseph L. [7647-77]S9b, [7650-25]S3a, [7650-29]S3b  
**Rossiter, Jonathan M.** 7642  
ProgComm, 7642 S8a SessChr, [7642-22]S6, [7642-61]S9b, [7642-73]S11a, [7644-17]S4  
Roth, Donald J. [7648-05]S2  
Roths, Johannes [7648-06]S2  
Roy, Surajit [7650-47]S5b  
Roy Mahapatra, D. [7647-84]S10b  
**Ruffin, Paul B.** 7646 ProgComm, [7646-01]S1, [7646-16]S7  
Runge, Jean-Baptiste [7643-04]S1a  
Runyan, Noel H. 7642 S4 SessChr, [7642-05]S2  
Russell, Samuel S. [7648-05]S2  
Ruzzene, Massimo [7646-43]S13, [7650-13]S2a, [7650-19]S3a, [7650-49]S6a, [7650-51]S6a  
Ryaboy, Vyacheslav M. [7643-56]S7a

## S

Sadeghi, Hossein [7644-74]SPS1  
Sajedi, Allen [7649-52]S10  
Salamone, Salvatore [7650-05]S1b, [7650-71]S8a  
Salas, Ken I. [7650-87]S10a  
Sale, Michele [7649-40]S7  
Salvino, Liming W. [7647-51]S7a  
**Samiee, Ahsan** [7644-70]S14  
Sandini, Giulio [7642-82]S12a  
Sandoval, Samuel M. [7643-49]S6  
Sano, Shigenori [7642-63]S9b  
Santiago-Rojas, Emiliano [7650-44]S5b  
Santoni-Bottai, Giola [7647-98]S11b  
Sapaty, Peter S. [7648-42]S10  
Sapouridis, Nikolaos [7649-35]S6  
Sarban, Rahimullah [7642-83]S12a, [7642-84]S12a, [7642-97]SPS1, [7642-21]S6  
Sareh, Sina [7642-61]S9b  
Sariqul-Klijn, Nesrin 7647 S7b SessChr, [7647-60]S7b  
**Sarles, Stephen A.** [7643-73]S8b  
Sasamoto, Akira [7647-163]SPS1  
Sater, Janet M. 7645 ProgComm  
Sathyan, Jithesh [7650-105]S11b  
Sato, Hiroshi [7643-95]S10a  
Sato, Susumu [7642-63]S9b  
Sawahara, Hironori [7646-25]S9

Scarpa, Fabrizio L. [7643-113]SPS1, [7646-43]S13  
Schaaf, Kristin L. [7647-146]S15b  
Schapeler, Dirk [7642-120]S7b  
Schlaak, Helmut F. 7642 S7b SessChr, [7642-10]S4, [7642-37]S7b, [7642-99]SPS1, [7642-104]SPS1  
Schlichting, Alexander D. [7645-02]S1  
Schlosser, Michael [7642-104]SPS1  
Schmidt, Arne [7642-57]S9a  
Schmidt, Bertram [7650-61]S7a  
Schmidt, Daniel P. [7648-21]S6  
Schmidt, Thilo [7646-48]S14  
Schmitzer, Heidrun [7646-38]S11  
Schönecker, Andreas J. [7643-43]S5  
Schramm, David [7642-32]S7a  
Schryvers, Dominique [7644-24]S5  
Schubert, Frank [7649-32]S6, [7650-129]SPS1  
Schubert, Lars [7649-32]S6  
Schuil, Crystal J. [7644-60]S12  
Schultz, Stephen M. 7648 S6 SessChr, [7648-03]S1, [7648-14]S4, [7648-02]S1  
Schulz, Volker [7642-76]S11b  
Schulze, Martin H. [7648-36]S9, [7649-14]S3  
Schutte, Jaco [7649-43]S8  
Schwarzendahl, Sebastian M. [7643-02]S1a  
Schwesinger, Norbert 7643 ProgComm, [7643-110]SPS1  
Scott, Daniel [7642-116]SPS1  
Scott, James [7647-116]S13b  
Scruggs, Jeffrey T. [7643-35]S4a  
Seaver, Mark E. [7649-02]S1  
Sederat, Hassan [7649-21]S4  
Sedigh, Sahra [7647-04]S2a  
Seelecke, Stefan S. [7643-18]S2b, [7643-123]SPS1, [7643-124]SPS1, 7644 S13 SessChr, 7644 ProgComm, [7644-67]S13, [7644-95]SPS1  
Seffner, Lutz [7643-111]SPS1  
Sekine, Kazushi [7647-75]S9b  
**Selfridge, Richard H.** 7648 ProgComm, [7648-02]S1, [7648-03]S1, [7648-14]S4  
Sellinger, A. T. [7644-54]S10  
Senalik, Adam [7647-57]S7a  
Seo, Juwon [7647-06]S2a  
Seracino, Rudolf [7650-93]S10b  
Shaffer, Joseph W. [7643-112]SPS1  
Shah, Ashal [7647-22]S3b  
Shankar, Ravi 7642 S12b SessChr  
Shaw, Andy [7648-20]S5, [7648-43]SPS1  
Shaw, Steven W. 7647 S3b SessChr, [7647-23]S3b  
**Shea, Herbert R.** [7642-14]S4, [7642-

92]S12b  
Shelke, A. [7650-85]S10a  
Shen, Chongyi [7644-84]SPS1  
Shen, Mengyan [7647-170]SPS1  
Shen, Shayn B. [7650-64]S7a  
Shen, Sheng 7647 S13c SessChr, [7647-92]S11a, [7647-113]S13a, [7647-118]S13c, [7647-159]SPS1  
Shen, Shyan B. [7649-29]S5  
Shenoy, Manjunatha [7647-39]S14b  
Sherrit, Stewart 7647 S6b SessChr, [7647-46]S6b, [7647-48]S6b, [7647-116]S13b  
Shi, Benyi [7645-33]S7  
Shi, Liping [7644-72]S14  
Shi, Pengfei [7647-138]S15a  
Shilo, Doron [7643-17]S2b  
Shimose, Shigeru [7643-57]S7a  
Shin, Hyunki [7647-160]SPS1  
Shindo, Yasuhide [7644-73]SPS1  
Shinozuka, Masanobu 7649 ProgComm, [7649-22]S5, [7649-23]S5  
Shlyagin, Mikhail G. [7648-04]S1  
Short, Matt [7645-26]S6  
Shoureshi, Rahmat A. 7647 ProgComm  
Shrotriya, Pranav [7647-105]S12b  
Shrout, Tom [7647-116]S13b  
**Shukla, Rahul** [7644-14]S3  
Shull, Peter J. 7649 Chr  
Shum, D. [7650-101]S11b  
Sidirolglou, Fotios [7647-49]S6b  
Sigg, Antoine [7644-20]S5  
Sikorsky, Charles [7650-05]S1b  
**Silva, Emilio C. N.** [7643-58]S7a  
Silva-Navarro, Gerardo [7643-38]S4b, [7643-80]S9a, [7643-88]S10a, [7643-105]SPS1  
Silvers, Kurt L. 7649 ProgComm, [7650-44]S5b  
**Sim, Sung-Han** [7647-44]S6a, [7647-125]S14a  
Sims, Neil D. [7645-19]S4  
Simunic Rosing, Tajana [7647-43]S6a  
Singh, Jugdutt J. [7646-49]S14, 7647 S8b SessChr, [7647-69]S8b  
Singh, Rajendra [7645-29]S6  
Singharoy, Subhamoy [7646-61]SPS1, [7646-64]SPS1  
Sinn, Thomas [7643-07]S1b  
Sirivat, Anuvat 7642 ProgComm, [7642-65]S9b  
Sivak, Mark [7647-114]S13b  
Skippen, Jeremy [7647-147]S15b  
Skorzewski, Tyler [7644-84]SPS1  
Skorpik, Jim [7650-44]S5b  
Skurkis, Richard J. [7645-24]S5  
Smela, Elisabeth 7642 ProgComm, 7642 S11b SessChr, [7642-17]S5, [7642-24]S6, [7642-62]S9b

Smith, Chris W. [7643-113]SPS1  
Smith, Colin F. [7642-71]S11a, [7644-79]SPS1  
Smith, David [7645-03]S1  
Smith, Ralph C. 7644 ProgComm, 7644 S2 SessChr, [7644-06]S2, [7644-07]S2, [7644-55]S11, [7644-84]SPS1  
Smyth, Andrew W. 7647 ProgComm  
Snook, Kevin A. [7649-30]S6  
Sodano, Henry A. 7643 CoChr, [7643-71]S8b, [7643-112]SPS1, [7644-11]S3, [7644-48]S10, 7645 ProgComm  
Soh, Chee Kiong [7647-74]S9b  
Sohn, Hoon 7647 ProgComm, 7647 S4a SessChr, [7647-16]S3a, [7647-27]S4a, [7647-126]S14a, [7647-133]S14c, 7650 ProgComm, 7650 S8a SessChr, 7650 S5a SessChr, 7650 S3a SessChr, [7650-01]S1a, [7650-20]S3a, [7650-21]S3a, [7650-23]S3a, [7650-24]S3a, [7650-98]S11a  
Soibelman, Lucio [7647-134]S14c, [7647-164]SPS1  
Solomon, John [7643-67]S8a  
Solzbacher, Florian [7642-76]S11b  
Sommer-Larsen, Peter 7642 ProgComm  
Son, Seyul [7642-58]S9a  
Soncini, Giovanni [7647-89]S11a  
Sone, Akira [7650-112]S13  
Song, Byunghun [7647-80]S10a  
Song, Di [7644-52]SPS1  
Song, Fei [7650-88]S10a  
Song, Fie [7650-81]S9b  
Song, Gangbing [7643-14]S2b, 7647 ProgComm, [7647-41]S6a, [7650-31]S3b  
Song, H. J. [7648-22]S6  
Song, Jie [7643-08]S1b  
**Song, Kyo D.** 7646 CoChr, [7646-27]S9  
Song, Shiwei [7647-54]S7a, [7647-92]S11a, [7647-118]S13c, [7647-159]SPS1  
Song, Wei [7647-109]S12c, [7647-142]S15a  
Song, Xueyu [7646-35]S11  
**Song, Young J.** [7648-23]S6  
Song, Yu [7648-46]SPS1, [7648-47]SPS1  
Soni, Som R. [7649-11]S3, [7649-12]S3  
Soni, Sunilkumar O. [7648-33]S8  
Soulioti, Dimitra V. [7649-35]S6  
Soundararajan, Rajiv [7646-22]S8  
Southward, Steve C. 7643 ProgComm, [7650-74]S8b  
Spares, Robert [7646-45]S13  
Speciale, Nicolò [7650-13]S2a, [7650-103]S11b  
Speckmann, Holger 7648 ProgComm

Spencer, Billie F. 7647 ProgComm, 7647 S6a SessChr, 7647 S10a SessChr, [7647-01]S1, [7647-05]S2a, [7647-06]S2a, [7647-44]S6a, [7647-78]S10a, [7647-125]S14a, [7647-137]S15a, [7647-141]S15a, [7647-172]S15b  
Spinks, Geoffrey M. 7642 S11b SessChr, [7642-03]S1, [7642-41]S8a  
Srivastava, Ankit [7650-05]S1b, [7650-71]S8a  
**Srivastava, Ashok** 7646 ProgComm, 7646 S8 SessChr, [7646-22]S8, [7646-28]S9  
Srivastava, Vijay K. [7644-24]S5  
Srivatsan, Malathi 7646 ProgComm  
Stanway, Roger 7643 ProgComm  
Starke, Eric [7644-32]S6, [7644-97]SPS1, [7647-40]S5b, [7647-99]S11b, [7647-100]S11b  
Staszewski, Wieslaw J. [7650-107]S12, [7650-109]S12  
Steck, James [7650-75]S8b  
Steltz, Erik [7642-74]S11a  
Stepinski, Tadeusz [7649-36]S6  
Stewart, Brian K. [7642-23]S6  
Stoilov, Vesselin M. [7644-37]S7  
Stoyanov, Hristiyan [7642-16]S5, [7642-85]S12a  
Strantz, Maria [7649-61]S11  
Stuebner, Michael [7644-55]S11  
Stumpe, Joachim [7642-107]SPS1  
Su, Ji 7642 ProgComm  
Su, Jian [7650-125]SPS1  
Sugino, Takushi [7642-79]S11b  
**Suhr, Jonghwan** 7644 ProgComm, 7644 S13 SessChr  
Sulic, Edin [7645-28]S6  
Summan, Rahul [7650-46]S5b  
Sun, Changsen [7649-26]S5, [7649-27]S5, [7649-28]S5  
Sun, Li-Min [7650-90]S10b, [7650-91]S10b, [7650-92]S10b, [7650-94]S10b  
Sun, Lizhi 7647 ProgComm, 7649 ProgComm  
Sun, Shouhua [7642-51]S8b, [7642-119]SPS1  
Sun, Wei [7647-131]S14c  
Sun, Yi [7646-35]S11  
**Sun, Zhi** [7647-151]S15c  
Sundaram, Jaya [7649-48]S9  
Sundaresan, Mannur J. 7648 S10 SessChr, [7648-37]S9, [7649-33]S6, [7650-17]S2b  
**Sundaresan, Vishnu B.** [7643-74]S8b, [7644-39]S8, 7644 S11 SessChr

# Index of Authors, Chairs, and Committee Members

Suo, Zhigang [7644-43]S9  
Suthar, Kamleshkumar J. [7644-44]S9  
Sutter, John P. [7644-09]S3  
Suzuki, Takayuki [7647-163]SPS1  
Swartz, Raymond A. [7647-18]S3a  
Sweeney, John [7646-45]S13  
Swenson, Eric D. [7649-11]S3, [7649-12]S3, [7650-01]S1a, [7650-20]S3a, [7650-23]S3a

## T

Ta, Dean [7650-103]S11b  
Tabesh, Majid [7643-125]S1b  
**Tadesse, Yonas T.** [7642-71]S11a  
Tagaya, Atsushi [7643-109]SPS1  
Taheri, Farid [7649-60]S11  
Takagi, Kentaro [7642-63]S9b  
Takahashi, Ichiya [7647-75]S9b  
Takashima, Kazuto [7642-73]S11a, [7644-17]S4  
Takeda, Nobuo [7647-75]S9b, 7648 ProgComm  
Takeya, Hajime [7647-75]S9b  
Tan, L. S. [7644-54]S10  
Tan, Xiaobo [7642-30]S7a  
Tandon, Gyaneshwar P. [7644-15]S4  
Tang, Jiong [7643-46]S5, [7643-89]S10a, 7647 S10b SessChr, [7647-10]S2b, [7648-15]S4, [7649-59]S11  
Tang, Wen [7644-13]S3  
**Tang, Yongsheng** [7647-54]S7a, [7649-08]S2  
Tao, Shiquan [7647-191]S11b  
Tarantino, Sergio [7642-11]S4  
Tarar, K. S. [7650-11]S2a, [7650-16]S2b, [7650-85]S10a  
Tathireddy, Prashant [7642-76]S11b  
Tawie, Rudy [7647-73]S9a  
**Taya, Minoru** 7642 ProgComm  
Taylor, Stuart G. [7647-43]S6a  
Taylor, Stuart [7647-94]S11a  
Taylor, Todd [7649-26]S5  
**Tehrani, Aref** [7650-09]S2a  
Teitelbaum, Michael E. [7643-78]S9a  
Tennyson, Roderick C. 7648 ProgComm  
Teo, Wei Xiong [7643-61]S7b  
Terentjev, E. M. [7642-48]S8b  
Terentjev, Eugene B. [7642-80]S11b  
Thayer, Nicholas D. [7642-87]S12a, [7642-88]S12b  
Then, Ronald [7650-29]S3b  
Thostenson, Erik T. [7650-64]S7a  
Thursby, Graham J. [7648-32]S8  
Tian, Y. [7650-101]S11b  
Tien, Cam Minh Tri [7643-119]SPS1  
**Tierney, Dennis** [7646-38]S11  
Tilson, Carl [7642-32]S7a  
**Tittmann, Bernhard R.** 7649 ProgComm, [7650-58]S7a, [7650-

101]S11b  
Tiwari, Rashmi [7642-112]SPS1  
Tjahyono, Arief P. [7642-77]S11b  
Todd, Michael D. [7647-94]S11a, 7648 ProgComm, [7648-17]S5, [7648-38]S10, 7650 ProgComm, 7650 S8b SessChr, 7650 S4a SessChr, [7650-14]S2b, [7647-43]S6a  
Tomizuka, Masayoshi 7647 Chr, 7647 S3b SessChr, [7647-20]S3b  
Tonner, Friedemann [7642-44]S8a  
Torop, Janno [7642-46]S8b, [7642-79]S11b  
Toyama, Motoshi [7647-11]S2b  
Tran-Le, Anh-Tuan [7643-64]S7b, [7643-145]S10a  
Travas-Sejdic, Jadranka [7642-77]S11b  
Trease, Brian P. [7647-48]S6b  
Trebi-Ollennu, Ashitey [7647-46]S6b  
Truman, Chris E. [7645-03]S1  
**Tryson, Michael J.** 7642 S12a SessChr, [7642-66]S10a, [7642-110]SPS1  
Tsai, Wei-Chih [7646-65]SPS1  
Tsao, Tsu-Chin 7647 ProgComm  
Tsou, Nien-Ti [7644-10]S3  
Tsviliuk, Olena [7644-18]S5  
Tucker, Brian J. 7649 ProgComm  
Tull, Monte P. [7647-13]S3a  
Tulloch, Allan W. [7650-100]S11b  
Türk, Markus [7643-55]S7a  
Turner, Joseph A. [7650-72]S8a, [7650-110]S13  
Turner, Kimberly L. [7647-23]S3b  
Tutwiler, Richard L. [7650-101]S11b  
**Twiefel, Jens** [7643-21]S3a

## U

Uchiyama, Naoki [7642-63]S9b  
**Udd, Eric** 7648 ProgComm  
Uetsuji, Yasutomo [7644-12]S3  
Ugail, Hassan [7646-45]S13  
Ulusoy, Hasan S. [7649-53]S11  
Ushita, Mitsushi [7647-42]S6a  
Uy, Brian [7647-112]S13a

## V

Vahdati, Nader [7643-32]S4a  
Vaia, Richard A. [7644-54]S10  
Valadez, Carlos [7644-04]S1  
Valentino, Massimo [7649-15]S3  
Valero, Laura [7642-29]S7a  
**Van Daele, Peter** [7648-24]S6  
van der Linden, Gwendolyn W. [7649-21]S4  
van der Velden, Stephen P. [7647-69]S8b  
Van Hoe, Bram [7648-24]S6

Van Steenberge, Geert [7648-24]S6  
Vanfleteren, Jan M. A. [7648-24]S6  
**Varadan, Vijay K.** 7646 Chr, 7646 S12 SessChr, 7646 S1 SessChr, 7646 S6 SessChr, [7646-02]S2, [7646-15]S6, [7646-16]S7, [7646-18]S7, [7646-29]S9, [7646-30]S9, [7646-32]S10, [7646-40]S12, [7646-42]S12, [7646-55]S15, [7646-56]S15  
Vazquez, Gemma [7642-29]S7a  
Vela, Evaristo [7646-57]SPS1  
Velichko, Alexander [7650-48]S6a, [7650-52]S6a  
Vella, Tyrie [7648-02]S1, [7648-03]S1  
Vernier, Chris [7643-114]SPS1  
Vetyukov, Yury M. [7647-96]S11b  
Vieira, Wander G. R. [7643-22]S3a  
Villanueva, Alex [7642-68]S10b, [7642-71]S11a, [7644-79]SPS1  
Vines-Cavanaugh, David M. [7647-65]S8a  
Vinuela, Fernando [7650-100]S11b  
Vinuela, Fernando [7650-100]S11b  
Vogel, Dietmar W. 7649 ProgComm  
Volk, Brent [7642-53]S9a  
Volobujeva, Olga [7642-46]S8b  
Volponi, Ruggero [7649-15]S3  
von Buttler, M. [7650-63]S7a  
Vos, Roelof [7647-83]S10b  
Vuong, Hong Phuc [7642-12]S4, [7642-20]S6, [7642-94]S12b

## W

Wakabayashi, Daisuke [7644-51]S10  
Walker, James L. [7648-05]S2  
Wallace, Gordon G. 7642 ProgComm, [7642-03]S1, [7642-41]S8a, [7642-109]SPS1, [SS10PL1-01]S  
Wallaschek, Joerg [7643-91]S10a, [7643-21]S3a  
Wallmersperger, Thomas 7642 ProgComm, 7642 S9a SessChr, [7642-56]S9a, [7642-76]S11b, [7644-66]S13  
Walsh, Ken [7643-101]S10b  
Wan, Hong 7647 S13a SessChr  
Wandowski, Tomasz [7650-118]S14  
Wang, Chuan [7647-165]SPS1, [7648-44]SPS1, [7649-07]S2  
Wang, Chuji [7647-58]S7b  
Wang, Cong [7647-170]SPS1  
Wang, D. H. [7644-54]S10  
Wang, Daihua [7643-121]SPS1, [7643-122]SPS1  
Wang, Dongwei [7643-127]SPS1  
Wang, Fuming [7643-127]SPS1  
Wang, Hong [7647-50]S6b  
Wang, Hsien-Hau [7647-158]SPS1  
Wang, Hua [7649-62]SPS1  
Wang, J. L. [7647-192]S4a  
Wang, Jian Xin [7648-46]SPS1  
Wang, Jie [7644-01]S1  
Wang, K. W. [7643-65]S8a, 7643 ProgComm, [7643-70]S8b, [7647-02]S1, [7650-108]S12  
Wang, Linxiang [7644-18]S5  
Wang, Mei [7650-18]S2b  
Wang, Min [7644-84]SPS1  
**Wang, Ming L.** 7647 ProgComm, 7647 S8b SessChr, [7647-65]S8a, [7647-68]S8b, [7647-126]S14a, 7649 ProgComm, 7649 S11 SessChr, 7649 S10 SessChr, [7649-54]S11, [7649-83]S5  
Wang, Peng [7642-52]S9a, [7642-96]SPS1  
Wang, Pengfei [7643-102]SPS1, [7647-120]S13c  
Wang, Qianying [7647-138]S15a  
Wang, Ruoling [7650-31]S3b  
Wang, Wei-Chih [7646-39]S12, 7650 ProgComm, 7650 S11b SessChr, [7650-59]S7a, [7650-62]S7a, [7650-69]S7b  
Wang, Xiaojie [7643-39]S4b  
**Wang, Xin** [7647-10]S2b, [7648-15]S4  
**Wang, Yang** 7647 S3a SessChr, [7647-81]S10a  
Wang, Yang [7647-154]S15c  
Wang, Yang 7649 ProgComm  
Wang, Yanlei [7647-34]S5a  
Wang, Yanqing [7649-68]SPS1  
Wang, Yezuo [7644-40]S8  
Wang, Yiqun [7645-137]S  
Wang, Yu [7644-71]S14  
Wang, Zhenhua [7643-102]SPS1  
Wang, Zhihao [7643-118]SPS1, [7647-141]S15a  
Wardle, Brian L. [7642-42]S8a  
Washington, Gregory N. [7643-68]S8a, [7645-21]S5, [7645-29]S6  
Watt, Richard K. 7646 ProgComm, [7646-03]S2, [7646-66]SPS1  
Weetman, Philip C. [7644-27]S6  
Wegener, Michael [7644-46]S9  
**Wehrheim, Frank** [7642-99]SPS1  
**Wei, Tao** [7647-30]S4b  
Wei, Zhanxiong [7647-120]S13c  
Weiland, Lisa M. [7642-108]SPS1, 7644 S10 SessChr  
Weiss, W. Jason [7650-28]S3b  
Weizman, Or [7644-47]S9  
Wen, Jin 7647 ProgComm  
Wen, Renjie [7643-14]S2b

Wenzel, Christian [7647-99]S11b  
Wereley, Norman M. SympChair, 7643 ProgComm, [7643-40]S4b, [7644-89]SPS1, 7645 S4 SessChr, [7648-22]S6  
Wernick, Helmut [7650-03]S1a  
Wetzel, Eric D. [7643-78]S9a  
**Wheeland, Sara** [7644-59]S12  
White, Edward V. 7645 ProgComm  
**White, Jonathan** [7643-52]S6  
Whiteside, Ben [7646-45]S13  
Wichert, Adam [7648-21]S6  
Wickenheiser, Adam M. [7643-48]S6  
**Wickersham, Miles A.** [7643-01]S1a  
Widholm, Scott [7647-48]S6b, [7647-116]S13b  
Wiewiórski, Przemyslaw [7644-29]S6, [7649-69]SPS1  
Wilcox, Paul D. [7643-30]S4a, [7649-65]SPS1, 7650 ProgComm, [7650-48]S6a, [7650-52]S6a, [7650-73]S8a, [7650-115]S14  
Williams, Frances 7646 ProgComm, 7646 S9 SessChr, [7646-27]S9  
Willis, David [7643-115]S7a  
Wilson, Melissa [7648-05]S2  
Windisch, Thomas [7648-34]S9, [7650-129]SPS1  
Winfree, William P. [7648-07]S2  
Winick, David A. [7642-07]S2  
Witthauer, Adam T. [7645-25]S6  
Woike, Mark R. [7650-45]S5b  
Woo, Jinho [7650-97]S11a  
**Wood, Sharon L.** [7647-150]S15c  
Worden, Keith [7650-46]S5b, [7650-84]S9b  
Wright, Joseph P. [7647-13]S3a  
Wu, Bin 7647 S15a SessChr, [7647-138]S15a  
Wu, Chunxia [7644-53]S10  
Wu, Gang [7647-54]S7a, [7647-113]S13a, [7647-118]S13c, [7647-159]SPS1  
Wu, H. Felix 7649 CoChr, [7649-16]S4  
Wu, Huayong [7647-19]S3a  
Wu, Hwai-Chung 7650 ProgComm  
**Wu, Kuo-Ting** [7648-35]S9  
Wu, Meng-Chou [7648-07]S2  
Wu, Ming H. [7643-08]S1b  
Wu, Tao [7644-41]S8  
Wu, Wei [7645-37]SPS1  
Wu, Xiaorong [7646-35]S11  
Wu, Xuelian [7644-16]SPS1, 7646 S11 SessChr  
Wu, Ying [7647-130]S14b

Wu, Zeyu [7643-127]SPS1  
 Wu, Zhishen 7647 ProgComm, [7647-54]S7a, [7647-56]S7a, [7647-92]S11a, [7647-113]S13a, [7647-118]S13c, [7647-159]SPS1, 7648 ProgComm, [7649-08]S2

## X

Xia, Ye [7647-153]S15c  
 Xian, Guijun [7649-07]S2  
 Xian, Jun Gui [7642-50]S8b  
 Xiao, Hai [7647-30]S4b, [7649-01]S1  
 Xie, Chao-Ying [7643-08]S1b  
 Xie, Jining [7646-02]S2, [7646-56]S15  
 Xie, Sheng Quan [7642-36]S7b, [7642-69]S10b  
 Xie, Shuhong [7644-38]S8  
 Xie, Weili [7646-35]S11  
 Xu, Buli [7650-13]S2a, [7650-19]S3a, [7650-51]S6a  
 Xu, Chengying 7647 S4b SessChr, [7647-31]S4b  
 Xu, Fujun [7647-143]S15b, [7647-167]SPS1  
 Xu, Kailiang [7650-103]S11b  
 Xu, Lei [7643-121]SPS1  
 Xu, Siqi [7648-40]S10  
**Xu, Tian-Bing** 7646 ProgComm, [7646-13]S5  
 Xu, Youlin 7647 ProgComm  
 Xu, Zhihong [7645-10]S3, [7645-14]S3, [7645-15]S3  
 Xue, Songtao [7647-56]S7a

## Y

Yamada, Eiji [7644-51]S10  
 Yamanouchi, Hiroyuki 7647 ProgComm  
 Yan, Fadong [7647-170]SPS1  
**Yan, Fei** [7650-25]S3a  
 Yan, Shi [7647-131]S14c, [7647-155]S15c  
 Yan, Xiaojun [7647-115]S13b  
 Yang, Caiqian [7647-54]S7a, [7647-92]S11a, [7647-113]S13a, [7647-118]S13c, [7647-159]SPS1, [7649-08]S2  
 Yang, Chulho [7644-64]S13  
 Yang, Hengzhao [7647-101]S12a  
 Yang, Henry T. [7647-106]S12b  
 Yang, Hyun-Seok [7642-45]S8a, [7642-86]S12a  
 Yang, Jann N. 7647 S15c SessChr, [7647-08]S2b, [7647-09]S2b, [7647-110]S13a, [7647-153]S15c  
 Yang, Peichun [7642-07]S2  
 Yang, Qiaolong [7647-115]S13b

Yang, Sang Yeol [7646-27]S9, [7646-31]S10  
 Yang, Shangming [7643-102]SPS1, [7647-120]S13c  
 Yang, Tianzhi [7646-62]SPS1  
 Yang, Yang [7644-42]S8  
 Yang, Yongchao [7650-128]SPS1  
 Yari, Takashi [7647-11]S2b  
 Yavuz, Mustafa [7645-37]SPS1  
 Yekani Fard, Masoud [7644-83]SPS1  
 Yi, Xiaohua [7647-81]S10a  
 Yih, T. C. 7646 ProgComm  
 Yim, Hong Jae [7649-76]S11  
 Yin, Jinying [7644-75]SPS1  
 Yin, Qiang [7647-08]S2b, [7647-09]S2b  
 Yin, Weilong [7645-36]S7  
 Ying, Yujie [7647-134]S14c, [7647-164]SPS1  
 Yoo, In Kyoong [7647-88]S11a  
 Yoo, Jeonghoon [7643-58]S7a  
 Yoo, Jin-Hyeong [7647-100]S11b  
 Yoo, Kyung Ho [7646-04]S2, [7646-44]S13, [7646-52]S15  
 Yoo, Young Jun [7650-123]SPS1  
 Yoon, Hargsoon [7646-16]S7, [7646-29]S9, [7646-30]S9  
 Yoon, Hwan-Sik [7649-37]S7  
 York, Alexander [7644-67]S13, [7644-95]SPS1  
 Yu, Byunggu [7647-149]S15c  
 Yu, Gang [7650-90]S10b  
 Yu, Jianguo [7649-25]S5  
 Yu, Kai [7643-15]S2b  
 Yu, Lingyu [7647-70]S9a, 7648 S9 SessChr, [7648-31]S8, [7649-25]S5  
 Yu, Miao [7647-24]S3b  
 Yu, Min [7642-31]S7a, [7642-118]SPS1  
 Yu, Tzu-Yang 7649 ProgComm, 7649 S9 SessChr, [7649-51]S10  
 Yu, Xiong [7646-41]S12, 7647 S5a SessChr, [7647-33]S5a, [7647-102]S12a  
 Yu, Yan [7647-154]S15c  
**Yuan, Fu-Hwo** 7647 S15b SessChr, [7647-143]S15b, [7647-167]SPS1, 7649 S3 SessChr  
 Yuan, Wei [7642-91]S12b  
 Yun, Chung-Bang 7647 CoChr, 7647 S14a SessChr, 7647 S1 SessChr, [7647-06]S2a, [7647-16]S3a, [7647-80]S10a, [7647-126]S14a, 7648 ProgComm  
 Yun, Gun-Jin 7648 S4 SessChr, [7648-18]S5  
 Yun, Gyu-Young [7644-64]S13  
 Yun, Sungryul 7646 S10 SessChr, [7646-31]S10  
 Yun, Tae Sup [7647-169]SPS1

## Z

Zagrai, Andrei N. 7650 ProgComm, 7650 S8b SessChr, 7650 S2b SessChr, [7650-41]S5a, [7650-53]S6b, [7650-55]S6b  
 Zaiats, Gary 7642 ProgComm  
 Zakir Hossain, Muhammad [7650-102]S11b  
 Zang, Chuazhi [7647-79]S10a, [7650-117]S14  
 Zangrilli, Ursula [7642-108]SPS1  
 Zanon, Paolo [7647-19]S3a  
 Zaroni, Michele [7642-109]SPS1  
 Zarate, Boris [7649-25]S5  
 Zayas, Jose R. [SS10PL2-01]S  
 Zellers, Brian [7642-55]S9a  
**Zentai, George** 7650 ProgComm, 7650 S11b SessChr, 7650 S7a SessChr  
 Zhang, Chunwei [7643-96]S10b, [7643-98]S10b, [7643-99]S10b  
 Zhang, David [7647-37]S5b, [7650-35]S4a, [7650-47]S5b  
 Zhang, Fencheng [7645-10]S3, [7645-15]S3  
 Zhang, Guangyu [7648-30]S7  
 Zhang, Haibin [7647-132]S14c  
 Zhang, Hongtao [7643-102]SPS1, [7647-120]S13c  
 Zhang, Huali [7647-86]S10b  
 Zhang, Jian 7647 ProgComm, [7647-111]S13a, 7649 ProgComm  
 Zhang, Jingyan [7644-84]SPS1  
 Zhang, Kai [7646-58]SPS1  
 Zhang, Kun [7650-83]S9b  
 Zhang, Lianguan [7649-71]SPS1  
 Zhang, Nong [7643-36]S4b  
**Zhang, Qiming** 7642 ProgComm, [7642-06]S2, [7642-08]S2, [7642-42]S8a, [7642-43]S8a, [7642-55]S9a, [7642-100]SPS1  
 Zhang, Qingying [7644-89]SPS1  
 Zhang, Qiwei [7647-122]S14a, [7649-64]SPS1  
 Zhang, Xiaoning [7643-08]S1b  
 Zhang, Xiaotan [7649-26]S5, [7649-27]S5, [7649-28]S5  
 Zhang, Xiaoyong [7647-115]S13b  
 Zhang, Yao [7645-10]S3, [7645-15]S3  
 Zhang, Yewei [7643-54]S7a  
**Zhang, Yinan** [7647-30]S4b, [7649-01]S1  
 Zhang, Ying [7647-101]S12a, 7649 ProgComm, 7649 S9 SessChr, 7649 S8 SessChr  
 Zhang, Yunfeng [7647-126]S14a  
**Zhang, Zhen** [7642-25]S6  
 Zhang, Zhichun [7648-09]S2  
 Zhao, Da-Hai [7643-103]SPS1

**Zhao, Ji** [7643-89]S10a  
 Zhao, Lihua [7647-54]S7a  
 Zhao, Naizhi [7647-155]S15c  
 Zhao, Su [7643-91]S10a  
 Zhao, Xilin [7643-102]SPS1  
 Zhao, Xuanhe [7644-43]S9  
 Zhao, Yue [7647-105]S12b  
 Zhen, Yaxin [7646-62]SPS1  
 Zheng, Peng [7647-145]S15b  
 Zheng, Shijie [7650-60]S7a  
 Zhong, Jing [7642-50]S8b  
 Zhong, Peng [7644-84]SPS1  
 Zhou, Bo [7644-76]SPS1, [7645-39]SPS1  
 Zhou, Ciming [7644-89]SPS1  
 Zhou, Dao [7650-34]S4a  
 Zhou, Li 7647 ProgComm, 7647 S2b SessChr, [7647-08]S2b, [7647-09]S2b  
 Zhou, Ming 7646 ProgComm  
 Zhou, Norman Y. [7645-37]SPS1  
 Zhou, Susan H. [7647-192]S4a  
 Zhou, Weiming [7643-08]S1b  
 Zhou, Wenfan [7650-99]S11a  
 Zhou, Wensong [7649-68]SPS1  
**Zhou, Zhi** 7648 ProgComm, [7648-28]S7, [7648-29]S7, [7649-01]S1, [7649-06]S2  
 Zhu, Dapeng [7647-81]S10a  
 Zhu, Jinying [7649-58]S11  
 Zhu, Xinqun [7647-72]S9a, [7647-112]S13a  
 Zhu, Xuan [7650-22]S3a  
 Zhu, Yinian [7648-01]S1, [7650-60]S7a  
 Zhu, Z. Z. [7647-192]S4a  
 Ziaei, Afshin [7646-50]S14  
 Ziehl, Paul H. [7647-70]S9a, [7649-24]S5, [7649-25]S5  
 Zientek, Brian [7647-158]SPS1  
 Zikry, Mohammed A. [7648-02]S1, [7648-03]S1, [7648-40]S10  
 Zimmerman, Andrew [7647-18]S3a, [7647-82]S10a  
 Zonta, Daniele [7647-19]S3a, [7647-89]S11a  
 Zubia, Joseba [7648-10]S3  
 Zunino, James L. [7646-53]S15, [7648-21]S6

# General Information



**SPIE**   
**Smart Structures/NDE**  
 Town and Country Resort & Convention Center  
 500 Hotel Circle North, San Diego, CA

## Registration

### Onsite Registration Hours

*Town and Country Resort & Convention Center*

#### *Golden Foyer*

Sunday 7 March	7:30 am to 4:00 pm
Monday 8 March	7:00 am to 5:15 pm
Tuesday 9 March	7:00 am to 4:00 pm, 5:30 to 7:00 pm
Wednesday 10 March	7:30 am to 4:00 pm
Thursday 11 March	7:30 am to 11:00 am

### Exhibit Hours

#### *Golden Ballroom*

Tuesday 9 March	10:00 am to 4:00 pm
Poster reception	6:00 pm to 7:30 pm
Wednesday 10 March	10:00 am to 4:00 pm

### Admission to the Exhibition

Admission is included in your conference, or course fees. Or register to attend only the exhibition. Use the exhibit visitor registration form to register to attend the Smart Structures/NDE Exhibition. Exhibit visitor registration is complimentary.

### SPIE Membership

SPIE Members receive discounts on conference and course registration fees.

### Add Digital Library subscriptions

Choose an SPIE Digital Library subscription with your registration. Also available: Proceedings of SPIE and Proceedings on CD-ROM. Please see details on the registration form.

Proceedings and CD-ROMs as part of a registration include tax and shipping. Proceedings and CD-ROMs purchased separately do not include shipping or taxes. Please see details on the registration form.

### Press Representatives

Media/Press—For credentialed press and media representatives, please email contact information, title, and organization to [media@spie.org](mailto:media@spie.org)

## Internet Services

### Internet Pavilion

#### *Golden Foyer*

Sunday–Wednesday	7:00 am to 6:00 pm
Thursday	7:00 am to 1:30 pm

SPIE will have a complimentary Internet Pavilion where attendees can use provided workstations or hook up their laptop to an Ethernet connection to access the Internet. There will be a 10-minute time limit for each person's Internet session.

### Complimentary Wireless Internet Access (Wi-Fi)

Guest rooms at the Town and Country Resort & Convention Center are equipped with complimentary high speed wireless Internet, for attendees at Smart Structures/NDE. Laptops will need an appropriate wireless card and access is available in all guest room areas. Please contact Internet call center at Ext. 1234 in order to get this complimentary rate. Note: Wi-Fi service is not available in or near the meeting rooms.

Properly secure your computer before accessing the public wireless network. Failure to do so may allow unauthorized access to your laptop as well as potentially introduce viruses to your computer and/or presentation.

## SPIE Onsite Services

### SPIE Receipts, Badge Corrections, Cashier

**Receipts** - Preregistered attendees who did not receive a receipt prior to the meeting may obtain a new copy of their registration receipt onsite at the SPIE Registration Desk.

**Badge Corrections** - Attendees who need a correction to their badge information onsite may do so at the SPIE Registration Desk. Please have your badge removed from the badge holder, marked with your changes, and ready to hand to the attendant upon approaching the counter.

**Cashier Station** - If you are paying by cash or check as part of your onsite registration, wish to add a course, or special event requiring payment, or have questions regarding your registration please see the onsite cashier at the Cashier station in the registration area.

### Speaker Check-In Desk / Preview Station

#### *Golden Foyer*

Sunday-Thursday . . . . . 7:30 am to 5:00 pm

All conference rooms will have a computer workstation, LCD projector, screen, lapel microphone, and laser pointer. All Presenters are requested to come to the Speaker Check-In Desk to confirm display settings of their presentations from their memory devices or laptops with the audiovisual equipment being used at this symposium.

### Course Materials Desk

#### *Golden Foyer*

If you have registered to attend a course, please stop by to pick up your badge and course materials.

### SPIE Marketplace and Membership Services

#### *Golden Foyer*

The SPIE Marketplace is your source for the latest SPIE Press books and Proceedings.

## Food and Beverage Services

### Coffee Breaks

*Lion Fountain Court* · Sunday, Monday and Thursday

*Golden Ballroom* · Tuesday and Wednesday

Complimentary coffee will be served twice each day of the conference at approximately 10:00 am and 3:00 pm. Please check the individual technical conference listings for exact times.

## Coffee Cart

*Lion Fountain Court*

Monday–Thursday . . . . . 7:00 am to 2:00 pm  
Coffee, espresso, pastries and sodas all available for purchase.

## Desserts

*Golden Ballroom Exhibition Hall*

Tuesday and Wednesday . . . . . 3:00 to 3:30 pm  
Dessert snacks will be served in the Exhibition Hall, from 3:00 to 3:30 pm. Complimentary tickets for the dessert snacks will be included in attendee registration packets.

## Business Services

### Business Center

*Grand Foyer*

Monday–Thursday

The business center can make copies, print documents or transparencies from your laptop, fax services and office supplies. Prices for services are posted onsite.

### Message Center

Message phone number: (619) 752-7743

The SPIE Message Board will be located near the Registration Desk. Messages will be taken during registration hours Sunday through Thursday.

### Child Care

Marion's Childcare, email amy@hotelchildcare.com, within San Diego call (619) 303-4379, or 1-888-891-5029, www.hotelchildcare.com

SPIE does not imply an endorsement or recommendation of this service. It is provided on an "information only" basis for your further analysis and decision. Other services may be available.

## Travel

### Parking

Discounted parking for hotel guests is \$5.00 per day. Local guests pay \$3.00 for the first hour, \$2.00 each additional hour, not to exceed \$8 per day.

## Car Rental

Hertz Car Rental has been selected as the official car rental agency for this Symposium. To reserve a car, identify yourself as a Smart Structures Conference attendee using the Hertz Meeting Code CV# 029B0014. Call 1-800-654-2240.

## Town and Country Resort & Convention Center

500 Hotel Circle North, San Diego, CA 92108  
Hotel Phone: 619-291-7131

## Policies

### Audio, Video, Digital Recording Policy

In the Meeting Rooms and Poster Sessions: For copyright reasons, recordings of any kind are strictly prohibited without prior written consent of the presenter in any conference session, short course or of posters presented. Each presenter being taped must file a signed written consent form. Individuals not complying with this policy will be asked to leave a given session and asked to surrender their film or recording media. Consent forms are available at the SPIE Speaker Check-In Desk.

In the Exhibition Hall: For security and courtesy reasons, photographing or videotaping individual booths and displays in the exhibit hall is allowed ONLY with explicit permission from on-site company representatives. Individuals not complying with this policy will be asked to surrender their film and to leave the exhibit hall.

### Laser Pointer Safety Information

SPIE supplies tested and safety approved laser pointers for all conference meeting rooms, and for short course rooms if instructors request one. For safety reasons, SPIE requests that presenters use our provided laser pointers available in each meeting room.

If using your own laser pointer, have it tested at your facility to make sure it has <5 mW power output. Laser pointers in Class II and IIIa (<5 mW) are eye safe if power output is correct - but don't automatically trust the labeling. Commercially available laser pointers, red or green (or any color), could be incorrectly labeled as to their wavelength and power output.

Presenters intending to use their own laser pointer for presentations are required to come to the Speaker Check In Desk onsite and test their pointer on our power meter. If the pointer fails the safe power level you may not use the pointer at the conference. You will be required to sign a waiver releasing SPIE of any liability for use of potentially non-safe laser pointers.

Use of a personal laser pointer at an SPIE event represents user's acceptance of liability for use of a non-SPIE supplied laser pointer device. Misuse of any laser pointer could lead to eye damage. In California, it is a criminal misdemeanor to shine a laser pointer at individuals "who perceive they are at risk."

## Underage Persons on Exhibition Floor

For safety and insurance reasons, no persons under the age of 16 will be allowed in the exhibition area during move-in and move-out. During open exhibition hours, only children over the age of 12 accompanied by an adult will be allowed in the exhibition area.

## Unauthorized Solicitation

Any manufacturer or supplier who is not an exhibitor and is observed to be soliciting business in the aisles, or in another company's booth, will be asked to leave immediately. Unauthorized solicitation in the Exhibition Hall is prohibited.

## Unsecured Items

Personal belongings such as briefcases, backpacks, coats, book bags, etc. should not be left unattended in meeting rooms or public areas. These items will be subject to removal by security upon discovery.

## Local Attractions

Attendees wishing to arrange for tours/sightseeing for themselves, or traveling guests, may contact the hotel concierge prior to the meeting to make arrangements: concierge@towncountry.com. Concierge services are offered onsite in the main lobby. The hotel will also provide a special Concierge Services desk near SPIE registration for the convenience of SPIE attendees, Sunday-Wednesday from 8:30 am to 10 am.

Services include:

- Discount tickets to San Diego Zoo and SeaWorld
- Discount rates for Riverwalk Golf Course
- Priority seating at Hotel Restaurants and off property restaurants
- San Diego City, Mexico, wine tours or harbor excursions
- Public Transit Information, local driving directions/maps

### Fashion Valley Mall

Located directly behind the hotel. Two-level outdoor garden center featuring over 300 specialty shops and restaurants and an 18-screen movie complex. It is the largest shopping area in San Diego!

### Old Town

Take the Trolley or Hotel Shuttle to the founding site of San Diego with excellent Mexican dining and shopping.

### Horton Plaza/Gas Lamp Quarter

Take the Trolley to downtown San Diego and enjoy shopping at Horton Plaza and/or the exciting nightlife of excellent restaurants and clubs of the Gas Lamp District.

### Seaport Village

Situated on 22 acres of parkland at the water's edge, over 60 shops, galleries, and boutiques along with restaurants are found in this unique village.





# SPIE Career Center Career Advancement Made Easy

## The SPIE Career Center offers:

Free online job search—All job seeker functions are available at no charge.

### ✓ CONFIDENTIAL RESUME POSTING

Make your resume available to employers, and release your contact information only when you are ready.

### ✓ JOB SEARCH AGENT

Create a password-protected account and receive automatic email notification of new jobs that match your search criteria.

### ✓ SAVED JOBS CAPABILITY

Save up to 100 jobs to a folder in your account so you come back to apply when you are ready.

**SPIE Career Center makes finding the perfect job easy.**

**Post Your Resume Today.**

[spie.org/careercenter](http://spie.org/careercenter)

Contact Robert Dentel for information.

+1 360 715 3705 [jobsales@spie.org](mailto:jobsales@spie.org)



## Proceedings of SPIE



Order Proceedings volumes now and receive low prepublication prices

Vol#	Title (Editor)	Prepublication Price
7642	<b>Electroactive Polymer Actuators and Devices (EAPAD) 2010</b> (Y. Bar-Cohen) . . . . .	\$130
7643	<b>Active and Passive Smart Structures and Integrated Systems 2010</b> (M. N. Ghasemi-Nejhad) . . . . .	\$135
7644	<b>Behavior and Mechanics of Multifunctional Materials and Composites 2010</b> (Z. Ounaies) . . . . .	\$120
7645	<b>Industrial and Commercial Applications of Smart Structures Technologies 2010</b> (M. McMickell) . . . . .	\$70
7646	<b>Nanosensors, Biosensors, and Info-Tech Sensors and Systems 2010</b> (V. K. Varadan) . . . . .	\$90
7647	<b>Sensors and Smart Structures Technologies for Civil, Mechanical, and Aerospace Systems 2010</b> (M. Tomizuka) . . . . .	\$170
7648	<b>Smart Sensor Phenomena, Technology, Networks, and Systems 2010</b> (K. J. Peters) . . . . .	\$70
7649	<b>Nondestructive Characterization for Composite Materials, Aerospace Engineering, Civil Infrastructure, and Homeland Security 2010</b> (P. J. Shull) . . . . .	\$100
7650	<b>Health Monitoring of Structural and Biological Systems 2010</b> (T. Kundu) . . . . .	\$135



### Searchable CD-ROM with Multiple Conferences

CD-ROMs are now available within 8 weeks of the meeting. Full-text papers from all 9 Proceedings volumes. PC, Macintosh, and Unix compatible.

### Smart Structures and Materials & Nondestructive Evaluation and Health Monitoring 2010

(Includes Vols. 7642-7650)  
Order No. CDS380  
Est. pub. May 2010  
Meeting attendee: \$135  
Nonattendee Member price: \$715  
Nonattendee nonmember price: \$940



# Publication Order Form

First Name \_\_\_\_\_ M.I. \_\_\_\_\_ Last Name \_\_\_\_\_  
 Title \_\_\_\_\_  
 Company \_\_\_\_\_  
 Address (include Mail Stop) \_\_\_\_\_  
 City \_\_\_\_\_ State/Province \_\_\_\_\_ Zip/Postal Code \_\_\_\_\_  
 Country other than USA \_\_\_\_\_  
 Phone \_\_\_\_\_ Fax \_\_\_\_\_  
 E-Mail Address (SPIE does not sell e-mail addresses) \_\_\_\_\_ Date of Birth (Optional) \_\_\_\_\_

Check this box if you do not wish to receive information from organizations other than SPIE.

## Proceedings and Publications

Fill in the volume or order number(s) and price(s) of the publications you wish to order below.

QTY.	VOL NO.	TITLE	PRICE (USD)

CA, FL, WA residents add sales tax; Canadian residents must add GST. . . . . \$ \_\_\_\_\_ USD

Shipping/Handling (Books & CD-ROMs). . . . . \$ \_\_\_\_\_ USD

U.S. 5% of order total [2-3 weeks delivery] Elsewhere 10% of order total [3-5 weeks delivery]

Express Shipping: U.S. \$15 USD for 1st item; \$10 USD each addl item [2-3 days delivery]

Elsewhere \$30 USD for 1st item; \$15 USD each addl item [1 week delivery]

## Method of Payment

Check enclosed. Payment in U.S. dollars (by draft on a U.S. bank or international money order) is required. Do not send currency. Wire transfers from banks must include a copy of the transfer order.

Charge to my:  VISA  MasterCard  Discover  American Express  Diners Club

Card Number \_\_\_\_\_ Security Code \_\_\_\_\_

Expiration date \_\_\_\_\_

Signature \_\_\_\_\_

Purchase order enclosed (Purchase orders must be preapproved).

All orders must be PREPAID in U.S. dollars. Prices subject to change without notice. No returns without written authorization of SPIE. ITEMS WILL NOT BE SHIPPED UNLESS PAYMENT IS RECEIVED.

SPIE Member

SPIE ID #

## Annual SPIE Membership

To receive the Member discount, check appropriate box(es) below and fax or mail this form.

Regular/Fellow Life Membership: \$995

Regular/Fellow 3-year Membership: \$297

Early Career Professional (Offered for 3 years following graduation): \$55 (Graduation date: \_\_\_\_\_)

Regular/Fellow Membership: \$105

Student Membership: \$20 (Est. graduation date: \_\_\_\_\_)

Online Journal Option (choose one):

Optical Engineering  Electronic Imaging

Biomedical Optics

Micro/Nanolithography, MEMS, and MOEMS

Applied Remote Sensing  Nanophotonics

## For Office Use Only

Date \_\_\_\_\_

Amt. Recd. \_\_\_\_\_

CC Cash Check TC

Check # \_\_\_\_\_

P.O. # \_\_\_\_\_

IDN # \_\_\_\_\_

ORD # \_\_\_\_\_

MEMBERSHIP TOTAL

\$ \_\_\_\_\_ USD

## SPIE Digital Library Subscription

1-year subscription, **up to 25** full-article downloads:

Member  \$145 Student/Retired  \$95

Nonmember  \$250

1-year subscription, **up to 50** full-article downloads:

Member  \$195 Student/Retired  \$125

Nonmember  \$335

Once form is submitted and validated, you will receive an email confirmation with instructions for setting up your account. At that point, you may begin using all the features of the Digital Library.

DIGITAL LIBRARY TOTAL

\$ \_\_\_\_\_ USD

PUBLICATIONS TOTAL

\$ \_\_\_\_\_ USD

SUBTOTAL

\$ \_\_\_\_\_ USD

TOTAL

\$ \_\_\_\_\_ USD

Mail or fax this form to

SPIE, PO Box 10

Bellingham, WA 98227-0010 USA

Phone +1 360 676 3290; Fax +1 360 647 1445

spie.org/ssnde; customerservice@spie.org

JOIN SPIE

## Your Resource. Your Society.

- ▶ Networking
- ▶ Access to Information
- ▶ SPIE Digital Library
- ▶ Career Advancement



Make SPIE your resource.  
Join or renew online today.

[spie.org/join](http://spie.org/join)



customerservice@spie.org  
+1 360 676 3290  
Fax: +1 360 647 1445

# Read the Industry's Leading Magazine

## Get the Information You Need to Stay Ahead.

Photonics is a fast-paced technology, and keeping up with the day-to-day developments in optics, lasers, imaging, fiber optics, electro-optics and photonics component manufacturing has never been so critical.

*Photonics Spectra* magazine will keep you on top of developments with complete news and information on this technology each month. The latest information on research and development, innovative applications and products, new ideas in design, business trends – all of these are in every issue of *Photonics Spectra*.

Today, more professionals in this industry read *Photonics Spectra* than any other photonics publication. The industry's most experienced editorial staff presents feature articles on timely subjects, vital news on the latest photonics technology and columns designed to give you the complete picture of the photonics industry.

## To Get a Free Subscription,

visit us at [www.photonicspectra.com](http://www.photonicspectra.com), or call +1 (413) 499-0514.



published by:  
Photonics Media  
PO Box 4949  
Pittsfield, MA 01202-4949  
Tel: +1 (413) 499-0514  
Fax: +1 (413) 442-3180  
E-mail: [photonics@laurin.com](mailto:photonics@laurin.com)

**PHOTONICS** MEDIA  
THE PULSE OF THE INDUSTRY

# SPIE Smart Structures/NDE

Mark Your  
Calendar for  
2011

## Connecting minds for global solutions

Join the leaders in adaptive structures and mechanisms research and applications.

- Energy Harvesting/Energy Systems
- Automotive and Aerospace Applications
- Actuators and Damping
- Structural Health Monitoring
- Nanotechnology
- Civil Infrastructure Systems
- Modeling, Control, and Optimization
- Sensor Networks
- Real-Time NDE
- Electroactive Polymers
- Shape Memory Alloys
- MR Fluids and Elastomers
- Piezoelectric Materials
- Embedded and Self-diagnostic Sensors
- Optical Fiber Sensors
- Bio-inspired and Robotic Systems

**Conferences and Courses: 6–10 March 2011**  
**Exhibition: 8–9 March 2011**

Town and Country Resort & Convention Center  
San Diego, California, USA



**SPIE**

Connecting minds. Advancing light.

[spie.org/ssnde](http://spie.org/ssnde)