SPIE PHOTONICS WEST

THE PREMIER LASER, PHOTONICS, AND BIOMEDICAL OPTICS EVENT

22-27 January 2022
Conferences and Courses

22-23 January 2022
BIOS Expo

25-27 January 2022
Photonics West Exhibition

The Moscone Center • San Francisco, California, USA

Cutting-Edge Research
Two Exhibitions
Industry Program
Training and Education

Meeting protocols to be aware of

PROOF OF VACCINATION
Everyone will be required to show proof of COVID-19 vaccination.

MASKS WILL BE REQUIRED
Everyone will be required to wear a face covering in all indoor spaces.

COVID-19 TESTING AVAILABLE
Testing will be available for travel or other needs at the convention center for a fee.

Download the SPIE Conference and Exhibition App

Download the App and view the full schedule of events, exhibitors, and participants and get all of the details on your mobile device.
» Plan your conference schedule and sync between your mobile device and desktop computer
» Locate key exhibitors and product demonstrations
» Save notes from presentations and events for your trip report
» Be notified when events added to My Schedule are about to begin
» Google Maps integration provides views of nearby restaurants, stores, and venues
» Search for participants, presentations, or events with Google voice commands

SPIE, the international society for optics and photonics, brings engineers, scientists, students, and business professionals together to advance light-based science and technology. The Society, founded in 1955, connects and engages with our global constituency through industry-leading conferences and exhibitions; publications of conference proceedings, books, and journals in the SPIE Digital Library; and career-building opportunities. Over the past five years, SPIE has contributed more than $22 million to the international optics community through our advocacy and support, including scholarships, educational resources, travel grants, endowed gifts, and public-policy development.

www.spie.org

spie.org/pw
#photonicswest
Experience the energy of Photonics West

Get ready to enjoy real conversations, hear the latest breakthroughs, and make important connections in person. Hear cutting-edge research in biomedical optics, biophotonics, industrial lasers, optoelectronics, microfabrication, MOEMS-MEMS, displays, and more. Attend technical presentations, courses, two world-class exhibitions, plenary presentations, and a variety of networking activities.

BIOS
The most important biomedical optics conference in the fields
MATRIX PAGES 34–38
CONFERENCES PAGES 50–120

LASE
Advancements in laser sources and industrial laser applications
PAGES 39–41
CONFERENCES PAGES 121–151

OPTO
Current optoelectronic technologies and applications
PAGES 42–45
CONFERENCES PAGES 152–220

Quantum West
One day only • 26 January
Explore the role that photonics plays as quantum technology moves from R&D to engineering products for the commercial marketplace
PAGES 22–23

Educational courses—PAGES 34–36
Receive live instruction directly from an expert and join a group of your peers with similar goals and challenges. Choose from more than 40 options on topics such as AR/VR, optical system design, biophotonics, quantum, basic optics and more. Courses priced separately.

Two Exhibitions—PAGES 30–32
Find the best solutions, components, instruments, and system providers from around the world. Companies offer an inside look into their portfolio of products and services—meet top suppliers, explore product and company capabilities, and build partnerships that will advance your work.

BIOS EXPO • Weekend Exhibition • Jan. 22–23
Photonics West Exhibition • January 25–27

Plenary Sessions and Hot Topics—PAGES 30–31
Each year Photonics West features approximately 25 plenary speakers presenting on a wide range of important topics. Be in the room full of energy and inspiration as leaders in their respective fields take the stage to share their latest research and visions of the future.

Technical Events—PAGES 12–13
Meet peers interested in the same topics and explore the latest research, hear different perspectives, and participate in engaging discussions. Find old friends and discover new partnerships.

Industry Events—PAGES 14–18
Join an energized audience at these informative sessions focused on the business side of photonics. Industry experts and leaders from various fields share opportunities and challenges.

SPIE Startup Challenge—PAGE 20
See and hear pitches for the “best of the best” new photonics businesses. This pitch competition is a lively, interactive event showcasing the power of entrepreneurs to move photonics technology to the global marketplace.

Career Hub and Job Fair—PAGES 22–23
Gain insights and tips to help advance your career and workplace satisfaction. Hone valuable job skills and focus on career development at these informative and engaging events. Build your schedule and don’t miss opportunities to make valuable connections.

Social and Networking Events—PAGES 26–27
Enjoy real conversations and make important connections in person. Take the opportunity to discuss optics and photonics with other professionals from around the world.

MEMBERSHIP EVENTS—PAGE 28
Your SPIE Membership is a valuable asset; join other SPIE Members at these informal get-togethers taking place in San Francisco.

SPIE AR | VR | MR—PAGE 41
SPIE Photonics West full conference registration includes access to this co-located event focused on XR hardware. Taking place at Moscone West 23–25 January, full program is online (spie.org/xr) or in the SPIE App.

See full details and updates at spie.org/pw or on the SPIE App.
The Moscone Center North/South Lobbies and Mezzanines

North Lobby
Registration
Speaker Check-In
Coat/Luggage
Cashier
Mothers’ Room
Quiet Room
Press Room

South Lobby
Registration
Cashier
Chair Services
Course Materials
Mothers’ Lounge

Water filling stations:
Stop by Level Two or Upper Mezzanine each day before 9:30 AM to receive your free refillable water bottle (while supplies last)

MOSCON CENTER SOUTH LEVELS TWO AND THREE

From Moscone Center South
To Marriott Marquis:
Turn left out of Moscone South and walk down Howard Street. Turn Right onto 4th Street. Walk one city block, pass by Target. Cross Mission Street. The Marriott will be on your right.

To Moscone Center West:
Turn left out of Moscone South and walk down Howard Street. Cross 4th Street and continue one block. The Moscone Center West will be on your right.

Street Map
THE MOSCONE CENTER WEST

LEVEL 3

LEVEL 2

LEVEL 1

Events in Moscone West

SPIE, AR VR MR

SPIE, PHOTONICS WEST

SPIE, PHOTONICS WEST

Poster Sessions
Sunday, Monday, Tuesday, Wednesday

Job Fair
Monday (AR VR MR Job Fair)
Tuesday and Wednesday (Photonics West Job Fair)

CAREER HUB

HEADSHOTS

Sunday, Monday, and Tuesday

STREET MAP

From Moscone Center South
To Marriott Marquis: Turn left out of Moscone South and walk down Howard Street. Turn Right onto 4th Street. Walk one city block, pass by Target. Cross Mission Street. The Marriott will be on your right.

To Moscone Center West: turn left out of Moscone South and walk down Howard Street. Cross 4th Street and continue one block. The Moscone Center West will be on your right.

Food Outlet Locations and Menu Highlights

All outlets offer beverages and a variety of snack foods.

Back of Hall F
Tue-Thu 10:00 AM-4:00 PM
Café Savor: Carvery, Cross Rib and Ham
Café @ Aisle 4000: Garlic Chicken Stir-fry

North Lower Lobby, near Hall F entrance
Sat-Mon 7:00 AM-3:00 PM,
Tue-Thu 7:00 AM-6:00 PM
Specialty coffee and crepes

Concourse, under Escalators near Hall D
Sat-Sun, Tue-Thu 7:00 AM-3:00 PM
Salads, Tomato Soup, Grilled Cheese Sandwich, Paninis

Entry to Hall A
Tue-Thu 7:00 AM-5:00 PM;
Thu 7:00 AM-4:00 PM
Chow Mein with chicken, pork

Entry to Hall B
Tue-Wed 7:00 AM-5:00 PM;
Thu 7:00 AM-4:00 PM
Burrito Bowl, Poke Bowl

Entry to Hall C
Tue-Wed 7:00 AM-5:00 PM;
Thu 7:00 AM-4:00 PM
Café @ Moscone: Specialty Coffee, Acai Bowl

Back of Hall B
Tue-Wed 10:00 AM-5:00 PM;
Thu 10:00 AM-4:00 PM
Savor Cafe & Bar: Pizza, Paninis
Savor Carvery: Tri-tip, Turkey

Food Outlet Locations and Menu Highlights

All outlets offer beverages and a variety of snack foods.

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Tue-Thu 10:00 AM-4:00 PM
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Salads, Tomato Soup, Grilled Cheese Sandwich, Paninis

Entry to Hall A
Tue-Thu 7:00 AM-5:00 PM;
Thu 7:00 AM-4:00 PM
Chow Mein with chicken, pork

Entry to Hall B
Tue-Wed 7:00 AM-5:00 PM;
Thu 7:00 AM-4:00 PM
Burrito Bowl, Poke Bowl

Entry to Hall C
Tue-Wed 7:00 AM-5:00 PM;
Thu 7:00 AM-4:00 PM
Café @ Moscone: Specialty Coffee, Acai Bowl

Back of Hall B
Tue-Wed 10:00 AM-5:00 PM;
Thu 10:00 AM-4:00 PM
Savor Cafe & Bar: Pizza, Paninis
Savor Carvery: Tri-tip, Turkey

This program is current as of 17 December 2021—Find the latest on the SPIE Conference and Exhibition App.
PLENARY AND HOT TOPICS SESSIONS

Presentations by leading speakers from across the globe.

Open to all paid conference attendees.

**BIOS Hot Topics**
22 January 2022 • 7:00 PM–9:00 PM | Moscone North/South, Room 207/215 (Level 2 South)

**Welcome and Opening Remarks**
Jennifer Barton
The Univ. of Arizona (United States)
BIOS 2022 Symposium Chair

Wolfgang Drexler
Medical Univ. of Vienna (Austria)
BIOS 2022 Symposium Chair

**Announcement and Presentation by 2022 Britton Chance Biomedical Optics Award Winner**

**Color revolution: super-multiplexed optical microscopy**
Wei Min
Columbia Univ. (United States)

**Holographic imaging and its bioapplications**
Osamu Matoba
Kobe Univ. (Japan)

**Tissue optical clearing imaging: from in vitro to in vivo**
Dan Zhu
Huazhong Univ. of Science and Technology (China)

**Live biophotonic analysis of embryonic development**
Irma Linna
Baylor Collage of Medicine (United States)

**Deep learning-enabled optics**
Aydogan Ozcan
Univ. of California, Los Angeles (United States)

**Cerebral health in a heartbeat**
Maria Angela Franceschini
Massachusetts General Hospital, Harvard Medical School (United States)

**Functional photoacoustic tomography of the human brain**
Lihong Wang
Caltech (United States)

**Neurotechnologies Plenary**
23 January 2022 • 3:30 PM–5:30 PM | Moscone North/South, Room 207/215 (Level 2 South)

**Moderators**
Elizabeth Hillman
Columbia Univ. (United States)

Anna Devor
Boston Univ. (United States)

**Exciting insights into neural coding with sculpted wavefronts**
Shy Shoham
New York Univ. (United States)

**Neuroscience of the everyday world**
Meryem Ayşe Yücel
Bostom Univ. (United States)

**LASE Plenary and Hot Topics**
24 January 2022 • 3:30 PM–6:00 PM | Moscone North/South, Room 207/215 (Level 2 South)

**Welcome and Opening Remarks**
Craig B. Arnold, Princeton Univ. (United States) and Takunori Taira, RIKEN / IMS (Japan)

**Announcement of the 3D Printing, Fabrication, and Manufacturing Best Paper Award**
Henry Helvajian, The Aerospace Corp. (United States)

**On the Threshold of Laser Fusion Ignition: Recent Breakthroughs on the National Ignition Facility and the Pathway to Inertial Fusion Energy (Plenary Speaker)**
Tammy Ma
Lawrence Livermore National Lab. (United States)

**High-Power Ultrafast Moves into the Terahertz Domain (Hot Topics Speaker)**
Clara Saraceno
Ruhr-Univ. Bochum (Germany)

**Integrated Photonic Quantum Frequency Combs and Applications (Plenary Speaker)**
Michael Kues
Leibniz Univ. Hannover (Germany)

**Lenses Beyond Limits: Sculpting Photons at the Molecular Scale for Global Health and Sustainability (Hot Topics Speaker)**
Jennifer Dionne
Stanford Univ. (United States)

**How Laser-based Fabrication Methods Can Be Used to Produce Multifunctional Surfaces (Hot Topics Speaker)**
Andreas Fabian Lasagni
TU Dresden (Germany) and Fraunhofer-Institut für Werkstoff- und Strahlttechnik IWS (Germany)

**Nano/Biophotonics Plenary**
25 January 2022 • 10:30 AM - 11:30 AM | Moscone North/South, Room 207 (Level 2 South)

**Biological fluorescence/luminescence imaging in the 1000-1700 nm NIR-II/SWIR Window**
Hongjie Dai
Stanford Univ. (United States)
Meet peers interested in the same topics and explore the latest research, hear different perspectives, and participate in engaging discussions. Find old friends and discover new partnerships.

Panel Discussion on Dynamics and Fluctuations in Biomedical Photonics
11:50 AM-12:50 PM | Moscone North/South, Room 154 (Upper Mezzanine South)
This panel discussion will include a review of current developments in this field.

Panel Discussion on Prospects and Future of Microfluidics
23 January 2022 • 11:30 AM-12:30 PM | Moscone North/South, Room 160 (Upper Mezzanine South)
This panel discussion will include a review of current developments in this field.

Workshop on Trends in Ultrashort Pulse Laser Source Technology Improvements
23 January 2022 • 1:30 PM-3:30 PM | Moscone North/South, Room 201 (Level 2 South)
This workshop brings together novel USPL source experts to provide a status of the development of emerging USPL technologies, identify points of contact to further coordination and cooperation, and propose solutions to emerging technological gaps.

BIOS Poster Session (Sunday)
23 January 2022 • 5:30 PM-7:00 PM | Moscone West, Lobby (Level 3)
Conference attendees are invited to attend the BIOS poster session on Sunday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field.

BIOS Student 3-Minute Poster Presentations
Sponsored by NeuroPhotonics and the Journal of Biomedical Optics
24 January 2022 • 4:30 PM-5:30 PM | Moscone West, Lobby (Level 3)
Students present 3-minute rapid-fire overviews of their BIOS poster research. The top three presentations will receive cash prizes.

BIOS Poster Session (Monday)
24 January 2022 • 5:30 PM-7:00 PM | Moscone West, Lobby (Level 3)
Conference attendees are invited to attend the BIOS poster session on Monday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field.

Frontiers of Laser 3D Manufacturing Keynotes, Hot Topics, and Panel Discussion
25 January 2022 • 1:30 PM-5:30 PM | Moscone North/South, Room 207 (Level 2 South)
Join us for keynotes and hot topics followed by a lively panel discussion on the Frontiers of Laser 3D Manufacturing. Speakers include Youping Gao, Eliana Fu, Rebecca Dylla-Spears, Henry Helvajian, and Hongqiang Chen.

LASE Poster Session
25 January 2022 • 6:00 PM-8:00 PM | Moscone West, Lobby (Level 3)
Conference attendees are invited to attend the LASE poster session on Tuesday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field.

Holography
25 January 2022 • 7:30 PM-9:00 PM | InterContinental Hotel, Intercontinental Ballroom B (5th Floor)
Join the holography technical group for a discussion on recent developments and directions in holography, focusing in particular on new materials, color display holography, digital holography, CGHs, and HOEs.

Laser Communications
25 January 2022 • 7:30 PM-9:00 PM | InterContinental Hotel, Intercontinental Ballroom C (5th Floor)
Join us for the annual meeting on Laser Communications. We invite all professionals involved in theory and applications of free-space laser communications, remote sensing, and supporting technologies.

Optical Communications Awards and Panel Discussion on Integrated Photonics
26 January 2022 • 8:30 AM-10:00 AM | Moscone North/South, Room 206 (Level 2 South)
Join us for the Optical Communications Best Student Paper awards and a panel discussion on integrated photonics.

Workshop on Methods of Complex Light
26 January 2022 • 2:00 PM-3:40 PM | Moscone North/South, Room 301 (Level 3 South)
Join us for small-group discussions on technologies related to complex light with a variety of experienced researchers in the field.

OPTO Poster Session
26 January 2022 • 6:00 PM-8:00 PM | Moscone West, Lobby (Level 3)
Conference attendees are invited to attend the OPTO poster session on Wednesday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field.
While industry experts and leaders from various fields share opportunities and challenges.

### Healthcare Startups Panel
**22 January 2022 • 3:00 PM–4:30 PM | Moscone North/South, Expo Stage, Hall DE (Exhibit Level)**

An informative panel composed of members of the healthcare startup ecosystem will discuss trends in growth and funding.

**Panelists:**
- Brit Berry-Pusey, COO, Avenda Health (United States)
- Rachel Kuperman, CEO and founder, Eysz (United States)
- Jay Reddy, CEO and Founder, Advanced Optronics (United States)
- An informative panel composed of members of the healthcare startups will discuss trends in growth and funding.

**Transforming Healthcare via AI and Deep Learning**
**23 January 2022 • 10:15 AM–12:15 PM | Moscone North/South, Expo Stage, Hall DE (Exhibit Level)**

Learn more about how machine learning and AI are improving the accuracy and efficiency in medical imaging from industry experts at FDA, Twenty/Twenty Therapeutics, Kineviz, HeartFlow, Glarity Imaging, and Google Health.

**Impact of Artificial Intelligence and Analytics to Ophthalmology**
**23 January 2022 • 10:15 AM–12:15 PM | Moscone North/South, Expo Stage, Hall DE (Exhibit Level)**

Suripio Sinha, Dir. of Applied Research and Head of Optical Engineering & Mechanical Engineering, Twenty / Twenty Therapeutics (United States)

**Graphs and AI for Healthcare**
**23 January 2022 • 10:15 AM–12:15 PM | Moscone North/South, Expo Stage, Hall DE (Exhibit Level)**

Ana Areias, Data Scientist, Kineviz (Portugal)

**HeartFlow**
**23 January 2022 • 10:15 AM–12:15 PM | Moscone North/South, Expo Stage, Hall DE (Exhibit Level)**

Michiel Schaap, Vice President, Research, HeartFlow (Netherlands)

**University of Chicago, MIDRC, Glarity Imaging**
**23 January 2022 • 10:15 AM–12:15 PM | Moscone North/South, Expo Stage, Hall DE (Exhibit Level)**

Maryellen Giger, Dept. Radiology, Com Medical Physics, The Univ. of Chicago

**Panel Discussion**
**23 January 2022 • 10:15 AM–12:15 PM | Moscone North/South, Expo Stage, Hall DE (Exhibit Level)**

Yuan Liu, Software Engineer, Google Health (United States)

**Evolution of Optical Coherence Tomography (OCT) Applications and Advancements**
**23 January 2022 • 2:30 PM–5:00 PM | Moscone North/South, Expo Stage, Hall DE (Exhibit Level)**

Adam Wax, CEO and Founder, Lumedica (United States); Professor, Duke University (United States); Editor-in-Chief, SPIE Optical Engineering

**Three Decades of Commercialization and Modern Trends in OCT Imaging**
**Nishant Mohan, Chief Technology Officer, Tesseract Health, Inc. (United States)**

**Clinical Visible-Light OCT: What Do We Need Next?**
**Hao F. Zhang, Professor, Northwestern Univ. (United States); Co-Founder, Optiscan Health (United States)**

**Through the Curtain: OCT-Enhanced Ear Exams Remove the Guesswork**
**Ryan Shelton, CEO, Photonicare Inc. (United States)**

**Portable, High-Speed SS-OCT for Pediatric and Point-of-Care Imaging**
**Hafeez Dhalla, CEO, Thelia Imaging (United States)**

**Improving Imaging Performance of Low-Cost OCT for the Clinic**
**Adam Wax, CEO and Founder, Lumedica (United States); Professor, Duke University (United States); Editor-in-Chief, SPIE Optical Engineering**

**Panel Discussion and Q&A**
**Sponsor: Lumedica**

**Lasers & Photonics Marketplace Seminar**
**24 January 2022 • 8:00 AM–5:00 PM | InterContinental Hotel, Grand Ballroom (3rd Floor)**

The Lasers & Photonics Marketplace Seminar delivers a comprehensive analysis of the global market for lasers and all of photonics. This event requires a separate registration from Photonics West.

**See the agenda at:**
[https://endeavor.swoogo.com/lmps2022/agenda](https://endeavor.swoogo.com/lmps2022/agenda)

**EVENING NETWORKING RECEPTION SPONSORED BY:**

**Sensors and Instrumentation Technical Advisory Committee (Open Session)**
**25 January 2022 • 9:00 AM–12:00 PM | InterContinental Hotel, Intercontinental Ballroom C (5th Floor)**

The Sensors and Instrumentation Technical Advisory Committee is an official federal advisory committee within the US Bureau of Industry and Security. Any attendee is welcome to attend and participate during the open session of this meeting.

**Chair:**
Jennifer Doris O’Bryan, Director, Government Affairs, SPIE (United States)

**Job Fair**
**25 January 2022 • 10:00 AM-5:00 PM | Moscone West, Career Hub, Lobby (Level 1)**

Meet with companies seeking to hire professionals like you. Bring your resume and put your best foot forward to land your dream job.
Industry Initiatives for the Commercial Quantum Infrastructure
25 January 2022 • 2:00 PM-3:45 PM | Moscone North/South, Quantum Hub Stage, Hall A Lobby (Exhibit Level)

Join Jay Lowell, Boeing Senior Technical Fellow, and Cella Merzbacher, QED-C Executive Director, at the first session of Quantum West. This session will discuss the potential, gaps, and challenges of commercializing quantum.

Panel Discussion on Industry Initiatives for the Commercial Quantum Infrastructure
25 January 2022 • 2:00 PM-3:45 PM | Moscone North/South, Quantum Hub Stage, Hall A Lobby (Exhibit Level)

Join us for a panel session, moderated by Eric Verey, Yole, to discuss the future of MicoLEDs with Nanosys, PlayNitride, Stratacache, X Display Company, Coherent, VuReal, eLux Display, and others.

MicroLED Display Technology-Path to High-Volume Manufacturing and Consumer Adoption
26 January 2022 • 10:15 AM-11:30 AM | Moscone North/South, Expo Stage, Hall DE (Exhibit Level)

Come to the Expo Stage and learn how to capitalize on initial device-level photonic materials patents and expertise to disrupt major end-markets and create sustainable and growing companies. Open to all attendees.

Business Model Transformations: Upscaling into End Systems from the Photonic Components
26 January 2022 • 11:45 AM-1:00 PM | Moscone North/South, Expo Stage, Hall DE (Exhibit Level)

Come to the Expo Stage and learn how to capitalize on initial device-level photonic materials patents and expertise to disrupt major end-markets and create sustainable and growing companies. Open to all attendees.

Photons for Net Zero
26 January 2022 • 1:15 PM-2:45 PM | Moscone North/South, Expo Stage, Hall DE (Exhibit Level)

Join John Lincoln, Director at Harlin, and his guest speakers in a special session on how photonics can make a major contribution to achieving net zero.

Panel Discussion on Business Model Transformations: Upscaling into End Systems from the Photonic Components
26 January 2022 • 11:45 AM-1:00 PM | Moscone North/South, Expo Stage, Hall DE (Exhibit Level)

Come to the Expo Stage and learn how to capitalize on initial device-level photonic materials patents and expertise to disrupt major end-markets and create sustainable and growing companies. Open to all attendees.

Panel Discussion on Photonics for Net Zero
26 January 2022 • 1:15 PM-2:45 PM | Moscone North/South, Expo Stage, Hall DE (Exhibit Level)

Join John Lincoln, Director at Harlin, and his guest speakers in a special session on how photonics can make a major contribution to achieving net zero.
**INDUSTRY EVENTS**

**From Consumer to Space, 3D Sensing Adoption is Accelerating**
26 January 2022 • 3:00 PM–4:45 PM | Moscone North/South, Expo Stage, Hall DE (Exhibit Level)
Senior Executive from AEye, LeddarTech, Lumotive, and Baraja will discuss how their work is making a difference to improving mobility, quality of life, autonomous vehicles, advanced driver assistance systems, robotics, and more.

**Introduction from the Chair**
Pierrick Boulay
Senior Analyst at Yole Développement (France)

**Adaptive LiDAR: Key to Advancing Autonomy**
Luis Dussan
Founder and CTO AEye (United States)

**Solid-State Beam Steering for Automotive LiDAR**
Pierre Olivier
CTO LeddarTech (Canada)

**Lumotive**
Gleb Akselrod
CTO and Founder Lumotive (United States)

**Baraja**
Yannick K. Lize
VP Research & Development Baraja (United States)

**Government Policy Update**
27 January 2022 • 10:15 AM–11:15 AM | Moscone North/South, Expo Stage, Hall DE (Exhibit Level)
Free to attend. On the Expo Industry Stage (Hall E).

**Photons Market Update**
27 January 2022 • 10:45 AM–11:45 AM | Moscone North/South, Expo Stage, Hall DE (Exhibit Level)
Free to attend. On the Expo Industry Stage (Hall E).

**Executive Insights: Emerging Stronger from a Period of Uncertainty**
27 January 2022 • 1:00 PM–2:30 PM | Expo Stage, Hall DE (Exhibit Level)
Join us for a thought-provoking session as executives from leading photonics companies take to the stage to share their thoughts and insights on opportunities and challenges guiding the future of the industry.

**MODERATOR**
Andrew Brown
Senior Director, Global Business Development SPIE (United States)

**SPEAKERS**
Shahida Imani
CEO Chromacity Ltd. (USA)

**Panel Discussion on Consumer to Space, 3D Sensing Adoption is Accelerating**

**2022 Prism Awards**
26 January 2022 • 6:00 PM–8:30 PM | Moscone West, Prism Award Stage (Level 2)
An annual international competition that honors the best new optics and photonics products on the market. Tickets required.

**Congratulations to the 2022 Prism Awards Finalists**

**Autonomous Vehicles**
 Labsphere
 Leica Geosystems
 Lumotive

**Software**
 Direct Machining Control (DMC)
 MEETOPTICS
 Zemax

**Augmented & Virtual Reality**
 Avagent
 Luxexcel
 Metalenz

**Industrial Lasers**
 Civan Lasers
 Litilit
 TOPTICA Eagleyard

**Manufacturing & Test**
 ficonTEC
 LightPath Technologies
 Nanoscribe

**Biomedical Devices**
 OmniVision
 PlenOptika
 Research Instruments Corporation

**Better Sensing**
 Emberion
 Stratio
 SWIR Vision Systems

**Scientific Lasers**
 Class 5 Photonics
 FYLA Laser
 Stuttgart Instruments

**Quantum**
 ColdQuanta
 Hamamatsu
 Toshiba

**Displays**
 ams OSRAM
 BRELYON
 Jade Bird Display (JBD)

**Presented by**
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Startup Challenge: M&A Activity in Photonics
25 January 2022 • 10:15 AM–11:15 AM | Moscone North/South, Expo Stage, Hall DE (Exhibit Level)
Mergers and acquisitions have driven growth and change in the photonics sector throughout 2021. Linda Smith from Ceres Technology Advisors will lead an update on M&A activity across various sectors.

Startup Challenge: Photonics Startup Fundraising Pitches
25 January 2022 • 11:20 AM–12:15 PM | Moscone North/South, Expo Stage, Hall DE (Exhibit Level)
Photonics-based startups raising Series A and B rounds pitch their growth stage business. See the latest businesses building the future using photonics.

Startup Challenge: Investing in Photonics
25 January 2022 • 1:00 PM–2:00 PM | Moscone North/South, Expo Stage, Hall DE (Exhibit Level)
Hear from leading VCs about emerging trends, common problems, and how founders can build successful companies in the photonics space.

Startup Challenge Finals
25 January 2022 • 2:15 PM–4:15 PM | Moscone North/South, Expo Stage, Hall DE (Exhibit Level)
Startups with new photonics-based businesses pitch to a team of expert judges. Teams have 5 minutes to pitch in areas such as quantum computing, AI/VR, 3D printing, optical communication, and microscopy to take home the $10,000 first prize.

Startup Challenge Awards and Reception
25 January 2022 • 4:30 PM–5:00 PM | Moscone North/South, Expo Stage, Hall DE (Exhibit Level)
Who will take home the $10,000 first prize in the Startup Challenge? The awards ceremony is followed by a reception.

See full details and updates at spie.org/pw or on the SPIE App

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WORLDWIDE COVERAGE

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Subscribe today!
www.photonics.com/subscribe
Hear from experts discussing market prospects, information systems and computing, communications, sensing and imaging, a special focus on photonics in quantum, and the path for building a commercial ecosystem.

**Quantum West: Welcome and Keynote**
26 January 2022 • 9:00 AM–9:50 AM | Moscone North/South, Quantum Hub Stage, Hall A Lobby (Exhibit Level)
Welcome to the Quantum West 2022 Conference! Join these opening remarks from Celia Merzbacher, QED-C (United States), followed by a keynote presentation from Jay Lowell, Boeing (United States).

**Welcome and Introduction**
Celia Merzbacher  
QED-C Executive Director  
SRI International (United States)

Jay Lowell  
Senior Technical Fellow  
Boeing Research and Technology Disruptive Computing & Networks (United States)

**Quantum West: Applications and the Role of Photonics in Quantum Computing**
26 January 2022 • 10:15 AM–12:00 PM | Moscone North/South, Quantum Hub Stage, Hall A Lobby (Exhibit Level)
Hear about key applications of quantum technology and the role of photonics in those applications from Quantum West speakers Pete Shadbolt, PsiQuantum (USA), Jonathan King, Atom Computing (USA), and Melissa Revelle, Sandia National Labs (USA).

**Welcome and Opening Remarks**
Session Chair: Santanu Basu  
Quantum Technologies

**Silicon Photonic Quantum Computing**
Pete Shadbolt  
Chief Strategy Officer  
PsiQuantum (United States)

**Optically Trapped Atomic Qubits**
Jonathan King  
Co-Founder and Chief Scientist  
Atom Computing (United States)

**Microfabricated Ion Traps for Quantum Information**
Melissa Revelle  
Senior Member of Technical Staff  
Sandia National Laboratories (United States)

**Quantum West: Applications and the Role of Photonics in Networks and Communications**
26 January 2022 • 1:00 PM–3:00 PM | Moscone North/South, Quantum Hub Stage, Hall A Lobby (Exhibit Level)
This exciting session on quantum networking communications and cybersecurity features a three-talk lightning round followed by two extended presentations and a panel discussion.

**Welcome and Opening Remarks**
Session Chair: Anke Lohmann  
Co-Founder and Director  
Anchored In (United Kingdom)

**LIGHTNING TALKS ON REGIONAL ACTIVITIES**
**IOWN in the Quantum World**
Bill Mureau  
Basic Research Laboratories  
NTT (Japan)

**Quantum Networks in the US**
Duncan Earl  
CTO  
Qubitek (United States)

**Recent Quantum Key Distribution**
Deployments in UK and Europe from an Industrial Perspective
Mirko Pittaluga  
Research Scientist  
Toshiba Europe (United Kingdom)

**The overlap between photonic quantum computing and quantum communications: leading components and developments that advance both**
Jamie Francis-Janes  
Head of Hardware  
ORCA Computing (United Kingdom)

**Panel Discussion on Applications and the Role of Photonics in Networks and Communications**

**Quantum West: Applications and the Role of Photonics in Sensing and Imaging**
26 January 2022 • 3:15 PM–5:00 PM | Moscone North/South, Quantum Hub Stage, Hall A Lobby (Exhibit Level)
This exciting session on quantum sensing and imaging featuring Jamil Abo-Shaeer, Vector Atomic (USA), Kartik Srinivasan, NIST (USA), Yuri Lebedev, Q-Sensorix (USA), and Jay Lowell, Boeing Research and Technology (USA).

**Welcome and Opening Remarks**
Session Chair: Barbara Goldstein  
CTO  
Amazon Web Services (United States)

**Commercializing Quantum Clocks and Sensors**
Jamil Abo-Shaeer  
CEO  
Vector Atomic (United States)

**Panel Discussion on Photonics in Quantum Sensing and Imaging**

**Quantum West: The Quantum Marketplace**
26 January 2022 • 5:00 PM–5:35 PM | Moscone North/South, Quantum Hub Stage, Hall A Lobby (Exhibit Level)
Join Thierry Botter, European Quantum Industry Consortium (QuIC) and Mark Whippich, MPW (USA) as they discuss the current status and future roadmap for development of the quantum application marketplace.

**Introductory Remarks**
Thierry Botter  
Executive Director  
European Quantum Industry Consortium (QuIC)

**Quantum Marketplace: Now and Looking Ahead**
Mark Whippich  
Principal  
MPW (United States)  
Moderator  
QED-C Quantum Marketplace (United States)

**Concluding Remarks**
Celia Merzbacher  
QED-C Executive Director  
SRI International (United States)

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CAREER HUB
Moscone West, Career Hub (Level 1)

Gain insights and tips to help advance your career and workplace satisfaction. hone valuable job skills and focus on career development at these informative and engaging events. Build your schedule and don’t miss opportunities to make valuable connections.

Professional development events on the Career Hub Stage

How to Network When You Hate Networking
23 January 2022 • 1:30 PM–4:30 PM | Moscone West, Career Hub Stage (Level 1)
Open to SPIE Members only. Speaker David Giltner leads us through this workshop on understanding the critical importance of networking and how to make the most of your networking opportunities.

Designing Your Own Career Path in the Private Sector
24 January 2022 • 9:00 AM–12:00 PM | Moscone West, Career Hub Stage (Level 1)
Not all career trajectories follow a traditional path. Speaker David Giltner’s workshop on designing private sector career paths will help you create a future you can be excited about. Open to SPIE Members.

Essential Skills for a Career in Industry
24 January 2022 • 1:30 PM–4:30 PM | Moscone West, Career Hub Stage (Level 1)
Open to SPIE Members only. In this workshop, speaker David Giltner walks us through the vital components of a successful career in industry, and how it differs from that of academia.

Equity, Diversity and Inclusion Presentation
24 January 2022 • 5:00 PM–6:30 PM | Moscone West, Career Hub Stage (Level 1)
Join us for a thought-provoking presentation from Dr. Kayla Lee and stay after to discuss topics with your colleagues during the reception.

Resumes to Interviews: Strategies for a Successful Job Search
25 January 2022 • 1:00 PM–3:00 PM | Moscone West, Career Hub Stage (Level 1)
Open to SPIE Members only. Recruiter and Speaker, Heather Welch, leads us through this vital workshop on resume and interview must-dos and don’ts.

Career Networking Mixer
25 January 2022 • 4:00 PM–5:00 PM | Moscone West, Lobby, adjacent to Job Fair
A casual mixer to chat with recruiters from the Job Fair and other industry and academia professionals about careers in the optics industry.

Navigating Career Growth in a Changing Optics Industry: Challenges and Opportunities for Diverse Voices
25 January 2022 • 4:30 PM–5:15 PM | Moscone West, Career Hub Stage (Level 1)
Join us for a panel discussion on the future of equity, diversity and inclusion in the workforce as well as hiring practices in the optics and photonics sectors.

Grant Writing from the Ground Up
26 January 2022 • 9:00 AM–12:00 PM | Moscone West, Career Hub Stage (Level 1)
Open to all. Author and speaker, Damon Diehl, leads us through this critical workshop on successful grant writing.

Charting a Course in the Photonics Industry
26 January 2022 • 2:00 PM–3:00 PM | Moscone West, Career Hub Stage (Level 1)
Open to all. Come hear expert panelists discuss the wide array of career paths in the optics and photonics industry, so you can make informed decisions for your future.

Free Professional Headshots
24 January 2022 • 10:00 AM–5:00 PM | Moscone West, Lobby (Level 1)
25 January 2022 • 10:00 AM–5:00 PM | Moscone North/South, Hall F (Exhibit Level) and Moscone West, Lobby (Level 1)
26 January 2022 • 10:00 AM–5:00 PM | Moscone North/South, Hall F (Exhibit Level) • 10:00 AM–3:00 PM | Moscone West, Lobby (Level 1)
Get your free professional portrait taken during SPIE Photonics West.

Resume Review
24 January 2022 • 10:00 AM–4:00 PM
25 January 2022 • 10:00 AM–4:00 PM
26 January 2022 • 10:00 AM–2:00 PM
Moscone West, Career Hub (Level 1)
Bring your resume to receive tactical tips and tricks from a professional resume reviewer.

SPIE Job Fair
Tuesday 25 January • 10:00 AM–5:00 PM
Wednesday 26 January • 10:00 AM–5:00 PM
Moscone West, Lobby Level

Speak with hiring companies
Connect with company representatives looking for qualified candidates. hone your interviewing skills, prepare your resume, and explore job opportunities in the photonics industry.

2022 JOB FAIR EXHIBITORS

Visit the SPIE Mobile event app or the website for current list of Job Fair exhibitors

Services from SPIE to get your job search on track
SOCI AL AND NETWORKING EVENTS

Make connections with new and old colleagues. Enjoy real conversations and make important connections in person. Take the opportunity to discuss optics and photonics with other professionals from around the world.

First Timers Meetup
23 January 2022 • 10:30 AM-11:00 AM • 2:00 PM-2:30 PM
24 January 2022 • 10:30 AM-11:00 AM • 2:00 PM-2:30 PM
25 January 2022 • 10:30 AM-11:00 AM
Moscone West, Career Hub, Membership Info Booth (Level 1)
Is this your first time to SPIE Photonics West? We’d love to meet you! Join us to gather informally and get to know each other. We’ll walk through some of the week’s highlights, answer any questions you have, and celebrate being together!

BIOS Expo Networking Reception in the Exhibition
23 January 2022 • 2:30 PM-3:30 PM | Moscone North/South, Exhibition Level
Open to all attendees. Come network and socialize with exhibitors!

SPIE Career Lab Meetup
23 January 2022 • 7:00 PM-8:30 PM | Moscone West, Career Hub (Level 1)
Come meet your fellow SPIE Career Lab Facebook Group members in real life and celebrate the return to Photonics West!

SPIE Publications Reception-BIOS
23 January 2022 • 8:00 PM-9:00 PM | InterContinental Hotel, By Invitation Only
This reception is for all volunteers who serve as Editors for the Journal of Biomedical Optics or Neurophotonics. Please join us!

Photonics West First Timers Reception
24 January 2022 • 4:00 PM-5:00 PM | Moscone West, Lobby (Level 3)
Is this your first time to SPIE Photonics West? We’d love to meet you! Please join us for light appetizers and beverages as we gather informally and get to know each other. We’re happy to answer questions and celebrate having you in San Francisco!

Student and Early Career Networking Social
24 January 2022 • 5:00 PM-6:00 PM | Moscone West, Lobby (Level 3)
SPIE Student and Early Career Professional Member social and speed-networking extravaganza!

Executive Women’s Meetup
24 January 2022 • 6:00 PM-7:30 PM | InterContinental Hotel, Fremont (5th Floor)
Join us at a reception for women executives in the optics, photonics, and photonics-enabled community. Build your professional network, share experiences, and learn from each other.

Photonics West Welcome Reception
24 January 2022 • 7:00 PM-9:00 PM | Marriott Marquis, Yerba Buena Ballroom (Lower Level)
Don’t miss our Welcome Back Reception and celebrate being together again.

SPIE Student Chapter Meetup
25 January 2022 • 11:00 AM-12:00 PM | Moscone West, Career Hub (Level 1)
Come meet your fellow Student Chapter Members from all over the world! Make new friends and play some games to expand your network.

Whiskey Tasting at SPIE Booth 3374
25 January 2022 • 1:00 PM-5:00 PM
26 January 2022 • 1:00 PM-5:00 PM
27 January 2022 • 12:00 PM-4:00 PM
Moscone North/South, Hall D (Exhibit Level)
Sample specialty whiskies while chatting with colleagues at SPIE Booth #3374.

Career Networking Mixer
25 January 2022 • 4:00 PM-5:00 PM | Moscone West, Lobby, adjacent to Job Fair
A casual mixer to chat with recruiters from the Job Fair and other industry and academia professionals about careers in the optics industry.
Sponsored by THORLABS

SPIE Publications Reception-OPTO and LASE
25 January 2022 • 5:00 PM-6:00 PM | InterContinental Hotel, By Invitation Only
This reception is for all volunteers who serve as Editors for SPIE journals Optical Engineering, Advanced Photonics, JEI, JNP, JPE, or JOM.

LGBTQ+ Social
25 January 2022 • 6:30 PM-7:30 PM | Moscone West, Career Hub (Level 1)
Come join us and socialize and network with other LGBTQ+ attendees, students, scientists, and allies in the optics and photonics community.

Black in Photonics Meetup
26 January 2022 • 5:30 PM-6:30 PM | Moscone West, Career Hub (Level 1)
Join us for a Black in Photonics informal meetup at SPIE Photonics West.

Photonics West Networking Reception in the Exhibition
27 January 2022 • 2:30 PM-3:30 PM | Moscone North/South, Exhibition Level
Open to all attendees. Come network and socialize with exhibitors!

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Photonics West, Booth #3374 25-27 January 2022

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e. rob.fisher@optics.org

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MEMBERSHIP EVENTS

Meet new people and renew old friendships. Your SPIE Membership is a valuable asset; join other SPIE Members at these informal get-togethers taking place in San Francisco. Also make sure to stop at the SPIE Membership booth (#3375) 25–27 January on the Photonics West show floor.

SPIE Fellow Member Luncheon
24 January 2022 • 12:00 PM–1:30 PM | InterContinental Hotel, Intercontinental Ballroom (5th Floor)
All Fellow Members of SPIE are invited to join your colleagues for an SPIE hosted lunch. The new SPIE Fellows attending Photonics West will be introduced and recognized.

SPIE Senior Member Breakfast
25 January 2022 • 8:00 AM–9:00 AM | InterContinental Hotel, Intercontinental Ballroom A (5th Floor)
All SPIE Senior Members are invited to join your colleagues for this SPIE-hosted buffet breakfast. Please join us for this informal gathering and a chance to interact with other Senior Members.

Meet the SPIE Leadership Candidates
25 January 2022 • 6:00 PM–7:00 PM | InterContinental Hotel, Howard (5th Floor)
Meet the 2022 candidates for Officer and Director of the Society while enjoying refreshments during this casual reception.

SPIE After-Dinner Member Reception
25 January 2022 • 8:00 PM–9:30 PM | Marriott Marquis, Golden Gate A
SPIE Members are invited to an after-dinner reception. Enjoy beer, wine, coffee and desserts. Please note: this reception is limited to SPIE Members only. Please wear your registration badge and Member ribbon and bring a valid ID. If you join as an SPIE Member onsite, please bring your registration receipt. Dress is casual or business attire.

Visit the SPIE Membership and Communities booth
25 January 2022 • 12:00 PM–1:30 PM | Marriott Marquis, Golden Gate A
Visit and learn more about Membership.

Members receive a thank you gift for being a valued Member.

Share your thoughts and ideas about Membership with leadership, and tell us your story.

What Member benefit most impacted your professional journey?

What is the future of your field?

What inspires you to be passionate about your work?

spie.org/membership

See full details and updates at spie.org/pw or on the SPIE App.
Two World-Class Exhibitions

More companies exhibit at Photonics West than any other exhibition in North America. Meet top suppliers, make the right connections, and discover new possibilities.

**BIOS Expo** - 22–23 January 2022
Location: Halls DE

BIOS Expo is the world’s largest biomedical optics and biophotonics exhibition. Find the latest technologies from companies supplying biomedical research and healthcare solutions.

SATURDAY 22 JANUARY ............... 12:00 PM–6:00 PM
SUNDAY 23 JANUARY ............... 10:00 AM–4:00 PM

**Photonics West Exhibition** - 25–27 January 2022
Location: Halls ABCDEF

The Photonics West exhibition is the premier photonics and laser event. Find the latest components, devices, and systems for your research or business needs.

TUESDAY 25 JANUARY ............... 10:00 AM–5:00 PM
WEDNESDAY 26 JANUARY .......... 10:00 AM–5:00 PM
THURSDAY 27 JANUARY .......... 10:00 AM–4:00 PM

**FEATURED TECHNOLOGIES**

- Biomedical Optics Components, Products, Instrumentation, and Applications
- Lasers
- Molecular Imaging
- Therapeutic Lasers
- Nano/Biophotonics
- Biosensors
- Spectroscopic/Microscopic Imaging

- Lasers and Other Light Sources
- Laser Accessories, Laser Systems
- Cameras and CCD Components
- Fiber Optic Components, Equipment, Systems
- Optical Components
- Communications
- Optical Detectors
- High Speed Imaging and Sensing
- Optical Materials and Substrates
- IR Sources and Detectors
- Electronic Imaging Components
- Optical Coatings
- Lenses and Filters
- Positions and Mounts
- Metrology

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- Biophotonics, a Photonics Media publication
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- Laser Focus World optics.org

### PHOTONICS WEST PROMOTIONAL PARTNERS

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### Photonics West courses

Courses complement and expand your Photonics West experience. Take advantage of this great opportunity to meet face-to-face with an expert instructor and a group of people with similar goals and challenges.

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<th>SATURDAY 23 January</th>
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<td>AR/VR/MR</td>
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<tr>
<td>SC1098 Head-Mounted Display Requirements and Design for Augmented Reality Applications (Shoosha, Zelenz) 8:30 AM-5:30 PM, $755/$429/$885</td>
<td>SC1214 Introduction to VR, AR, MR and Smart Eyewear: Market Expectations, Hardware Requirements and Investment Patterns (Kress) 8:30 AM-10:30 AM, $920/$209/$15</td>
<td>SC1216 Optical Technologies and Architectures (MR) Head-Mounted Displays (HMDs) (Nasrabadi) 8:30 AM-5:30 PM, $745/$425/$875</td>
<td>SC1217 Optical Metrology for AR, VR, MR (Zhou) 1:30 PM-5:30 PM, $450/$285/$525</td>
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<td>SC1010 Optical Metrology for AR, VR, MR (Zhou) 1:30 PM-5:30 PM, $450/$285/$525</td>
<td>SC1195 Fluorescence Sensing and Imaging: Towards Portable Healthcare (Ley) 1:30 PM-5:30 PM, $450/$285/$525</td>
<td>SC1196 Fluorescence Sensing and Imaging: Towards Portable Healthcare (Ley) 1:30 PM-5:30 PM, $450/$285/$525</td>
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<td>SC1009 Artificial Intelligence for Computer Vision Applications (Agaim) 8:30 AM-12:30 PM, $450/$285/$525</td>
<td>SC1181 Designing and Specifying Digital Cameras (Browne) 8:30 AM-12:30 PM, $450/$285/$525</td>
<td>SC1182 Deep Learning and Applications in Image Processing (Novak) 8:30 AM-5:30 PM, $745/$425/$875</td>
<td>SC1183 Designing and Specifying Digital Cameras (Browne) 8:30 AM-12:30 PM, $450/$285/$525</td>
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<td>SC1011 Design of Efficient Illumination Systems (Casserey) 1:30 PM-5:30 PM, $450/$285/$525</td>
<td>SC1024 Fundamental of Optical Engineering (Vogel) 1:30 PM-5:30 PM, $450/$285/$525</td>
<td>SC1244 Adobe Photoshop for Optics and Photonics Design (Barrett) 8:30 AM-5:30 PM, $745/$425/$875</td>
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<td>Laser Technology and Applications</td>
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<td>SC1028 Solid Laser Technology (Hodges) 8:30 AM-12:30 PM, $450/$285/$525</td>
<td>SC1028 Industrial Ultrashort Lasers for Micro-Processing and Applications (Hodges) 8:30 AM-12:30 PM, $450/$285/$525</td>
<td>SC1221 Coherent Light and Laser Engineering (Lavoie) 8:30 AM-12:30 PM, $450/$285/$525</td>
<td>SC1222 Introduction to LIDAR for Autonomous Vehicles (Shaw) 1:30 PM-5:30 PM, $450/$285/$525</td>
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<td>Metrology and Standards</td>
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<td>SC1057 Optical Measurements for Automotive Displays (Blanckenbach) 8:30 AM-12:30 PM, $450/$285/$525</td>
<td>SC1058 Optical Measurements for Automotive Displays (Blanckenbach) 8:30 AM-12:30 PM, $450/$285/$525</td>
<td>SC1059 Optical Measurements: An Introduction with Practical Applications (Kress) 8:30 AM-12:30 PM, $450/$285/$525</td>
<td>SC1060 Optical Metrology for AR, VR, MR (Zhou) 1:30 PM-5:30 PM, $450/$285/$525</td>
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**MONEY-BACK GUARANTEE**

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

Digital badges and certificates

SPIE awards digital badges and certificates to participants who attend courses and complete the evaluation and quiz. Digital credentials are always accessible, easily shareable, printable at any time, and verified. For more information visit spie.org/digital-badges.

SPIE Members and Student Members receive discounts on courses.

Price key: SPIE Member / Student Member / Non-Member

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**DAILY COURSE SCHEDULE**

Check the course schedule and view course descriptions online.

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**Optoelectronics**

- **SC1125** Design Techniques and Applications Fields for Digital Micro-optics (Kress) 8:30 AM–5:30 PM, $745/$425/$875
- **SC1277** Photodetectors: Theory, Practice, and Applications (Piatek) 8:30 AM–12:30 PM, $450/$285/$525
- **SC1259** Introduction to Vertical-Cavity Surface-Emitting Lasers (VCSELs) and Applications (Choquette) 1:30 PM–5:30 PM, $450/$285/$525
- **SC1217** Silicon Photonics (Michel) 1:30 PM–5:30 PM, $450/$285/$525
- **SC1191** Quantum Sensors (Lanzagorta, Venegas-Andraca) 8:30 AM–12:30 PM, $450/$285/$525
- **SC747** Semiconductor Photonic Device Fundamentals (Linden) 8:30 AM–5:30 PM, $745/$425/$875
- **SC1210** Quantum Computing (Venegas-Andraca) 1:30 PM–5:30 PM, $450/$285/$525

Price key: SPIE Member / Student Member / Non-Member

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**APPLICATION TRACKS**

Applications tracks list presentations on a specific topic together within the program so that participants can easily locate presentations in their area of interest. Learn about key technologies creating market opportunities and connect with people creating the future. Each track will highlight applicable papers.

See conference app or website for a full listing of presentations in each of these tracks: spie.org/pwapplications

- **Brain**
  Papers that describe the development of innovative technologies that will increase our understanding of brain function

- **Translational Research**
  Papers that showcase the latest photonics technologies, tools, and techniques with high potential to impact healthcare

- **3D Printing**
  Papers that showcase innovative ways to apply this multidimensional/multidisciplinary technology

- **COVID-19 Research**
  Papers that illustrate the creativity and breadth of the optics and photonics community’s response to the COVID-19 pandemic
BiOS

SPIE BiOS is the most important biomedical optics conference in the field. Topics include biomedical optics, diagnostics and therapeutics, biophotonics, new imaging modalities, optical coherence tomography, neurophotonics, optogenetics, tissue optics, and nanophotonics.

BIOS SYMPOSIUM CHAIRS

Jennifer Barton
The Univ. of Arizona (United States)

Wolfgang Drexler
Medical Univ. of Vienna (Austria)

BIOS PROGRAM TRACK CHAIRS

Photonic Therapeutics and Diagnostics
Brian Jet-Fai Wong, Beckman Laser Institute and Medical Clinic, Univ. of California, Irvine (United States)
Eva M. Sevick, The Univ. of Texas Health Science Ctr. at Houston (United States)

Neurophotonics, Neurosurgery, and Optogenetics
Elizabeth Hillman, Columbia Univ. (United States)
Anna Davor, Boston Univ. (United States)

Clinical Technologies and Systems
Tuan Vo-Dinh, Duke Univ. (United States)
Anita Mahadevan-Jansen, Vanderbilt Univ. (United States)

Tissue Optics, Laser-Tissue Interaction, and Tissue Engineering
E. Duco Jansen, Vanderbilt Univ. (United States)
Jessica C. Ramella-Roman, Florida International Univ. (United States)

Biomedical Spectroscopy, Microscopy, and Imaging
Ammasi Periasamy, Univ. of Virginia (United States)
Daniel L. Farkas, Univ. of Southern California (United States)
and SME (United States)

Nano/Biophotonics
Paras Prasad, Univ. at Buffalo (United States)
Ewa M. Goldys, The Univ. of New South Wales (Australia)

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BIOS DAILY CONFERENCE SCHEDULE
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Photonic Therapeutics and Diagnostics (Wong, Sevick)

11934 Photons in Dermatology and Plastic Surgery 2022 (Choe, Zheng)
Room 103 (Level 3 South Lobby)

11935 Imaging, Therapeutics, and Advanced Technology in Head and Neck Surgery and Otolaryngology 2022 (Wong, Agmae)
Room 78 (Lower Mezzanine South)

11936 Diagnostic and Therapeutic Applications of Light in Cardiology 2022 (Manu, van Soest)
Room 54 (Lower Mezzanine South)

11937 Endoscopic Microscopy XVII (Tarnay, Wang, Sufer)
Room 103 (Level 3 South)

11938 Visualizing and Quantifying Drug Distribution in Tissue VI (Chen, Evans)
Room 103 (Level 3 South)

11939 Photonic Diagnosis, Monitoring, Prevention, and Treatment of Infections and Inflammatory Diseases 2022 (Chai, Popp, Wu)
Room 107 (Level 3 South)

11940 Optical Methods for Tumor Treatment and Detection: Mechanisms and Techniques in Photodynamic and Photobiomodulation Therapy XXX (Kesel, Hasan, Carroll, Liebert, Wu, Liao)
Room 306 (Level 3 South)

11941 Ophthalmic Technologies XXXII (Hammars, Ioss, Palander)
Room 301 (Level 3 South)

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## BIOS DAILY CONFERENCE SCHEDULE

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<td>11942 Lasers in Dentistry XXVIII (Reichmann, Fried) Room 307 (Level 3 South)</td>
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<td>11943 Molecular-Guided Surgery: Molecules, Devices, and Applications VIII (Gious, Gobb, Paguro) Room 302 (Level 3 South)</td>
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<td>11944 Multiscale Imaging and Spectroscopy III (Campanigola, Maitland, Ruljic) Room 516 (Lower Mezzanine South)</td>
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### Biomedical Spectroscopy, Microscopy, and Imaging (Periasamy, Farkas)

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<td>11958 Optical Interactions with Tissue and Cells XXIII and Advanced Photonics in Urology (Ibayy, Lin) Room 155 (Upper Mezzanine South)</td>
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<td>11959 Dynamics and Fluctuations in Biomedical Photonics XIX (Tuchin, Leary, Wang) Room 305 (Upper Mezzanine South)</td>
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### Biomedical Technologies and Systems (Mahadevan-Jansen, Vo-Dinh)

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<td>11947 Optogenetics and Optical Manipulation 2022 (Mohanty, Roe, Shihab) Room 302 (Level 3 South)</td>
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### Optical Technologies, and Wearables III (Shadrpan, Ganabakha)

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<td>11953 Optical Fibers and Sensors for Medical Diagnostics, Treatment and Environmental Applications XXII (Gannot, Roeddenko) Room 314 (Level 5 South Lobby)</td>
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<tr>
<td>11955 Microfluidics, BioMEMS, and Medical Microsystems XX (Gray, Becker, Raas) Room 306 (Upper Mezzanine South)</td>
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<tr>
<td>11956 Biophotonics in Exercise Science, Sports Medicine, Health Monitoring Technologies, and Wearables III (Shadrpan, Ganabakha) Room 307 (Upper Mezzanine South)</td>
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## BIOS DAILY CONFERENCE SCHEDULE

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<td>11970 Quantitative Phase Imaging VIII (Liu, Popescu, Park) Room 202 (Level 2 South) Room 201 (Level 2 South) Room 204 (Level 2 South)</td>
<td>11969 Adaptive Optics and Wavefront Control for Biological Systems VIII (Bittense, J. Tian) Room 214 (Level 2 South) Room 213 (Level 2 South) Room 212 (Level 2 South)</td>
<td>11971 High-Speed Biomedical Imaging and Spectroscopy VII (Tel, Gota) Room 107 (Upper Mezzanine South) Room 108 (Upper Mezzanine South) Room 109 (Upper Mezzanine South)</td>
<td>11972 Label-free Biomedical Imaging and Sensing (LBIS) 2022 (Shaked, Hayden) Room 215 (Level 2 South) Room 216 (Level 2 South) Room 217 (Level 2 South)</td>
<td>11973 Advanced Chemical Microscopy for Life Science and Translational Medicine 2022 (Cheng, Min, Simpson) Room 212 (Level 2 South) Room 211 (Level 2 South) Room 210 (Level 2 South)</td>
<td>11974 Biomedical Applications of Light Scattering XII (Wax, Backman) Room 204 (Level 2 South) Room 203 (Level 2 South) Room 202 (Level 2 South)</td>
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### Nano/Biophotonics (Prasad, Goldys)

- **11975 Advances in Terahertz Biomedical Imaging and Spectroscopy** (Zaytsev, Ponomarenko, Skorobogatyy) Room 204 (Level 2 South)
- **11976 Nanoscale Imaging, Sensing, and Actuation for Biomedical Applications XIX** (Finkler, Goldys, Wachsmann-Hogiu) Room 204 (Level 2 South)
- **11977 Colloidal Nanoparticles for Biomedical Applications XVII** (Otsuka, Kanazawa) Room 104 (Level 1 South Lobby)
- **11978 Plasmonics in Biology and Medicine XIX** (Vo-Dinh, Ho, Bay) Room 103 (Level 1 South Lobby)
- **11979 Frontiers in Biological Detection: From Nanosensors to Systems XIV** (Dahli, Miller, Weiss, Raghavachari, Benzin) Room 79 (Lower Mezzanine South)

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---

**LASE**

SPIE LASE is the most important laser technologies conference in the field. Topics include laser manufacturing, laser materials processing, micro-nano packaging, fiber, diode, solid state lasers, laser resonators, ultrafast, semiconductor lasers and LEDs, and 3D fabrication technologies.

---

**LASE SYMPOSIUM CHAIRS**

- Craig B. Arnold
  Princeton Univ.
  (United States)
- Takunori Taika
  RIKEN / IMS (Japan)

**LASE SYMPOSIUM CO-CHAIRS**

- Stefan Kaiser
  Laser Zentrum Hannover e.V. (Germany)
- John Ballato
  Clemson Univ.
  (United States)

**LASE PROGRAM TRACK CHAIRS**

- **Laser Sources**
  - Akihiko Kasukawa, Furukawa Electric Co. (Japan)
  - Stuart D. Jackson, Macquarie Univ. (Australia)
- **Nonlinear Optics and Beam Guiding**
  - Vladimir Ichenko, Jet Propulsion Lab. (United States)
  - Paul O. Leisher, Freedom Photonics, LLC (United States)
- **Micro/Nano Applications**
  - Henry Helvajian, The Aerospace Corp. (United States)
  - Guido Hennig, Daetwyler Graphics AG (Switzerland)
- **Macro Applications**
  - Bo Gu, Bios Photonics (United States)
  - Constantin L. Häfner, Fraunhofer-Institut für Laserentchnik ILT (Germany)
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<td>Fiber Lasers XIX: Technology and Systems (Jalvingh, Misak, Supradhep)</td>
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<td>Components and Packaging for Laser Systems VIII (Gibson, Leisher)</td>
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<td>Nonlinear Frequency Generation and Conversion: Materials and Devices XXI (Schunemann, Potrov)</td>
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<td>Real-time Measurements, Rogue Phenomena, and Single-Shot Applications VII (Soll, Narz, Bizjakovski)</td>
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<td>Laser Resonators, Microresonators, and Beam Control XXIV (Ilicheko, Arfani, Sheldakova, Kudryashov, Paxtan)</td>
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<td>3D Manufacturing IX (Gu, Chen, Hejajian)</td>
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<td>High-Power Laser Materials Processing: Applications, Diagnostics, and Systems XI (Kaierle, Heinemann)</td>
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<td>Laser Applications in Microelectronic and Optoelectronic Manufacturing (LAMOM) XXVII (Qiao, Narozaki, Gemini)</td>
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<td>Laser-based Micro- and Nanoprocessing XVI (Watanabe, King, Pfingg)</td>
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<td>Nanoscale and Quantum Materials: From Synthesis and Laser Processing to Applications XXII (Kabas, Farzani, Madjouri-Samani)</td>
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<td>Room 201 (Upper Mezzanine South)</td>
<td>Laser Applications in Microelectronic and Optoelectronic Manufacturing (LAMOM) XXVIII (Qiao, Narozaki, Gemini)</td>
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<td>Room 208 (Level 2 South)</td>
<td>Frontiers in Ultrafast Optics: Biomedical, Scientific, and Industrial Applications XXII (Herman, Osetel, Ben-Yakar)</td>
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OPTO

SPIE OPTO is the most important optoelectronics conference in the field. Topics include silicon photonics, photonic crystals, optoelectronics, semiconductor lasers, and nanophotonics; plus quantum technologies for information, sensing, materials, and dots. This conference addresses the latest developments in a broad range of optoelectronic technologies and their integration for a variety of commercial applications.

OPTO SYMPOSIUM CHAIRS

Sonia M. García-Blanco
Univ. Twente (Netherlands)

Bernd Witzigmann
Friedrich-Alexander-Universität Erlangen-Nürnberg (Germany)

OPTO SYMPOSIUM CO-CHAIRS

Sailing He
KTH Royal Institute of Technology (Sweden) and Zhejiang University (China)

Yasuhiro Kolke
Keio Univ. (Japan)

OPTO PROGRAM TRACK CHAIRS

Optoelectronic Materials and Devices
James G. Grote, Photonics Engineering Consultant (United States)
Shibin Jiang, AdValue Photonics, Inc. (United States)

Photonic Integration
Yakov Sidorin, OI Labs (United States)
Jean-Emmanuel Broquin, Université de Sherbrooke (Canada)

Nanotechnologies in Photonics
All Adibi, Georgia Institute of Technology (United States)

MOEMS-MEMS in Photonics
Holger Becker, microfluidic ChipShop GmbH (Germany)

Advanced Quantum and Optoelectronic Applications
David L. Andrews, Univ. of East Anglia (United Kingdom)

Semiconductor Lasers, LEDs, and Applications
Klaus P. Strubel, University of Erlangen-Nuremberg (Germany)

Displays and Holography
Liang-Chy Chien, Kent State Univ. (United States)

Optical Communications: Devices to Systems
Benjamin Dingel, Nasfline Photonics, Inc. (United States)

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Optoelectronic Materials and Devices (Grote, Jiang)

11995 Physics and Simulation of Optoelectronic Devices XXX
(Witzigmann, Oshiyuki, Arakawa)
Room 105 (Level 1 South Lobby)

11996 Physics, Simulation, and Photonic Engineering of Photovoltaic Devices XI
(Friedrich, Collin, Hinz)
Room 105 (Level 1 South Lobby)

11997 Optical Components and Materials XIX
(Jiang, Digonnet)
Room 104 (Level 1 South Lobby)

11998 Organic Photonic Materials and Devices XXVII
(Shenk, Rau, Suhiga)
Room 105 (Level 1 South Lobby)

11999 Ultrafast Phenomena and Nanophotonics XXVI
(Betz, Elzachi)
Room 104 (Level 1 South Lobby)

12000 Terahertz, RF, Millimeter, and Submillimeter-Wave Technology and Applications XV
(Sadewick, Yang)
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12001 Gallium Nitride Materials and Devices XVII
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12002 Oxide-based Materials and Devices XIII
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12003 2D Photonic Materials and Devices V
(Maumadar, Torres, Deng)
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Photonic Integration (Sidorin, Broquin)

12004 Integrated Optics: Devices, Materials, and Technologies XXVI
(García-Blanco, Chaban)
Room 305 (Level 3 South Lobby)

12006 Silicon Photonics XVII
(Reed, Knobbe)
Room 301 (Level 3 South Lobby)

12005 Smart Photonic and Optoelectronic Integrated Circuits 2022
(Ha, Vivien)
Room 301 (Level 3 South Lobby)

12007 Optical Interconnects XXII
(Chen, Schröder)
Room 304 (Level 3 South Lobby)

12008 Photonic Instrumentation Engineering IX
(Busse, Saksind)
Room 306 (Level 3 South Lobby)

12009 Quantum Sensing and Nano Electronics and Photonics XVIII
(Razeghi, Khodaparast, Vitiello)
Room 70 (Lower Mezzanine South)

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### OPTO DAILY CONFERENCE SCHEDULE

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<td>11969 Adaptive Optics and Wavefront Control for Biological Systems VIII</td>
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<td>(Scheuer, Shahriar)</td>
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<td>(Jalali, Kitayama)</td>
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#### MOEMS-MEMS in Photonics (Boeker, von Freymann)

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Comparison of photoacoustic imaging and histopathological examination in determining the histological changes in skin
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**EDITOR(S):** Tianhong Dai, Jürgen Popp, Mei X. Wu M.D.

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Juliane de Paula Tavares, Camila Vieira da Silva, Yael Engiel, Patricia M. Freitas, Peter Rechmann
Proc. SPIE 11942, Lasers in Dentistry XXVIII, 1194208 (4 March 2022); doi: 10.1117/12.2614560

Use of SWIR dehydration and OCT to assess the complete arrest of simulated incipient caries lesions

Nai-Yuan Chang, John Tressel, Filip Kashirtev, Daniel Fried
Proc. SPIE 11942, Lasers in Dentistry XXVIII, 119420A (4 March 2022); doi: 10.1117/12.2608237

Caries inhibition of simulated active caries lesions with CO2 laser irradiation and fluoride

John Tressel, Filip Kashirtev, Kevin Cheung, Jacob Simon, Daniel Fried
Proc. SPIE 11942, Lasers in Dentistry XXVIII, 119420A (4 March 2022); doi: 10.1117/12.2608308

Methods of dental shade determination

Christa Serban, Gianni Nteroli, Emanuela L. Craciunescu, Meda L. Negnici, Helmine Serban, Virgil F. Duma, Adrian Brada, Adrian Podoleanu, Cosmin Sinescu
Proc. SPIE 11942, Lasers in Dentistry XXVIII, 1194206 (4 March 2022); doi: 10.1117/12.2608283

3D stereolithography print (SLA) in clinical orthodontic and dental applications

Tatjana Dostalova, Ales Prochazka, Petra Urbanova, Hana Eliasova
Proc. SPIE 11942, Lasers in Dentistry XXVIII, 1194207 (4 March 2022); doi: 10.1117/12.2608271
Color-coded double labeling of colon-cancer liver metastasis and the adjacent liver segment with a tumor-specific fluorescent antibody and indocyanine green


Proc. SPIE 11943, Molecular-Guided Surgery: Molecules, Devices, and Applications VIII, 1194306 (4 March 2022); doi: 10.1117/12.2607395

Fine-tuning physicochemical properties of Oxazine-4 for nerve-specific imaging

William S. Greer, Antonio Montafrio, Nourhan A. Shams, Dan Szafar-Reeder, Anas Masillat, Lei G. Wang, Summer L. Gibbs

Proc. SPIE 11943, Molecular-Guided Surgery: Molecules, Devices, and Applications VIII, 1194308 (4 March 2022); doi: 10.1117/12.2607332

The advantages and disadvantages of novel contrast agent types for fluorescence guided surgery

Connor W. Barth, Summer L. Gibbs

Proc. SPIE 11943, Molecular-Guided Surgery: Molecules, Devices, and Applications VIII, 1194309 (4 March 2022); doi: 10.1117/12.2607342

An investigation into the in vivo performance of Changsha and rhodamine fluorophores

Antonio R. Montafrio, Lei G. Wang, Anas Masillat, Nourhan A. Shams, Summer L. Gibbs

Proc. SPIE 11943, Molecular-Guided Surgery: Molecules, Devices, and Applications VIII, 119430A (4 March 2022); doi: 10.1117/12.2607341

CLINICALLY APPROVED CONTRAST AGENTS

Epidermal growth factor-targeted fluorescence is unaffected by standard neoadjuvant therapies in human sarcoma


Proc. SPIE 11943, Molecular-Guided Surgery: Molecules, Devices, and Applications VIII, 119430B (4 March 2022); doi: 10.1117/12.2607326

Dynamic contrast-enhanced fluorescence imaging compared with MR imaging in evaluating bone perfusion during open orthopedic surgery

Yue Tang, Jessica M. Sin, I. Leah Gitajn, Xu Cao, Xinyue Han, Jonathan T. Elliott, Xiaohan Yu, Melanie L. Christian, Logan Bateumarat et al.

Proc. SPIE 11943, Molecular-Guided Surgery: Molecules, Devices, and Applications VIII, 11943OC (4 March 2022); doi: 10.1117/12.2608382

Fluorescence-based radiomics analysis improves the identification of head and neck cancer in preclinical studies

Yao Chen, Cheng Wang, Samuel S. Streeter, Sassan Hodge, Brian W. Pogue, Kimberly S. Samkoe

Proc. SPIE 11943, Molecular-Guided Surgery: Molecules, Devices, and Applications VIII, 119430D (4 March 2022); doi: 10.1117/12.2607351

On the path toward system characterization standardization for in vivo applications of fluorescence imaging

Ethan P. M. LaRochelle, Alberto J. Ruiz


PROCEEDINGS VOLUME 11943
Molecular-Guided Surgery: Molecules, Devices, and Applications VIII

Editor(s): Sylvain Gioux, Summer L. Gibbs, Brian W. Pogue

ENDOGENOUS MOLECULAR CONTRAST

Accurate colorectal cancer detection and delineation by probing superficial and deeper tissue biochemistry and microstructure using diffuse reflectance spectroscopy

Marcalo Salto Nogueira, Michael Saku, Jacqueline Gunther, Siddra Maryam, Michael Amisah, Shane Killeen, Huitui Lu, Michael O’Riordan, Stefan Anderson-Engels

Proc. SPIE 11943, Molecular-Guided Surgery: Molecules, Devices, and Applications VIII, 1194302 (4 March 2022); doi: 10.1117/12.2609547

CONTRAST AGENT DEVELOPMENT AND PRECLINICAL APPLICATIONS

Whole-brain MR-registered cryo-imaging of a porcine-human glioma model to compare contrast agent biodistributions


Proc. SPIE 11943, Molecular-Guided Surgery: Molecules, Devices, and Applications VIII, 1194303 (4 March 2022); doi: 10.1117/12.2608252

Rapid tumor margin analysis using paired-agent imaging to guide Mohs micrographic surgery

Veronica C. Torres, Sasan Hodge, Eunice Y. Chen, Joshua Levy, Louis J. Vaicikus, Matthew Lebrasseur, Kimberly S. Samkoe

Proc. SPIE 11943, Molecular-Guided Surgery: Molecules, Devices, and Applications VIII, 1194304 (4 March 2022); doi: 10.1117/12.2609731

CONTRAST AGENT DEVELOPMENT AND APPLICATIONS

Selective tumor targeting with a fluorescent MUC4 antibody in a patient derived pancreatic cancer xenograft mouse model

Michael A. Turner, Hitoto Nishino, Siamak AmiriFakhr, Sukhwinder Kaur, Kanita Mallya, Robert M. Hoffman, Surindar Batra, Michael Bouvet, Thinzar M. Lein

Proc. SPIE 11943, Molecular-Guided Surgery: Molecules, Devices, and Applications VIII, 1194305 (4 March 2022); doi: 10.1117/12.2605024

PROCEEDINGS VOLUME 11943 (CONTINUED)

CLINICALLY APPROVED CONTRAST AGENTS

Epidermal growth factor-targeted fluorescence is unaffected by standard neoadjuvant therapies in human sarcoma


Proc. SPIE 11943, Molecular-Guided Surgery: Molecules, Devices, and Applications VIII, 119430F (4 March 2022); doi: 10.1117/12.2607408

Improved image quality for Cherenkov-excited luminescence scanned tomography based on learned KSDV

Hua Zhang, Zhu Li, Zhonghua Sun, Mengfan Geng, Kebin Jia, Jinchao Feng

Proc. SPIE 11943, Molecular-Guided Surgery: Molecules, Devices, and Applications VIII, 119430G (4 March 2022); doi: 10.1117/12.2607478

Validation of dynamic contrast-enhanced bone blood flow imaging technique with fluorescent microspheres

Xinyue Han, Valentin Demidov, Dennis Wirth, Brook Byrd, Scott Davis, Leah Gitan, Jonathan Elliott

Proc. SPIE 11943, Molecular-Guided Surgery: Molecules, Devices, and Applications VIII, 119430H (4 March 2022); doi: 10.1117/12.2608228

POSTER SESSION

Cherenkov-excited luminescence scanned tomography reconstruction based on Unet

Wenqian Zhang, Zhu Li, Zhonghua Sun, Kebin Jia, Jinchao Feng

Proc. SPIE 11943, Molecular-Guided Surgery: Molecules, Devices, and Applications VIII, 1194306 (4 March 2022); doi: 10.1117/12.2607341

Fluorescence-based radiomics analysis improves the identification of head and neck cancer in preclinical studies

Yao Chen, Cheng Wang, Samuel S. Streeter, Sassan Hodge, Brian W. Pogue, Kimberly S. Samkoe

Proc. SPIE 11943, Molecular-Guided Surgery: Molecules, Devices, and Applications VIII, 119430D (4 March 2022); doi: 10.1117/12.2607351

On the path toward system characterization standardization for in vivo applications of fluorescence imaging

Ethan P. M. LaRochelle, Alberto J. Ruiz


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Evidence for early prediction of pathologic complete response in breast cancer neoadjuvant chemotherapy based on pretreatment data obtained with dynamic diffuse optical tomography
Proc. SPIE 11944, Multiscale Imaging and Spectroscopy III, 1194402 (4 March 2022); doi: 10.1117/12.2610136

Early treatment window for predicting breast cancer response to neoadjuvant chemotherapy in the HR+/HER2- subgroup using diffuse optical tomography
Minelia L. Altoe, Alessandro Marone, Hyun K. Kim, Mariella Tejada, Hanina Hibshoosh, Hua Guo, Katherine D. Crew, Melissa K. Accordino, Meghna S. Trivedi et al.
Proc. SPIE 11944, Multiscale Imaging and Spectroscopy III, 1194403 (4 March 2022); doi: 10.1117/12.2609729

Label-free multiscale dynamic imaging using 3D phase contrast and deep UV microscopy
Francisco E. Robles
Proc. SPIE 11944, Multiscale Imaging and Spectroscopy III, 1194404 (4 March 2022); doi: 10.1117/12.2617118

Improved sensitivity to deep tissues using phase-based structured interrogation frequency-domain near-Infrared spectroscopy
Ola Abdalsalam, Scott Howard, Thomas D. O’Sullivan
Proc. SPIE 11944, Multiscale Imaging and Spectroscopy III, 119440A (4 March 2022); doi: 10.1117/12.2609652

Intensity correlation analysis of Raman spectra of concentrated Ficoll solutions
Y. Lopez, M. Salih, F. Boukari, C. Barnett, H. Boukari
Proc. SPIE 11944, Multiscale Imaging and Spectroscopy III, 119440B (4 March 2022); doi: 10.1117/12.2609947

Machine learning-based approach to identify formalin-fixed paraffin-embedded glioblastoma and healthy brain tissues
Hülya Torun, Numan Batur, Buse Bilgin, Omer Tarik Esengur, Kemal Baykal, Ibrahim Kulaç, İhsan Solarsolgu, Mehmet Cengiz Önbasi
Proc. SPIE 11944, Multiscale Imaging and Spectroscopy III, 119440C (4 March 2022); doi: 10.1117/12.2610539
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Editor(s): Victor X. D. Yang, Jana M. Kainerstorfer

CEREBRAL HEMODYNAMICS I

Intraoperative real-time and continuous cerebral blood flow visualization with laser speckle contrast imaging
David R. Miller, Ramsey Ashour, Colin T. Sulender, Andrew K. Dunn
Proc. SPIE 11945, Clinical and Translational Neurophotonics 2022, 1194502 (4 March 2022); doi: 10.1117/12.2608914

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CEREBRAL HEMODYNAMICS II

Dynamic laser-based photomodulation of endovascular hydrogel embolization for the treatment of various cerebrovascular disorders
Jerry C. Ku, Yuta Dobashi, Christopher R. Pasarikovski, Joel Ramjist, John D. Madden, Konrad Walus, Victor X. D. Yang
Proc. SPIE 11945, Clinical and Translational Neurophotonics 2022, 1194503 (4 March 2022); doi: 10.1117/12.2605294

CEREBRAL HEMODYNAMICS III

Performance improvement of optical coherence tomography angiography for neuroimaging incorporating cortical segmentation
Zhang Jiasheng, Fan Fan, Lianqing Zhu, Zongqing Ma, Jiang Zhu
Proc. SPIE 11945, Clinical and Translational Neurophotonics 2022, 1194504 (4 March 2022); doi: 10.1117/12.2609396

DIFFUSE OPTICAL TOMOGRAPHY

Optimized optode placement strategy for diffuse optical tomography
Jiaming Cao, Pulkit Grover, Jana M. Kainerstorfer
Proc. SPIE 11945, Clinical and Translational Neurophotonics 2022, 1194505 (4 March 2022); doi: 10.1117/12.2610184

Modulation frequency improves imaging hemoglobin fluctuation in frequency domain high-density diffuse optical tomography
Weihao Fan, Hamid Dehghani, Adam T. Eggebrecht
Proc. SPIE 11945, Clinical and Translational Neurophotonics 2022, 1194506 (4 March 2022); doi: 10.1117/12.2610185

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Editor(s): Qingming Luo, Jun Ding, Ling Fu

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Gless Blaney, Angela Sassaroli, Christiane Fernandez, Martina Bottino, Sergio Farinotti
Proc. SPIE 11946, Neural Imaging and Sensing 2022, 1194602 (4 March 2022); doi: 10.1117/12.2610664

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Investigating presence of motion artifacts in the oxygen saturation signal during in-vivo fiber photometry
Anupam Bisht, Kathryn Simone, Govind Peringod, Grant R. Gordon, Jaidereep S. Bans, Kartikeya Murari
Proc. SPIE 11946, Neural Imaging and Sensing 2022, 1194603 (4 March 2022); doi: 10.1117/12.2609877

NOVEL TECHNIQUES

Photometry for scalp morphology estimation for optical functional neuroimaging
Abigail L. Magee, Calamity Svoboda, Alvin S. Agato, Ed Richter, Joseph R. Culver, Adam T. Eggebrecht
Proc. SPIE 11946, Neural Imaging and Sensing 2022, 1194604 (4 March 2022); doi: 10.1117/12.2608326

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Background signal rejection for pO2 measurements using adaptive optics and two-photon phosphorescence lifetime microscopy
Qi Pian, Baoping Li, Habil Sencan, Xiaoqun Cheng, Jay Dubb, Xinyue Huang, Baojin Fu, Sergei A. Vinogradov, David A. Boas, et al.
Proc. SPIE 11946, Neural Imaging and Sensing 2022, 1194605 (7 March 2022); doi: 10.1117/12.2609110
**3D cell models morphological monitoring using OCT and extended depth of focus-OCT**

Hyunjee Lee, In-Young Kim, Sang-Won Lee

Proc. SPIE 11948, Optical Coherence Tomography and Coherence Domain Optical Methods in Biomedicine XXVI, 119480J (7 March 2022); doi: 10.1117/12.2608500

**Multi-probe photonic time-stretch optical coherence tomography**

Hossein Asghari, Max Hushahn

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**Tuning of optical coherence tomography texture features as a basis for tissue differentiation in glioblastoma samples**


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**Multi-focus average for multiple scattering noise suppression in optical coherence tomography**

Lida Zhu, Shuichi Makita, Antonia Lichtenecker, Junye Tamakomi, Kensuke Okawa, Pradip Mukherjee, Yi Heng Lim, Makoto Kobayashi, Jaya Luscz et al.

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**Soft attention-based U-NET for automatic segmentation of OCT kidney images**

Mouna Morel, Xian Du, Yu Chen

Proc. SPIE 11948, Optical Coherence Tomography and Coherence Domain Optical Methods in Biomedicine XXVI, 119480N (7 March 2022); doi: 10.1117/12.2609281

**Swept-source optical coherence tomography with a compact and low-cost wavelength-tunable laser realized through the application of compressed sensing**

J. Kenji Clark, S. Nakamura

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**Multi-window approach to improve resolution, side-lobe suppression, and phase sensitivity in OCT**

Clayton Walker, Anna Włosiowiecki, Jack Tang, John Oghalai, Brian E. Applegate

Proc. SPIE 11948, Optical Coherence Tomography and Coherence Domain Optical Methods in Biomedicine XXVI, 119480P (7 March 2022); doi: 10.1117/12.2613301

**Dispersion-contrast imaging using machine learning**

Krzysztof A. Maliszewski, Varvara Vetova, Hoyang (Thomas) Li, Piotr Kolenderski, Sylvia M. Kolenderska

Proc. SPIE 11948, Optical Coherence Tomography and Coherence Domain Optical Methods in Biomedicine XXVI, 119480Q (7 March 2022); doi: 10.1117/12.2612035

**Tumour classification with optimized sliding window size for OCT imaging**

Oleksii Clevik, Blu Cugmas, Daiva Viškienė, Mikus Melderis, Inita Liapinė-Sakaliūnaitė, Junjie Yao, Mindaugas Tamulionas

Proc. SPIE 11948, Optical Coherence Tomography and Coherence Domain Optical Methods in Biomedicine XXVI, 119480S (7 March 2022); doi: 10.1117/12.2607185
Advanced Biomedical and Clinical Diagnostic and Surgical Guidance Systems XX

Editor(s): Caroline Boudoux, James W. Tunnell

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FreeView: portable multiphoton imaging system for multimodal high-data-content label-free imaging
Mantas Zurauskas, Matthew Durack, Hachua Tu, Stephen A. Boppart
Proc. SPIE 11949, Advanced Biomedical and Clinical Diagnostic and Surgical Guidance Systems XX, 1194907 (7 March 2022); doi: 10.1117/12.2607378

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Intestinal optical coherence tomography (angiography) imaging: a comparison between animal models and humans
Elena B. Kiseleva, Maxim G. Ryabov, Mikhail S. Baleev, Mikhail A. Sizov, Alexander A. Moiseev, Grigory V. Gelikonov, Peter V. Penetuyin, Alexander N. Vorobiev, Natalia D. Gladkova
Proc. SPIE 11949, Advanced Biomedical and Clinical Diagnostic and Surgical Guidance Systems XX, 1194908 (7 March 2022); doi: 10.1117/12.2608405

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LED-based light source for ultraviolet-visible absorption spectrophotometry
Takahiro Ando, Satoko Oshita, Shoko Kawakami, Yuya Matsuoaka, Yasuhiro Kato, Shohi Ariga, Elchino Tokada
Proc. SPIE 11949, Advanced Biomedical and Clinical Diagnostic and Surgical Guidance Systems XX, 1194909 (7 March 2022); doi: 10.1117/12.2607186

Multimodal sapphire scalpel for intraoperative diagnosis and therapy
Darja A. Varvina, Irina N. Dolganova, Irina A. Shikunova, Anna I. Alekseeva, Pavel A. Karakin, Kirill I. Zaytsev, Vladimir N. Kurlov
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Basic study on edema evaluation using viscoelastic parameters
Kiyoh Yashimoto, Hideya Takahashi
Proc. SPIE 11949, Advanced Biomedical and Clinical Diagnostic and Surgical Guidance Systems XX, 119490B (7 March 2022); doi: 10.1117/12.2609157

Panoramic imaging with depth information from miniaturized aspheric catadioptric endoscopes
Bjorn Paulson, Saeed Bohlouli, Youngkyu Kim, Sanghywa Lee, Jun Ki Kim
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Towards real-time urinalysis with holographic lens-free imaging
Gregory N. McKay, Anisha Oommen, Carolina Pacheco, Mason T. Chen, Stuart C. Ray, René Vidal, Benjamin D. Haeffele, Nicholas J. Durr
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Sub-millimeter precision 3D measurement through a standard endoscope with time of flight
Romain Stolyarov, Vassili Buharin, Michael Val, Charlie Beurskens, Manuel DeNarlo, Sunj Srinivasan, Tom Calet, Peter Kim
Proc. SPIE 11949, Advanced Biomedical and Clinical Diagnostic and Surgical Guidance Systems XX, 119490E (7 March 2022); doi: 10.1117/12.2605993

Optically-enhanced wireless breast lesion localization device for use during lumpectomy
Sunghoon Rho, Roy A. Stillwell, Patrick Fay, Kandice K. Ludwig, Thomas D. O’Sullivan
Proc. SPIE 11949, Advanced Biomedical and Clinical Diagnostic and Surgical Guidance Systems XX, 119490F (7 March 2022); doi: 10.1117/12.2606061

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**WRIST: a wearable, rapid, and real-time infection screening tool for dual-mode detection of inflammatory biomarkers in sweat**
Tanzila Naoush, Shwana Tabassum
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**Design and characterization of piezoelectric actuators on flexible substrate for non-invasive, conductive hearing aids**
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**A microfluidic mixer and illumination system for a high-throughput optical calorimeter**
Ignacio Lopez-Pena, Jacob Chamoun, Patrick Maeda, Ika Pavlovets, Daniel Cohen, Frank Torres, Anne Plochowietz, Joerg Martini
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**Advanced optical on-chip analysis of fluid flow for applications in carbon dioxide trapping**
Jaíne Tirapu-Azpiroz, Mathews Esteves Ferreira, Ademir Ferreira Silva, Ricardo Luis Ohta, Rodrigo Neumann Barros Ferreira, Ronaldo Giro, Benjamin Wunsch, Matthias B. Steiner
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**Development of an integrated microfluidic system for monitoring patient's immunity**
Jákr Issač-Irman, Jung Ryung Kim
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**Towards in-flow monitoring of fat content and fluid composition of dairy milk using microfluidic confocal Raman spectroscopy**
P. Canyelles Pericas, A. Sundararajan, R. Wiegerink, J. C. Lotters
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**A biocompatible 3D printed microfluidic C. elegans analysis device**
Taylor Burchard, Aaron Putzke, Philip Measor
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**New joining and automation approaches for multilayer-based manufacturing of complex, customized microsystems**
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### WEARABLE OPTICAL BIOSENSING II

#### Accurate measurement of SpO2 and dermal skin hydration using a wearable miniaturized spectrometer

R. Van Beers, M. Jacobs, A. Borgos, M. Hornik, S. Janssens, W. van der Tempel, J. Borremans

Proc. SPIE 11956, Biophotonics in Exercise Science, Sports Medicine, Health Monitoring Technologies, and Wearables III, 1195602 (2 March 2022); doi: 10.1117/12.2607446

#### Broad-bandwidth frequency-domain near-infrared spectroscopy system on a chip

Sueiah Yabed, Saba Mohammadi, Shaikhant Labade, Alex Beck, Timothy Quang, Jesse H. Lam, Thomas D. O’Sullivan, Michael M. Green

Proc. SPIE 11956, Biophotonics in Exercise Science, Sports Medicine, Health Monitoring Technologies, and Wearables III, 1195603 (2 March 2022); doi: 10.1117/12.2608961

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#### Combined near-infrared spectroscopy (NIRS) and electroencephalography (EEG) in gamma-band during pain perception

Shahbaz Askari, Zoya Bastany, Baran Askari, Babak Shadgan Sr., Guy Dumont

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#### Recording dual-mode near-infrared spectroscopy and ultra-low frequency electroencephalography during spreading depression

Shahbaz Askari, Zoya Bastany, Ali Gajo, Guy Dumont

Proc. SPIE 11956, Biophotonics in Exercise Science, Sports Medicine, Health Monitoring Technologies, and Wearables III, 1195605 (2 March 2022); doi: 10.1117/12.2623048

### WEARABLE OPTICAL BIOSENSING I

#### Near infrared spectroscopy as an adjunctive technology in the care of spinal cord and brain

Andrew J. Macnab M.D.

Proc. SPIE 11956, Biophotonics in Exercise Science, Sports Medicine, Health Monitoring Technologies, and Wearables III, 119560C (2 March 2022); doi: 10.1117/12.2625157

#### Technologies advances in NIRS devices and parameters measured: examples from clinical studies of the urologic system

Andrew J. Macnab, Lynn Stothers

Proc. SPIE 11956, Biophotonics in Exercise Science, Sports Medicine, Health Monitoring Technologies, and Wearables III, 119560D (2 March 2022); doi: 10.1117/12.2610051

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#### Study the accuracy of infrared thermography for measuring core body temperature

Aaron Mah, Leili Ghazi Zadeh, Mahla Khoreshvam Tehrani, Shahbaz Askari, Babak Shadgan


#### Multimodal wearable platform for remote monitoring of breathing patterns, cough events and blood oxygen level

Muhammad J. Moghimi, Courtney Bradley, Noelle Maurice, Kyle White

Proc. SPIE 11956, Biophotonics in Exercise Science, Sports Medicine, Health Monitoring Technologies, and Wearables III, 119560F (2 March 2022); doi: 10.1117/12.2607680
**Biomedical Vibrational Spectroscopy 2022: Advances in Research and Industry**

**Editor(s):** Zhiwei Huang

**RAMAN SPECTROSCOPY AND IMAGING IN BIOMEDICAL DIAGNOSIS II**

**Accurate Raman indicators of protein synthesis through sparse classification**
Nicolas Pavillon, Nicholas Smith
Proc. SPIE 11957, Biomedical Vibrational Spectroscopy 2022: Advances in Research and Industry, 1195702 (2 March 2022); doi: 10.1117/12.2609775

**Tuberculosis diagnosis from sputum using Raman spectroscopy**
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Proc. SPIE 11957, Biomedical Vibrational Spectroscopy 2022: Advances in Research and Industry, 1195703 (2 March 2022); doi: 10.1117/12.2608594

**Determination of best Raman spectroscopy spatial offsets for transcutaneous bone quality assessments in human hands**
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Proc. SPIE 11957, Biomedical Vibrational Spectroscopy 2022: Advances in Research and Industry, 1195704 (2 March 2022); doi: 10.1117/12.2608774

**Label-free assessment of hiPSC-derived hepatocytes by Raman microscopy**
Menglu Li, Yukiko Toba, Yasunori Nawa, Satoshi Fujita, Hiroyuki Niioka
Proc. SPIE 11957, Biomedical Vibrational Spectroscopy 2022: Advances in Research and Industry, 1195705 (2 March 2022); doi: 10.1117/12.2608359

**Multi-configuration Raman spectrometer for early stage diagnosis of oral cancer**
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**Clinical validation of SERS metasurface SARS-CoV-2 biosensor**
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**Multicolor stimulated Raman scattering microscopy and its applications**
Yasuuki Ozeki
Proc. SPIE 11957, Biomedical Vibrational Spectroscopy 2022: Advances in Research and Industry, 1195709 (2 March 2022); doi: 10.1117/12.2605280

**Photoswitchable stimulated Raman scattering spectroscopy and microscopy**
Jingwen Shou, Yasuyuki Ozeki
Proc. SPIE 11957, Biomedical Vibrational Spectroscopy 2022: Advances in Research and Industry, 1195710 (2 March 2022); doi: 10.1117/12.2607706

**Near-real-time nerve visualization using coherent Raman scattering rigid endoscope and deep learning-based image processing for nerve-sparing surgery**
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**SENSITIVE VIBRATIONAL SPECTROSCOPY**

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**The next generation of mid-IR laser-based refractive index (dispersion) spectroscopy of liquid-phase analytes**
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Proc. SPIE 11958, Optical Interactions with Tissue and Cells XXXIII; and Advanced Photonics in Urology, 1195808 (2 March 2022); doi: 10.1117/12.2610541

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Proc. SPIE 11958, Optical Interactions with Tissue and Cells XXXIII; and Advanced Photonics in Urology, 1195804 (2 March 2022); doi: 10.1117/12.2605029

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Samitosh Aparajita, Siya Kamat
Proc. SPIE 11958, Optical Interactions with Tissue and Cells XXXIII; and Advanced Photonics in Urology, 1195809 (2 March 2022); doi: 10.1117/12.2600027

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Ivan Bozic, Madeleine R. Behr, J. Quincy Brown
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Proc. SPIE 11958, Optical Interactions with Tissue and Cells XXXIII; and Advanced Photonics in Urology, 119580C (2 March 2022); doi: 10.1117/12.2609602

Targeted MRI-guided transurethral ultrasound ablation (TULSA) treatment of prostate cancer and concordant benign prostatic hyperplasia: results of a single-center retrospective study
D. Samun, A. Lumiani, R. Soka, R. Muschter
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Increased ablation efficiency in hard and soft tissues using an annular beam
Jason B. King, Nilesh Kalia, Joel M. H. Teichman, James W. Tunnell, Thomas E. Miller
Proc. SPIE 11958, Optical Interactions with Tissue and Cells XXXIII; and Advanced Photonics in Urology, 119580E (2 March 2022); doi: 10.1117/12.2608952

MRI-guided transurethral ultrasound ablation (TULSA) targeted therapy of urinary retention due to benign prostatic obstruction (BPO) and concordant prostate cancer
D. Samun, A. Lumiani, R. Soka, R. Muschter
Proc. SPIE 11958, Optical Interactions with Tissue and Cells XXXIII; and Advanced Photonics in Urology, 119580F (2 March 2022); doi: 10.1117/12.2608138

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Dynamics and Fluctuations in Biomedical Photonics

Editor(s): Valery V. Tuchin, Martin J. Leahy, Ruikang K. Wang

OPTICAL COHERENCE TOMOGRAPHY
Tracking spermatozoa movement toward the egg with functional optical coherence tomography
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IMPROVING PHOTOTHERMAL IMAGING OF LYMPHATIC DYNAMICS IN PIGMENTED SKIN
Vladislav Torenov, Balaj Mian, Xin Zhou, Yeni H Yu

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LEARNING-BASED ENHANCEMENT OF LIMITED-VIEW OPTOACUSTIC TOMOGRAPHY BASED ON IMAGE-AND-TIME-DOMAIN DATA
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Photoacoustic raster scan imaging using an optomechanical ultrasound sensor in silicon photonics
Cedric Pieters, Wouter J. Westerveld, Hasan Mahmud-Ul-Hasan, Simone Severi, Jon Kjellman, Rosoel Jansen, Veronique Rochus, Xavier Rottenberg
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A photoacoustic microscopy system using MEMS and fibre tip transducers for all-optical control
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A novel translucent ultrasound transducer approach for dual-modality ultrasound and photoacoustic imaging
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Biophotonics and Immune Responses XVII

Editor(s): Wei R. Chen

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Automated chondrocyte viability analysis of articular cartilage based on deep learning segmentation and classification of two-photon microscopic images
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Super-resolution imaging of the third dimension of the actin cytoskeleton using metal-induced energy transfer and micropatterning
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A structured illumination microscopy module using two micro-electromechanical system scanning micromirrors
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Modified blaze condition of a digital micromirror device for structured illumination microscopy
Jongew Kim, Dug Young Kim
Proc. SPIE 11967, Single Molecule Spectroscopy and Superresolution Imaging XV, 119670C (2 March 2022); doi: 10.1117/12.2608524

Single molecule photobleaching reveals the piecewise arrangement of monomers in IAPP oligomers
Arjan Dey, Sudipta Maiti
Proc. SPIE 11967, Single Molecule Spectroscopy and Superresolution Imaging XV, 119670D (2 March 2022); doi: 10.1117/12.2612694

Modified blaze condition of a digital micromirror device for structured illumination microscopy
Jongew Kim, Dug Young Kim
Proc. SPIE 11967, Single Molecule Spectroscopy and Superresolution Imaging XV, 119670C (2 March 2022); doi: 10.1117/12.2608524

Single molecule photobleaching reveals the piecewise arrangement of monomers in IAPP oligomers
Arjan Dey, Sudipta Maiti
Proc. SPIE 11967, Single Molecule Spectroscopy and Superresolution Imaging XV, 119670D (2 March 2022); doi: 10.1117/12.2612694

Modified blaze condition of a digital micromirror device for structured illumination microscopy
Jongew Kim, Dug Young Kim
Proc. SPIE 11967, Single Molecule Spectroscopy and Superresolution Imaging XV, 119670C (2 March 2022); doi: 10.1117/12.2608524

Single molecule photobleaching reveals the piecewise arrangement of monomers in IAPP oligomers
Arjan Dey, Sudipta Maiti
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Compact and low-cost deep-ultraviolet microscope for point-of-care complete blood count analysis
Viswanath Gorti, Nischita Kaza, Francisco E. Robles
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Label-free hematological assessment of neutropenia using a microfluidic device and deep-UV microscopy
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Label-free analysis of E. coli viability using quantitative phase imaging and machine learning
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Morphological alterations in primary hepatocytes upon nanomaterial incubation assessed by digital holographic microscopy and holotomography
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Compact and simultaneous three-wavelength quantitative phase microscopy for hemoglobin concentration quantification in red blood cells
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Polarization Differential Interference Contrast (PDIC) microscopy for quantitative phase and fluorescence imaging of mouse brain sections
Mark Strassberg, Yana Shvetsova, Kai Wagoner-Oshima, Chelsea Yu, Jiayan Xu, Christina Ramiro, Jia Liu, Min Xu
Proc. SPIE 11970, Quantitative Phase Imaging VIII, 119700J (2 March 2022); doi: 10.1117/12.2613563

Phase retrieval from overexposed PSF: a projection-based approach
Oleg Soloviev, Jacques Noom, Hieu Thao Nguyen, Gleb Vdovin, Michel Verhaegen
Proc. SPIE 11970, Quantitative Phase Imaging VIII, 119700K (2 March 2022); doi: 10.1117/12.2609697

An adaptive excitation source for multiphoton deep and fast imaging
Chris Xu
Proc. SPIE 11971, High-Speed Biomedical Imaging and Spectroscopy VII, 1197102 (2 March 2022); doi: 10.1117/12.2609150

Fast, cell-resolution, wide field-of-view two-photon microscopy to reveal functional network architectures across multi-modal cortical areas
Masanori Murayama
Proc. SPIE 11971, High-Speed Biomedical Imaging and Spectroscopy VII, 1197103 (2 March 2022); doi: 10.1117/12.2612749

High-speed broadband CARS in the fingerprint region through supercontinuum generation in bulk media
Federico Vernuccio, Arianna Bresci, Benedetta Talone, Alejandro De la Cadena, Chiara Cecchinello, Renzo Vanna, Giulio Cerullo, Dario Polli
Proc. SPIE 11971, High-Speed Biomedical Imaging and Spectroscopy VII, 1197104 (2 March 2022); doi: 10.1117/12.2607728

High speed focus-shift for light sheet microscope using continuous rotating planar mirrors
Kenneth Li, Bi-Chang Chen, Po-Yen Lin
Proc. SPIE 11971, High-Speed Biomedical Imaging and Spectroscopy VII, 1197105 (2 March 2022); doi: 10.1117/12.2609086

High speed focus-shift for light sheet microscope using continuous rotating planar mirrors
Kenneth Li, Bi-Chang Chen, Po-Yen Lin
Proc. SPIE 11971, High-Speed Biomedical Imaging and Spectroscopy VII, 1197105 (2 March 2022); doi: 10.1117/12.2609086

Reconstruction-based spectroscopy using CMOS image sensors with random photon-trapping nanostructure per sensor
Proc. SPIE 11971, High-Speed Biomedical Imaging and Spectroscopy VII, 1197106 (2 March 2022); doi: 10.1117/12.2610527

Deep learning enables accelerated optical coherence tomography angiography
Gyuwon Kim, Jongbeom Kim, Woo June Choi, Chulhong Kim, Seungshil Lee
Proc. SPIE 11971, High-Speed Biomedical Imaging and Spectroscopy VII, 1197108 (2 March 2022); doi: 10.1117/12.2609303

Employing a neural network approach for reducing the convergence speed of diffuse optical image reconstruction algorithms
Pai Wang, Andreas H. Hielscher, Stephen H. Kim
Proc. SPIE 11971, High-Speed Biomedical Imaging and Spectroscopy VII, 1197109 (2 March 2022); doi: 10.1117/12.2609631

Ultrahigh spatiotemporal resolution fluorescence molecular tomography with a sparsity constrained dimensional reduction reconstruction model
Hyon K. Kim, Ankrit Raghuram, Yongyi Zhao, Ashok Veeraraghavan, Jacob Robinson, Andreas H. Hielscher
Proc. SPIE 11971, High-Speed Biomedical Imaging and Spectroscopy VII, 1197110 (2 March 2022); doi: 10.1117/12.2610266

Showing differences in viscoelastic properties of cells growing on micropattern by using very long-time high speed micro rheology as a new way to measure cell mechanics
Carolin Grandy, Jonas Pfeil, Fabian Port, Kay-Elberhard Gottschalk, Othmar Marti
Proc. SPIE 11971, High-Speed Biomedical Imaging and Spectroscopy VII, 119710B (2 March 2022); doi: 10.1117/12.2608158
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Modeling key metabolic pathways of cancer cells using label-free fluorescence lifetime imaging
Linghao Hu, Alex J. Walsh
Proc. SPIE 11972, Label-Free Biomedical Imaging and Sensing (LBIS) (2022), 119720B (2 March 2022); doi: 10.1117/12.2610394

Measuring variations in optical imaging markers in a gill cell-directed mouse model of human MEN1 syndrome
Suzann Duan, Ricky Sontz, Juanita L. Merchant, Travis W. Sawyer
Proc. SPIE 11972, Label-Free Biomedical Imaging and Sensing (LBIS) (2022), 1197207 (2 March 2022); doi: 10.1117/12.2608797

OCT AND INTERFEROMETRY II

Label-free assessment of renal function with unilateral ureteral obstruction (UUO) model by optical coherence microscopy
Proc. SPIE 11972, Label-Free Biomedical Imaging and Sensing (LBIS) (2022), 1197208 (2 March 2022); doi: 10.1117/12.2608443

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Label-free identification and quantification of nanoparticles in single cells by combining digital holographic microscopy and mass spectrometry
Anna Marzi, Iona Nordhorn, Kai Eder, Martin Wiedmann, Uwe Karst, Björn Kemper, Jürgen Schnekenburger
Proc. SPIE 11972, Label-Free Biomedical Imaging and Sensing (LBIS) (2022), 1197209 (2 March 2022); doi: 10.1117/12.2609700

Detection of apoptotic and necrotic cell death using holographic microscopy
Md Alamgir Kabir, Ashish Kharel, Saloni Malla, Pauli Nath, Devinder Kaar, Amit K. Tiwari, Aniruddha Ray
Proc. SPIE 11972, Label-Free Biomedical Imaging and Sensing (LBIS) (2022), 119720A (2 March 2022); doi: 10.1117/12.2609690

Quantitative volume comparisons of methamphetamine-induced apoptosis by simultaneous digital holographic microscopy and transport of intensity phase-imaging techniques
Shane Camery, Ting Chuan Khoa, Kala Tubbaensing, Anna Shapkova, Supriya D. Mahajan, Jonathan C. Petruccelli, Alexander Khmaladze
Proc. SPIE 11972, Label-Free Biomedical Imaging and Sensing (LBIS) (2022), 119720B (2 March 2022); doi: 10.1117/12.2610394
TECHNOLOGY DEVELOPMENT OF RAMAN II

Stimulated Raman scattering microscopy with spectral focusing of 2-ps laser pulses for higher spectral resolution and signal-to-background ratio
Kota Kikoe, Nicholas Smith, Katsumasa Fujita
Proc. SPIE 11973, Advanced Chemical Microscopy for Life Science and Translational Medicine 2022, 1197308 (2 March 2022); doi: 10.1117/12.2609736

BIOMEDICAL APPLICATIONS OF COHERENT RAMAN II

DO-SRS and MPF imaging of metabolic activities
Pegah Bagheh, Khang Hoang, Anthony Fung, Saham Hussain, Lingyan Shi
Proc. SPIE 11973, Advanced Chemical Microscopy for Life Science and Translational Medicine 2022, 1197309 (2 March 2022); doi: 10.1117/12.2609737

MULTIMODAL

Feasibility study of dual-modality optical-Raman projection tomography
Nan Wang, Xinyu Wang, Feng Ren, Tianyu Yan, Hui Xie, Shouping Zhu, Xueli Chen
Proc. SPIE 11973, Advanced Chemical Microscopy for Life Science and Translational Medicine 2022, 1197304 (2 March 2022); doi: 10.1117/12.2608360

TECHNOLOGY DEVELOPMENT OF RAMAN I

High-speed multicolor stimulated Raman imaging
Yasuuki Otsuki

Multiplex CARS microscopy in the “long-pulse” regime: where are we now?
Hideaki Kano, Philippe Laproux
Proc. SPIE 11973, Advanced Chemical Microscopy for Life Science and Translational Medicine 2022, 1197306 (2 March 2022); doi: 10.1117/12.2609589

Feasibility demonstration of supercontinuum fiber laser-based coherent anti-Stokes Raman scattering microscopy
Jiaojiao Zhang, Nan Wang, Haoyu Wang, Wangtailing Zhou, Xinyi Xu, Qi Zeng, Xueli Chen
Proc. SPIE 11973, Advanced Chemical Microscopy for Life Science and Translational Medicine 2022, 1197307 (2 March 2022); doi: 10.1117/12.2608358

BIOPHYSICS OF CELLS

Imaging phase-function contrast with masked aperture scattering oblique plane microscopy
Ryan C. Niemeier, Gregory N. McKay, Nicholas J. Durr
Proc. SPIE 11974, Biomedical Applications of Light Scattering XII, 1197408 (3 March 2022); doi: 10.1117/12.2608902

OCT AND LIGHT SCATTERING

Speckle statistics of cortical brain tissue in optical coherence tomography
Gary R. Ge, Wei Song, Malen Nedergaard, Jannick P. Rolland, Kevin J. Parker
Proc. SPIE 11974, Biomedical Applications of Light Scattering XII, 1197403 (3 March 2022); doi: 10.1117/12.2608850

Measurement of optical scattering properties using line-field confocal optical coherence tomography (LC-OCT)
Lena Waszczuk, Jonas Ogier, Frédéric Pain, Arnaud Dubois
Proc. SPIE 11974, Biomedical Applications of Light Scattering XII, 1197404 (3 March 2022); doi: 10.1117/12.2607279

BIOPHYSICS OF CELLS

Dynamic fluorescence diffuse optical tomography using the adaptive EKF and GRNN-based learning
Xin Wang, Yuhong Liu, Jiewei Zhang
Proc. SPIE 11974, Biomedical Applications of Light Scattering XII, 1197409 (3 March 2022); doi: 10.1117/12.2608006

SPATIAL FREQUENCY DOMAIN IMAGING

Monitoring of surgical wound healing using spatial frequency domain imaging
Lai Zhang, Alistair Bounds, James Fleming, John Girk
Proc. SPIE 11974, Biomedical Applications of Light Scattering XII, 1197407 (3 March 2022); doi: 10.1117/12.2608518

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Improved estimation of the optical properties in a skin five-layer model from spatially resolved diffuse reflectance spectra using a layer-by-layer approach and optimized combinations of wavelengths and source-detector distances
Victor Colas, Christian Daul, Grégoire Khairallah, Marine Amouroux, Walter Blondel
Proc. SPIE 11974, Biomedical Applications of Light Scattering XII, 1197408 (3 March 2022); doi: 10.1117/12.2607050

Dynamic fluorescence diffuse optical tomography using the adaptive EKF and GRNN-based learning
Karthik Vishwanath
Proc. SPIE 11974, Biomedical Applications of Light Scattering XII, 1197409 (3 March 2022); doi: 10.1117/12.2608006

Breaking the rules of time-domain diffuse optics: working with 1 cm2 SiPM and well-beyond the single-photon statistics
L. D. Sieno, E. Avanzi, G. A. Song, M. Lacerenza, A. Behera, D. Contini, A. Dalla Mora
Proc. SPIE 11974, Biomedical Applications of Light Scattering XII, 1197404A (3 March 2022); doi: 10.1117/12.2606956

Investigating the use of diffuse reflectance spectroscopy to identify shantodyna
Oliva Kline, Boyd Collbrunn, Andrew Pacha,man, Sudhakar Vadivelu, Kirthik Vishwanath
Proc. SPIE 11974, Biomedical Applications of Light Scattering XII, 1197408B (3 March 2022); doi: 10.1117/12.2601059

Time-gated diffuse reflectance to discriminate optical properties of two-layered tissue phantoms
Carter McMaster, Michael Nethan, Boyd Collbrunn, Mary-Ann Mycek, Kirthik Vishwanath
Proc. SPIE 11974, Biomedical Applications of Light Scattering XII, 1197404C (3 March 2022); doi: 10.1117/12.2601039
Emerging Tools and Methods of THz Biophotonics

Biomedical applications of terahertz technology
Michael Shur, Xueqing Liu
Proc. SPIE 11975, Advances in Terahertz Biomedical Imaging and Spectroscopy, 1197502 (3 March 2022); doi: 10.1117/12.2604800

Graphene-based plasma-wave devices for terahertz applications
Taischi Chiou, Victor Ryzhii, Michael Shur
Proc. SPIE 11975, Advances in Terahertz Biomedical Imaging and Spectroscopy, 1197503 (3 March 2022); doi: 10.1117/12.2604818

Thz-wave interactions with tissues and liquids

Effects of high intensity non-ionizing pulses of terahertz radiation on human skin fibroblasts
Veronika A. Kavalkova, Inna V. Irina, Svetlana A. Gurova, Rimma O. Shatalova, Mikhail A Konoplyannikov, Vladimir A. Karlin, Vladimir P. Baklavachev, Dmitry S. Ponomarev, Maksim Skorobogatiy
Proc. SPIE 11975, Advances in Terahertz Biomedical Imaging and Spectroscopy, 1197504 (3 March 2022); doi: 10.1117/12.2604888

Terahertz multi-dimensional imaging for nanoparticle-assisted therapeutics
Proc. SPIE 11975, Advances in Terahertz Biomedical Imaging and Spectroscopy, 1197505 (3 March 2022); doi: 10.1117/12.2604885

Implementation of a coplanar-waveguide chip for the measurement of EM wave absorption spectrum of SARS-Cov-2 virus
Peng-Jui Wang, Tien-Wei Huang, Yi-Jan Chen, Chi-Kuang Sun
Proc. SPIE 11975, Advances in Terahertz Biomedical Imaging and Spectroscopy, 1197506 (3 March 2022); doi: 10.1117/12.2611333

Nanoscale Imaging, Sensing, and Actuation for Biomedical Applications IX

All-dielectric nanophotonic optical tweezers for lossless manipulation of biologically-relevant molecules
J. J. Hernández Sárría, Osvaldo N. Oliveira Jr., J. R. Mejía-Salazar
Proc. SPIE 11976, Nanoscale Imaging, Sensing, and Actuation for Biomedical Applications XIX, 1197602 (3 March 2022); doi: 10.1117/12.2606905

Nanoscale illumination microscopy via randomly localized near-field speckle by nanocomposite islands
Hajun Yoo, Hongki Lee, Woo Jong Rhee, Gwiyong Moon, Changhun Lee, Jeon-Soo Shin, Donghyun Kim
Proc. SPIE 11976, Nanoscale Imaging, Sensing, and Actuation for Biomedical Applications XIX, 1197603 (3 March 2022); doi: 10.1117/12.2607865

Spectral ghost imaging with a speckle pattern
Shir Rabi, Moti Fridman
Proc. SPIE 11976, Nanoscale Imaging, Sensing, and Actuation for Biomedical Applications XIX, 1197604 (3 March 2022); doi: 10.1117/12.2608096

Extracting the reduced scattering coefficient in different optical magnifications in the blue regime: theory and experiments
Channa Shapira, Inbar Yariv, Hamootal Duadi, Dror Fixler
Proc. SPIE 11976, Nanoscale Imaging, Sensing, and Actuation for Biomedical Applications XIX, 1197605 (3 March 2022); doi: 10.1117/12.2608476

Nanoscale Imaging, Sensing, and Actuation for Biomedical Applications IV

Nanobeam and Nanoneedle technology study new biomarker and single molecular interaction
Feng Liang, Zhongcong Xie
Proc. SPIE 11976, Nanoscale Imaging, Sensing, and Actuation for Biomedical Applications XIX, 1197606 (3 March 2022); doi: 10.1117/12.2607925

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Nano logic gates based on gold nanoparticles- carbon dots hybrid and its FLIM imaging
Sweeta Pawar, Hamootal Duadi, Yafit Fleger, Dror Fixler
Proc. SPIE 11976, Nanoscale Imaging, Sensing, and Actuation for Biomedical Applications XIX, 1197607 (3 March 2022); doi: 10.1117/12.2607935

Engineering of multi-photo luminescence properties for hybrid structure of metal nanoparticles/semiconductor quantum dots for bio-imaging applications Poster +
Ha Trang Nguyen, Sung Jin Kim, Ju-Hyung Yoon
Proc. SPIE 11976, Nanoscale Imaging, Sensing, and Actuation for Biomedical Applications XIX, 1197608 (3 March 2022); doi: 10.1117/12.2608426

Scattering detection in multi-layer tissue: phantom experiments and in vivo applications
Inbar Yariv, Hamootal Duadi, Dror Fixler
Proc. SPIE 11976, Nanoscale Imaging, Sensing, and Actuation for Biomedical Applications XIX, 1197609 (3 March 2022); doi: 10.1117/12.2608944

Golden exosomes: a new platform for cancer theranostics
Adi Anaki, Oshra Betzer, Menachem Motiei, Tamar Sadan, Dror Fixler, Rachela Popovtzer
Proc. SPIE 11976, Nanoscale Imaging, Sensing, and Actuation for Biomedical Applications XIX, 1197610 (3 March 2022); doi: 10.1117/12.2608951

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Packaged microbubble resonators as a robust biosensing device

Jie Liao, Abraham J. Gavi, Maxwell R. Adolphson, Lan Yang
Proc. SPIE 11979, Frontiers in Biological Detection: From Nanosensors to Systems XIV; 1197902 (4 March 2022); doi: 10.1117/12.2609692

Exceptional point of nanocylinder-loaded silicon microring for single nanoparticle detection

Jiexin Li, Jinzhao Wang, Rui Li, Yang Fang, Yamei Li, Lin Yu, Wanning Li, Jinxin Chen, Yunmei Sunet, et al.
Proc. SPIE 11979, Frontiers in Biological Detection: From Nanosensors to Systems XIV; 1197903 (4 March 2022); doi: 10.1117/12.2613637

Detecting aflatoxin M1 using wavelength-scanned fiber cavity attenuated phase shift spectrocopy

M. Imran Cheema, Daniyal Ghauri, Ubaid Ullah

A magnetic modulation biosensing-based molecular assay for rapid and highly sensitive clinical diagnosis of COVID-19

Michael Margulis, Onur Erster, Shira Roth, Michal Mandelboim, Amos Danielli
Proc. SPIE 11979, Frontiers in Biological Detection: From Nanosensors to Systems XIV; 1197905 (4 March 2022); doi: 10.1117/12.2608722

Identification of inhibitors for the S1-ACE2 interaction of the SARS-CoV-2 using magnetically modulated biosensors

Shira Roth, Amos Danielli, Michael Margulis

Analysis of machine learning techniques for capture agent free biosensing with porous silicon arrays

Simon J. Ward, Mengfei Cao, Catie Chang, Sharon M. Weiss
Proc. SPIE 11979, Frontiers in Biological Detection: From Nanosensors to Systems XIV; 1197907 (4 March 2022); doi: 10.1117/12.2614697

Developing ultrathinortex-based sensing platforms

Karel Szuba-Jablonski, Carolyn Greig, Drew Riley, Valeria Italia, Thomas Arguay, Kenith E. Meissner
Proc. SPIE 11979, Frontiers in Biological Detection: From Nanosensors to Systems XIV; 1197908 (4 March 2022); doi: 10.1117/12.2608379

Enhanced fluorescence detection of miRNAs using one-dimensional photonic-crystal-based biochips

Tommaso Pilani, Alberto Srinadald, Norbert Danz, Gianpino Pignataro, Peter Munzert, Agostino Occhicone, F. Sonntag, Francesco Michelotti
Proc. SPIE 11979, Frontiers in Biological Detection: From Nanosensors to Systems XIV; 1197909 (4 March 2022); doi: 10.1117/12.2623479

Chasing the green echihuan worm Bonellia in tidal pools of Okinawa

Masahiko Taniguchi, Minami Taniguchi, Ran Zhang, Ryutaro Goto, Jonathan S. Lindsey

Analysis of machine learning techniques for capture agent free biosensing with porous silicon arrays

Simon J. Ward, Mengfei Cao, Catie Chang, Sharon M. Weiss
Proc. SPIE 11979, Frontiers in Biological Detection: From Nanosensors to Systems XIV; 1197907 (4 March 2022); doi: 10.1117/12.2614697
NOVEL LASER CONCEPTS AND MATERIAL CHARACTERIZATION

Piezo-tuned nonplanar ring oscillator with GHz range and 100 kHz bandwidth
Thomas J. Kane, Kenji Numata, Anthony Yu, Julia Majors, David R. Demer

POSTER SESSION

Intracavity beam shaping using digital holograms in continuous-wave-diode-pumped Nd:YAG laser module
Takuo Bell, Chemist Mabane, Sandile Ngcobo

Multi-joule energy extraction in diode-pumped Tm:YLF
Issa Tamer, Brendan A. Reaun, Thomas Galvin, Justin D. Galbraith, Emily Link, Andrew Church, Glenn Huete, Hansel Neurath, Drew Issa Tamer, Brendan A. Reagan, Thomas Galvin, Justin D. Galbraith, Emily Link, Andrew Church, Glenn Huete, Hansel Neurath, Drew

PULSED LASERS

6 MW peak power UV microlaser using novel pumping Rakesh Bhandari, Hanukey Endo, Shota Sekiguchi, Tadaashi Makino, Yuichi Takashima
Nd:YLF laser pumped at 797 nm with 68% slope efficiency Felice M. Prado, Niklaus U. Wetter

2-µm microchip laser based on Tm:YAG composite under 0.8 µm and 1.7-µm pumping
Jan Kratzhövill, Jan Šulc, Helenen Jeniková, Karel Nejezichl, Štefan Uka, Miloslav Čech, Veronika Čirtková
Development of a diode-pumped high-power continuous-wave Yb:LLF laser
R. Akbari, Al Major
Low repetition rate mode-locked Yb:CALGO laser with a white cell configuration and sub-100 fs pulses
Md. A. Reza, Al Major
Development of a continuous-wave Nd:YAP laser with low quantum defect pumping at 910 nm
Mohammad Nadimi, Akady Major
Dual-wavelength Yb:YAG laser with tunable wavelength separation
R. Akbari, J. Xu, X. Xu, A. Major
Disordered Yb:GdYCOB crystal: polarized spectroscopy, thermal lensing and diode-pumped lasers

Continuous-wave and passively mode-locked operation of Yb:Ca3Gd2(BO3)4 laser

Pheromone detection by Raman spectroscopy
Sarah S. Sahota, Alain S. Chang, Tiziana Bond
Miniature single-longitudinal-mode diode-pumped solid-state lasers
David C. Brown, Christopher L. Hancock, Nicholas S. Tomassello, James Cojll, Shl Tormagard
Mid-infrared laser generation at 4.7–5.1 µm of the Cr2+Nd:ZnSe crystal under 100 K. Excitation wavelengths Adam Štěpán, Helena Jeniková, Maxim E. Doroshenko, Michal Jenik, Michal Němec, Miroslav Čech, David Vyhlidal, Nazar O. Kovalenko
Cr2+:ZnSe waveguides with gradient refractive index profiles Hua-Chuan Lee, Helmut Meissner, David Meissner, Stephanie Meissner

CHARACTERIZATION

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Baozuo Zheng, Fuqin Gu, Jing Yang, Biao Li, Jinming Liu, Xin Zhang, Pu Wang
The effect of thermal and mechanical processing on the fluorescence lifetime of Yb-doped silica preforms and fibers for use in nanostructured-core fiber lasers
Petr Valák, Ivan Kalík, Pavel Peterka, Jan Mrázek, Michael Kamrásék, Jan Aubrecht, Ondřej Podrazký, Ivo Bartoň, Martin Franczyk. et al.

FIBER DESIGN
Novel polarization-maintaining solid-core anti-resonant fiber in mid-infrared regime
Shuai Zhang, Shuai Sun, Guan-Sheng Wei, Shi H, Hao Tian, Zhong-Bo Yan, Jian-Quan Yao
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Elke Brockmöller, Tobias Lange, Felix Wollmann, Ossi Kimmelma, Tyron Lowder, Steffen Nothyst, Roland Lachmayer, Jörg Neumann, Dietmar Kracht
Confined doping LMA fibers for high power single frequency lasers
Matthew A. Cooper, Stefan Gausmann, Jose E. Antonio-Lopez, Axel Schülzgen, Rodrigo Amezcua Correa
Q-SWITCHING
4.8mJ pulse energy directly from a single-mode Q-switched ytterbium fiber lasers
Monica T. Kalchevski-Dong, Wenping Ge, Thomas W. Hawkins, Turghun Matniyaz, Liang Dong
High energy oscillator-amplifier with tapered rod-type multicore fiber
Christopher Allesho, Abrecht Steinkopff, Maximilian Karst, Arno Klenke, Cesar Jaquegui, Stefan Kuhn, Johannes Nold, Nicolletta Haarlamert, Thomas Schreiber. et al.
Generation of Q-switched mode-locking noise-like pulses based on nonlinear polarization rotation in a thulium-doped all-fiber laser
Andrés Camarillo-Avilés, Rosa López-Estepiér, Miguel Bello-Jiménez, Olivia Pottiez, Manuel Durán-Sánchez, Baldemar Ibarra-Escamilla

APPLICATONS
Applied high power laser in drilling oil and gas wells
S. Salavafi
Dynamic beam lasers based on coherent beam combining
Aasf Nissenbaum, Nina Armon, Eyal Shaked
Advanced metal processing enabled by fiber lasers with tunable beam properties
Handheld laser welding and cleaning system for typical metal fabrication using 1.5 kW fiber laser source
Vassili Gasparsen, Fain Stulkin, Adam Pauwan, Olag Shushkin, Yuri Gavop, Iuri Murashov

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500 W average power, multicore fiber-based femtosecond CPA system
Arno Klenke, A. Steinkopf, C. Alleshore, C. Jaquegui, Stefan Kuhn, Johannes Nold, Christian Hüpfl, Sinaen Schulze, et al.

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Diffusive combining and control of femtosecond pulse beam arrays
Rusail Wu, Ting Zhou, Qiang Du, Dan Wang, Antonio Gilardi, Siyun Chen, Derun Li

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Anti-Stokes cooling and other thermal managements techniques in fiber lasers and amplifiers
Michel J. F. Digonnet, John Ballato, Peter D. Dragic
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Henning Stark, Christian Grebing, Joachim Buldt, Michael Müller, Arno Klenke, Jens Lipert

NONLINEAR OPTICS IN FIBERS
High-power, high-efficiency, semi-random Raman fiber lasers
Andrew Grimes, Anand Hariharan, Ian Sun, Jeffrey W. Nicholson
Next generation Yb-doped fibers for high-power, narrow-linewidth lasers
Brillouin measurements of double clad, metal coated optical fibres
A. Gambel, N. Smakov, A. Hemming, A. Carter
Dynamic beam lasers based on coherent beam combining

LONG WAVELENGTH FIBER LASERS
First demonstration of dispersion-shifted LMA silica fiber in a high-power 1.6-μm laser
Charles X. Yu, Victor Khitrove, Paul Pax, Cody Mart, Mike Rutaille, Mike Messerly, Jay Dawson, Jun Zhang, Mark Dubinski
High-power single-frequency fiber laser based on cascaded fiber structure
Chao Shu, Shijie Fu, Xun Deng, Hao Tian, Shuai Sun, Junxiang Zhang, Weili Shi, Jianquan Yao
High-power single-frequency all-fiber oscillator via manipulation of saturable absorption induced optical bistability
Junsiang Zhang, Quan Sheng, Lu Zhang, Chao Shu, Shuai Sun, Wei Shi, Jianquan Yao

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KILOWATT-CLASS SYSTEMS

High average power (500W/50ps) and high peak power (3.2 MW/50ps) picosecond pulsed MOPA system with tapered double-clad ytterbium fiber

V. Ustimchik, Yu. Chamorovskii, Valery Filippov


LONG WAVELENGTH FIBER LASERS

A pulsed 1720 nm Tm-doped fiber laser based on dual-cavity scheme

Lu Zhang, Junxiang Zhang, Quan Sheng, ChaoXu Shi, Shijie Fu, Wei Shi, Jianquan Yao


High power 2 µm picosecond laser delivery in a low loss Nested hollowcore anti-resonant fiber

Xin Zhang, Weihua Song, Zihan Dong, Jingyuan Yao, Yubin Hou, Pu Wang


KILOWATT-CLASS SYSTEMS

Photodarkening-free fiber laser based on Yb-doped 20/400 gain fiber


LONG WAVELENGTH FIBER LASERS

Broad-band high damage threshold mid-IR coating for high power fluoride fiber laser

Yimin Hu, Feng Niu, Benjamin Decker, Wei Lu


TRANSVERSE MODE INSTABILITY AND MODAL CONTROL

Mode instability in kW-class thulium doped fiber amplifiers

Brian M. Anderson, Abraham Tafajerres, Angel Flores


Mitigation of transverse mode instability by heat load modulation in high-power fiber laser amplifiers

Sobhy Khalaf, Cesar Jauregui, Yiming Tu, Jens Limpert


Static modal energy transfer in high power, polarization maintaining fiber laser systems

Cesar Jauregui, Sobhy Khalaf, Yiming Tu, Jens Limpert


Real-time modal decomposition of fiber laser beams using a spatial mode multiplexer

Yiming Tu, Cesar Jauregui, Sobhy Khalaf, Jens Limpert


ULTRAFAST FIBER LASERS

200W electro-optic frequency comb from a monolithic fiber laser with tunable repetition rate between 1 and 18 GHz featuring 200 fs pulses

Florin Léris, Haruo Yu, Giorgetto Santarelli, Johan Bouflet, Eric Commeur


Amplifier similariton generation from a Yb-doped all-normal-dispersion fiber laser employing a hybrid-mode-locking technique

Xinyang Liu, Mikko Närhi, Dmitry Karabiko, Regina Gumenyuk


POSTER SESSION

Highly reflective Fiber Bragg Gratings in active fibers for fiber-integrated multi-mode resonators Poster +

P. Baer, S. Klein, M. Raguse, M. Reilfer, M. Giesberts, H.-D. Hoffmann


Soliton processing via dispersion modulation in optical fibers

A. A. Sysolyatin, A. Konukhov


Numerical optimization of high power 3.5 µm erbium-doped mid-infrared fiber laser and amplifiers

On Henderson-Saps, Deeksha Beniwal, David J. Ottaway


Frequency doubling in three laser regimes using nonlinear polarization rotation laser

Shruti Sundar, Arif Prabhat


Refractive index profiles and propagation losses in bent laser fibers

P. Kliver, M. Kuuskisto, J. Koponen, O. Kimmelm, V. Aaloss, J. Hama, H. Hauk, P. Kjölberg, Manoj Kanskar


Core alignment for large mode area (LMA) fibers

Wenxin Zhang, Douglas Duke

High-Power Diode Laser Technology XX

Editor(s): Mark S. Zediker, Erik P. Zucker

High-power diode laser technology XX: a retrospective on 20 years of progress
Mark S. Zediker, Erik P. Zucker
Proc. SPIE 11983, High-Power Diode Laser Technology XX, 1198302 (4 March 2022); doi: 10.1117/12.2615260

BROAD-AREA DIODE LASERS AND BARS

High-volume manufacturing of state-of-the-art high-power diode lasers on 6-inch GaAs
Rene Todt, Stefan Deubert, Dominik Jaeggi
Proc. SPIE 11983, High-Power Diode Laser Technology XX, 1198303 (4 March 2022); doi: 10.1117/12.2610147

Kilowatt-class, 1-cm diode laser bars at 910-940 nm with improved power, conversion efficiency and beam quality
M. Jazdz Miah, Anisuzzaman Boni, Dominik Martin, Andrea Knigge, Pietro Della Casa, Paul Crump
Proc. SPIE 11983, High-Power Diode Laser Technology XX, 1198304 (4 March 2022); doi: 10.1117/12.2609831

Advances in 976nm single emitter broad area semiconductor diode lasers for 300W+ fiber laser pump module applications
Yihan Xiong, Ching-long Jiang, Ayasha Jamil, Xiaohang Jiang, Ayesha Jamil, Xiaohang Liu, Xi Liu, Prasanta Modak, Stewart McDougall, Kostas Bouskos
Proc. SPIE 11983, High-Power Diode Laser Technology XX, 1198305 (4 March 2022); doi: 10.1117/12.2608103

Volume manufacturing of high-power diode lasers using 6" wafers
Jun Wang, Shaoyang Tan, Heng Liu, Bo Li, Yiyun He, Run Zhao, Xiao Xiao, Yang Cheng, Yu Pan, et al.
Proc. SPIE 11983, High-Power Diode Laser Technology XX, 1198306 (4 March 2022); doi: 10.1117/12.2606591

Progress in experimental studies into the beam parameter product of GaAs-based high-power diode lasers
Paul Crump, Mohamed Elattar, M. Jazdz Miah, Michael Etkeni, Matthias M. Karow, Dominik Martin, Pietro Della Casa, Andre Maasdorf, Stewart McDougall, et al.
Proc. SPIE 11983, High-Power Diode Laser Technology XX, 1198307 (4 March 2022); doi: 10.1117/12.2607627

LASER DIODE RELIABILITY AND EXTENDED WAVELENGTHS

Multiphysics modeling of feedback-induced catastrophic optical damage in 9xx-nm high-power laser diodes
Martin Adams, Simon Rauch, Carlo Holly, Martin Traub, Hans-Dieter Hoffmann
Proc. SPIE 11983, High-Power Diode Laser Technology XX, 1198308 (4 March 2022); doi: 10.1117/12.2608103

Anisotropic thermal conductivity of oxide and oxide-free 976-nm laser diodes
Jenny Gallery, Samuel Lytton
Proc. SPIE 11983, High-Power Diode Laser Technology XX, 1198309 (4 March 2022); doi: 10.1117/12.2609113

ADVANCED PACKAGING SOLUTIONS FOR LASER DIODES: JOINT SESSION WITH CONFERENCES 11982 AND 11983

Advanced packages for high-power diode laser modules at 793nm and 976nm for defense applications
Tobias Körnig, Sandra Arfken, Jan Weimar, Ruth Stenbrink-Knuth, Florian Almenpo, Heiko Kessler, Bernd Köhler, Markus Klein, Guo Li, et al.
Proc. SPIE 11983, High-Power Diode Laser Technology XX, 1198310 (4 March 2022); doi: 10.1117/12.2607944

Metal 3d printing using high-brightness blue laser systems
M. Finut, R. Fritz, E. Bossa, M. S. Zediker
Proc. SPIE 11983, High-Power Diode Laser Technology XX, 1198304 (4 March 2022); doi: 10.1117/12.2615623

LASER SOURCES FOR LIDAR: JOINT SESSION WITH 11982 AND 11983

1500nm triple junction laser diode for long range LiDAR
Sidi Aboujja, Daniel Chu, David Bean
Proc. SPIE 11983, High-Power Diode Laser Technology XX, 1198305 (4 March 2022); doi: 10.1117/12.2615623

High peak power tapered RWG laser diodes for eye-safe LiDAR applications around 1.5 µm wavelength
Topi Uusitalo, Jukka Viheriälä, Heikki Virtanen, Santeri Hanhinen, Marko Hübner, Martin Adams, et al.
Proc. SPIE 11983, High-Power Diode Laser Technology XX, 1198306 (4 March 2022); doi: 10.1117/12.2608601

Metal 3d printing using high-brightness blue laser systems
M. Finut, R. Fritz, E. Bossa, M. S. Zediker
Proc. SPIE 11983, High-Power Diode Laser Technology XX, 1198304 (4 March 2022); doi: 10.1117/12.2615623

ADVANCED PACKAGING SOLUTIONS FOR LASER DIODES: JOINT SESSION WITH CONFERENCES 11982 AND 11983

Enhanced brightness 180W compact blue diode laser modules
Alessandro Mirigandi, Martina Riva, Giulia Pippione, Roberto Paukett, Guido Pernone
Proc. SPIE 11983, High-Power Diode Laser Technology XX, 1198307 (4 March 2022); doi: 10.1117/12.2609587

Blue laser diodes and applications

High-power diode lasers and applications
Enhanced brightness 180W compact blue diode laser modules
Alessandro Mirigandi, Martina Riva, Giulia Pippione, Roberto Paukett, Guido Pernone
Proc. SPIE 11983, High-Power Diode Laser Technology XX, 1198307 (4 March 2022); doi: 10.1117/12.2609587
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Development of diode laser stack with high power and long pulse width for medical aesthetic application
Junli Li, Tuanwei Fu, Dong Hou, Jingwei Wang, Yunzhu Chen, Yanfang Zhang, Chungun Zhi, Xingsheng Liu
Proc. SPIE 11983, High-Power Diode Laser Technology XX, 119830R (4 March 2022); doi: 10.1117/12.2608522

Fast inline photometric stereo using coherent illumination and multi-TDI speckle reduction Poster +
Lukas Trailler, Christian Kapeller, Laurin Ginner, Ernst Bodenstorfer
Proc. SPIE 11983, High-Power Diode Laser Technology XX, 119830S (4 March 2022); doi: 10.1117/12.2605537

Vertical External Cavity Surface Emitting Lasers (VECSELs) XI
Editor(s): Mircea Guina

MECSEL I

Thermal behavior and management of membrane external-cavity surface-emitting lasers (MECSELs)
Hoy-My Phung, Philipp Tatar-Mathes, Aaron Rogers, Patrik Rajala, Sanna Ranta, Hermann Kahle, Mircea Guina
Proc. SPIE 11984, Vertical External Cavity Surface Emitting Lasers (VECSELs) XI, 1198402 (4 March 2022); doi: 10.1117/12.2609644

High power in-well pumped MECSEL emitting at 1178 nm for sodium guide star applications
Mingyang Zhang, Davide Priante, Alexander R. Albrecht, Garrett D. Cole, Mansoor Shiek-Bahae
Proc. SPIE 11984, Vertical External Cavity Surface Emitting Lasers (VECSELs) XI, 1198403 (4 March 2022); doi: 10.1117/12.2609740

Design and characterization of MECSEls for widely tunable (>25 THz) continuous wave operation
Patrik Rajala, Philipp Tatar-Mathes, Hoy-My Phung, Jesse Koskinen, Sanna Ranta, Mircea Guina, Hermann Kahle
Proc. SPIE 11984, Vertical External Cavity Surface Emitting Lasers (VECSELs) XI, 1198404 (4 March 2022); doi: 10.1117/12.2609649

MECSEL II

Analysis of MECSEL mode-locking
Mansoor Shiek-Bahae
Proc. SPIE 11984, Vertical External Cavity Surface Emitting Lasers (VECSELs) XI, 1198405 (4 March 2022); doi: 10.1117/12.2609991

High peak power GaSb-based VECSEls
Jacob Hoehler, Ricky Gibson Jr., Bradley J. Thompson, Robert Bedford
Proc. SPIE 11984, Vertical External Cavity Surface Emitting Lasers (VECSELs) XI, 1198406 (4 March 2022); doi: 10.1117/12.2603501

High-power single frequency intracavity doubled VECSEL at 589 nm for sodium guide stars
Gregory J. Felzer, Juan Chilla, Steven E. Rako, Cory Baumgarten, Nathan Woody, Celine D’Orgeville
Proc. SPIE 11984, Vertical External Cavity Surface Emitting Lasers (VECSELs) XI, 1198407 (4 March 2022); doi: 10.1117/12.2612400
Nonlinear Frequency Generation and Conversion: Materials and Devices XXI

Editor(s): Peter G. Schunemann, Valentin Petrov

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Optical parametric amplification seeded by four-wave mixing in photonic crystal fiber
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Enhanced-efficiency of a mid-IR intrapulse difference-frequency generation
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NEW CONCEPTS OF NONLINEAR OPTICS

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Room-temperature-bonded multiple GaAs plates for mid-IR wavelength conversion
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Emil Z. Usig, Itiro Dagi-Erek, Nicolas Volet

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100W collinear optical parametric amplifier pumped by the second harmonic of a picosecond Yb-fiber laser
Pancho Tzankov, Valery Kasyanenko, Philippe Herpe, Pankaj Kadowar, Alex Limarov, Jinyung Kim, Alexey Avdokhin, Igor Samartsev, Valentin Gaponov

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High-energy, broadband, non-resonant PPKTP optical parametric oscillator
Uplink laser assembly for the deep space optical communications payload aboard NASA's Psyche Asteroid Mission
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Proc. SPIE 11993, Free-Space Laser Communications XXXIV, 119930F (4 March 2022); doi: 10.1117/12.2607302

Performance demonstration of 2x1U CubeSat laser communications terminal with over-the-air 10G communications links
Keith G. Petrillo, Jacob Hwang, Michael M. Albert, He Cao, Kent Pufferburgen, Joe Ruud, Michael McIntosh, Mark Strom, Brian Mathison, et al.
Proc. SPIE 11993, Free-Space Laser Communications XXXIV, 119930K (4 March 2022); doi: 10.1117/12.2607320

Qualification and performance of a high-efficiency laser transmitter for deep-space optical communications
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Optical modem enabling broadband datalink for crewed cis-lunar missions
Proc. SPIE 11993, Free-Space Laser Communications XXXIV, 119930H (4 March 2022); doi: 10.1117/12.2614577

A stereoscopic approach for cloud base height assessment over an optical ground station
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Proc. SPIE 11993, Free-Space Laser Communications XXXIV, 119930I (4 March 2022); doi: 10.1117/12.2615192

Optical propagation in a marine environment: effects of turbulence spectrum choice on simulation
William S. Rabkinoff, Rika Mahon, Mike S. Ferraro, Christopher I. Moore, Andrew Coffee
Proc. SPIE 11993, Free-Space Laser Communications XXXIV, 119930J (4 March 2022); doi: 10.1117/12.2615104

Enabling efficient quantum communications with adaptive optics
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Proc. SPIE 11993, Free-Space Laser Communications XXXIV, 119930L (4 March 2022); doi: 10.1117/12.2608420

Aportoglou, Wael El-Dali, Silvia Mezzasoma, Monica Politano, Zoran Christopher Vasko, Josep Perdigues, Guray Acar, Pantelis-Daniel

HydRON: Internet backbone beyond the clouds
Christopher Vasilo, Jorge Perdigues, Ganev Acar, Pantelis-Daniel Aparapoglu, Wael El-Dali, Silvia Mezzasoma, Monica Politano, Zoran Sodnik, Carlo Elsea, et al.
Proc. SPIE 11993, Free-Space Laser Communications XXXIV, 119930M (4 March 2022); doi: 10.1117/12.2606232

Ground transceiver technologies
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Automatic aircraft avoidance for laser uplink safety
Seán Meenan, Emily Dunkel, Michael Cheng
Proc. SPIE 11993, Free-Space Laser Communications XXXIV, 119930O (4 March 2022); doi: 10.1117/12.2607330

Plenoptic wavefront sensor for free-space optical communications
Noelia Martinez, Luis Fernando Rodriguez Ramos, Ángel Alonso, Icira Montilla, Joan Torras
Proc. SPIE 11993, Free-Space Laser Communications XXXIV, 119930P (4 March 2022); doi: 10.1117/12.2607320

Numerical phase space optics methods and applications to the analysis of fiber coupling efficiency in atmospheric turbulence
Youssef K. Khaine, Farnil Ruhton, Brian E. Vyhnaele, Sarah A. Tedder
Proc. SPIE 11993, Free-Space Laser Communications XXXIV, 119930Q (4 March 2022); doi: 10.1117/12.2607603

Transportable ground station for QKD using adaptive optics
Jorge Socos Negrin, Luis Fernando Rodriguez Ramos, Joan Torras, Icira Montilla, Ángel Alonso, Pablo González de Chaves, Noelia Martinez Rey
Proc. SPIE 11993, Free-Space Laser Communications XXXIV, 119930R (4 March 2022); doi: 10.1117/12.2607603

Implementation and assessment of a non-line-of-sight network cluster operating at the UVC wavelength band
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Proc. SPIE 11993, Free-Space Laser Communications XXXIV, 119930S (4 March 2022); doi: 10.1117/12.2607320

POST-DEADLINE TALKS

Electro-optics sensor with embedded edge AI-computing for atmospheric turbulence refractive index structure parameter (C2n) sensing at high temporal resolution
Don L. H. Hettiarachchi, Ernst Polnau, Mikhail A. Vorontsov
Proc. SPIE 11993, Free-Space Laser Communications XXXIV, 119930T (4 March 2022); doi: 10.1117/12.2618110

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Advances in beam shaping of high-power CW lasers with BrightLine wave technology
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Remote welding with ultra-high-power CW lasers
Evangelos Papadopoulos, Arnette Pricking, Elke Kaiser, Reiner Brusele, Christoph Tilkim, Tina Gottwald, Bernh Metzger, Sven-Silvius Schad, Alexander Kiltl et al.

Influence of high feed rates during laser beam welding on the capillary geometry and the resulting weld seam quality
Eveline N. Reinheimer, Rudolf Weber, Thomas Graf

Evaluation of productivity scaling approaches for laser powder bed fusion of nickel-base alloy 625
Tim Lantzsch, Daniel Heussen, Niklas Praetzsch, Constantin Haefner

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The potential of photonic technologies in battery production: measurement, monitoring, control
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High-accuracy calibration technique for passive pre-alignment of a laser autofocus system
J. Dalgado-Aguilón, C. Ruiz, M. Rosete-Aguilón, Carlos J. Román-Moreno, J. Gandull-Meija

High-speed x-ray imaging of the melt flow during laser beam cutting
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A multi-scale model for ultra-short pulse laser structuring: part II. The macro-scale model
C. Heinig, T. Barthels, W. Schütz, M. Nielßen

Development and optimization of fast laser shock peening (FLSP) using most advanced laser architectures
Alexandre Bondopadre, Olivier Casagrande, Yann Rouchaussé, Olivier Castelnaud, Laurent Berthe

Effect of laser shock peening with square laser spot on hardness and residual stress of Ti6Al4V alloy
Hao Wang, Jan Kaufman, Jan Brüser, Evgeny L. Gurevich, Andreas Ostendorf

Laser welding of additively manufactured technological components assisted by a neural network-based expert system
Julian Kuklik, Torben Mente, Verena Wippo, Peter Jaeschke, Benjamin Kuester, Malte Stonis, Stefan Kaierle, Ludger Overmeyer

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Sohran Karavamum, Souichi Oka, Kazuhito Takaya, Takaaki Sakamoto, Masahiro Uno, Masayuki Tsuda

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Comparison between wavelengths of 940nm and 1530nm for laser transmission welding of glass fiber reinforced PPS
Verena Wippo, Julian Kuklik, Peter Jaeschke, Stefan Kaierle

Multi-MJ ultrafast laser machining with flexible multi-spot patterns
Danie Fliam, Julian Hellstern, Andreas Heimes, Felix Zimmermann, Abdolnaser Ghazaghi, Jona Woflzeit, Fabian Kimmich, Jonas Kleiner, Christoph Tillkorn et al.

Remote laser processing of highly reflective materials with ultra-bright lasers operating at 445nm

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Physical simulation of perovskite/silicon three-terminal tandems based on bipolar transistor structure
Gemma Giliberti, Federica Cappelluti
Proc. SPIE 11996, Physics, Simulation, and Photonic Engineering of Photovoltaic Devices XI, 1199602 (4 March 2022); doi: 10.1117/12.2609510

ADVANCED CONCEPTS

Extremely low material consumption III/V solar cell
I. Kolpakov, E. A. Bochichio, K. Korzun, P. A. L. M. Koolen, B. van Gorkom, W. J. H. Berghuis, R. Veldhoven, J. E. M. Haverkort
Proc. SPIE 11996, Physics, Simulation, and Photonic Engineering of Photovoltaic Devices XI, 1199607 (4 March 2022); doi: 10.1117/12.2608529

Sub-millimeter-scale multijunction solar cells for concentrator photovoltaics (CPV)
Proc. SPIE 11996, Physics, Simulation, and Photonic Engineering of Photovoltaic Devices XI, 1199608 (4 March 2022); doi: 10.1117/12.2613441

Thermodynamics of a nanowire solar cell towards the radiative limit
K. Korzun, P. A. L. M. Koolen, I. Kolpakov, E. A. Bochichio, J. Gómez Rivas, J. E. M. Haverkort
Proc. SPIE 11996, Physics, Simulation, and Photonic Engineering of Photovoltaic Devices XI, 1199609 (4 March 2022); doi: 10.1117/12.2608671

PHOTOVOLTAIC MODULES AND SYSTEMS

Impact of reflective torque tube on rear side irradiance in bifacial photovoltaic modules
Trevor J. Coathup, Mandy R. Lewis, Annie C. J. Russell, Karin Hinzer

Probabilistic description of short-term cloud dynamics from rapid sampling of the solar spectral irradiance
Nick Andersen, Viktor Tatsiukou, Karin Hinzer, Richard Beal, Henry Schriemer

PHOTOVOLTAIC MODULES AND SYSTEMS

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Nick Andersen, Viktor Tatsiukou, Karin Hinzer, Richard Beal, Henry Schriemer

HOT CARRIERS AND LOW DIMENSIONALITY

Energy transfer between photons, carriers, and phonons in hot-carrier solar cells: a theoretical investigation
Chen-Wei Tien
Proc. SPIE 11996, Physics, Simulation, and Photonic Engineering of Photovoltaic Devices XI, 1199603 (4 March 2022); doi: 10.1117/12.2616651

Theoretical evidence of hot-ballistic-carriers in ultra-thin solar cell
Nicolas Cavossiolas, Imam Makhiufi, Anne-Marie Dani, Michel Lanno, Marc Bescond, Fabienne Michelini
Proc. SPIE 11996, Physics, Simulation, and Photonic Engineering of Photovoltaic Devices XI, 1199604 (4 March 2022); doi: 10.1117/12.2609613

LIGHT MANAGEMENT

Light management for improved photon absorption in thin-film radiation-tolerant multijunction space photovoltaics
Julia R. O’Razoar, Steve J. Polly, Ruo Tatavarti, Seth M. Hubbard
Proc. SPIE 11996, Physics, Simulation, and Photonic Engineering of Photovoltaic Devices XI, 1199605 (4 March 2022); doi: 10.1117/12.2609780

Passive radiative cooling of solar cells by low-cost and scalable metamaterials: physical simulation and efficiency limits
Matteo Cagnoni, Alberto Tibaldi, Pietro Testa, Jorge Sánchez Dolado, Federica Cappelluti
Proc. SPIE 11996, Physics, Simulation, and Photonic Engineering of Photovoltaic Devices XI, 1199606 (4 March 2022); doi: 10.1117/12.2607489

HOT CARRIERS AND LOW DIMENSIONALITY

Energy transfer between photons, carriers, and phonons in hot-carrier solar cells: a theoretical investigation
Chen-Wei Tien
Proc. SPIE 11996, Physics, Simulation, and Photonic Engineering of Photovoltaic Devices XI, 1199603 (4 March 2022); doi: 10.1117/12.2616651

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Nicolas Cavossiolas, Imam Makhiufi, Anne-Marie Dani, Michel Lanno, Marc Bescond, Fabienne Michelini
Proc. SPIE 11996, Physics, Simulation, and Photonic Engineering of Photovoltaic Devices XI, 1199604 (4 March 2022); doi: 10.1117/12.2609613

LIGHT MANAGEMENT

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Julia R. O’Razoar, Steve J. Polly, Ruo Tatavarti, Seth M. Hubbard
Proc. SPIE 11996, Physics, Simulation, and Photonic Engineering of Photovoltaic Devices XI, 1199605 (4 March 2022); doi: 10.1117/12.2609780

Passive radiative cooling of solar cells by low-cost and scalable metamaterials: physical simulation and efficiency limits
Matteo Cagnoni, Alberto Tibaldi, Pietro Testa, Jorge Sánchez Dolado, Federica Cappelluti
Proc. SPIE 11996, Physics, Simulation, and Photonic Engineering of Photovoltaic Devices XI, 1199606 (4 March 2022); doi: 10.1117/12.2607489
POSTER SESSION

Improving the photoresponse of organic polarization-sensitive media by dimerizing the chromophoric component
Irlakhi Chaganava, Barbara Kilosanidze, George Kakauridze, Irine Kobulashvili, Amit K. Bhowmick, Philip J. Bos
Proc. SPIE 11998, Organic Photonic Materials and Devices XXIV, 119980D (7 March 2022); doi: 10.1117/12.2610109

Numerical investigation of fluorescent/phosphorescent multilayer top-emitting organic light-emitting diodes
Yung-Cheng Chang, Jih-Yuan Chang, Man-Fang Huang, Yen-Kuang Kuo
Proc. SPIE 11998, Organic Photonic Materials and Devices XXIV, 119980E (7 March 2022); doi: 10.1117/12.2608703

Protein-based Gabor filter for visual illusion
Shoko Kako, Natsumi Fukunaga, Yoshiko Okada-Shudo
Proc. SPIE 11998, Organic Photonic Materials and Devices XXIV, 119980F (7 March 2022); doi: 10.1117/12.2608950

Ultrasfast Phenomena and Nanophotonics XXVI

PLASMONICS

Photoinduced transient symmetry breaking in plasmonic structures for ultrafast nanophotonics
Andrea Sbirato, Margherita Mauri, Remo Proietti Zaccaria, Alessandro Alabastri, Giusto Cerullo, Giuseppe Della Valle
Proc. SPIE 11999, Ultrafast Phenomena and Nanophotonics XXVI, 119990D (7 March 2022); doi: 10.1117/12.2607177

Plasmonic nano-focusing of particle beams by surface-crunch-in plasmons excited in tapered tubes
Aakash A. Sahai
Proc. SPIE 11999, Ultrafast Phenomena and Nanophotonics XXVI, 1199903 (7 March 2022); doi: 10.1117/12.2605722

Propagation analysis of space-time surface plasmon polariton wave packet excited by light irradiation on nanobeams structure
Acebilli Ichi, Yuval Yewaras, Kenneth J. Schepartz, Ayman F. Abouraddy, Atef Kudo
Proc. SPIE 11999, Ultrafast Phenomena and Nanophotonics XXVI, 1199904 (7 March 2022); doi: 10.1117/12.2607690

QUANTUM EMITTERS

Theoretical analysis of correlations between two quantum fields exciting a three-level system using the cluster-expansion approach
Hendrik Rosas, Olgar Telnina, Torsten Neier, Polina R. Sharapova
Proc. SPIE 11999, Ultrafast Phenomena and Nanophotonics XXVI, 1199905 (7 March 2022); doi: 10.1117/12.2608528

Helicity sensitive temporal profile of the photocurrent in semiconductor nanoparticle thin film
Iwiaheaei V., Vanykova, Girendra M. Mkhare, Aramiy E. Fabez, Vladimir Ya. Kogas, Tatyana N. Mogileva, Yuri P. Svirko
Proc. SPIE 11999, Ultrafast Phenomena and Nanophotonics XXVI, 1199906 (7 March 2022); doi: 10.1117/12.2604546

CARRIER DYNAMICS IN SEMICONDUCTORS AND 2D MATERIALS

2D electronic spectroscopic techniques towards quantum technology applications
Elisabetta Cusini
Proc. SPIE 11999, Ultrafast Phenomena and Nanophotonics XXVI, 1199907 (7 March 2022); doi: 10.1117/12.2608527

Nonlinear optics

Microscopic simulations of high harmonic generation from semiconductors
Alexander Trautmann, Ruxin Zou, Guifang Wang, Wolf-Rudiger Hannes, Shi ding Yang, Li Hui Thong, Cong Ngo, Johannes Tilman Stein, Marcelo Gissapnai, et al.
Proc. SPIE 11999, Ultrafast Phenomena and Nanophotonics XXVI, 1199909 (7 March 2022); doi: 10.1117/12.2607447

Maxwell-Semiconductor Bloch simulations of high-harmonic generation in finite thickness semiconductor slabs
Anton Rubenko, Maria K. Hagen, Jörg Hader, Miroslav Kolesik, Stephan W. Koch, Jerome V. Moloney
Proc. SPIE 11999, Ultrafast Phenomena and Nanophotonics XXVI, 119990A (7 March 2022); doi: 10.1117/12.2625903

2D MATERIALS

Amplitude mode-driven ultrafast transition into a hidden state in a thin film of transition metal dichalcogenide
Ryo Shimano, Naotaka Yoshikawa
Proc. SPIE 11999, Ultrafast Phenomena and Nanophotonics XXVI, 119990B (7 March 2022); doi: 10.1117/12.2611742

Ultrafast responses of uniform- and gradient-doped GaAs photocathodes: from theory to experiment
Rui Zhou, Hemang Jari, Yulin Zhang, Yunsheng Gai, Lingze Duan
Proc. SPIE 11999, Ultrafast Phenomena and Nanophotonics XXVI, 119990C (7 March 2022); doi: 10.1117/12.2607632

REAL-TIME SPECTROSCOPY AND ULTRAFAST MEASUREMENTS

Amplified correlated beams
Sara Mair, Moti Fridman
Proc. SPIE 11999, Ultrafast Phenomena and Nanophotonics XXVI, 119990D (7 March 2022); doi: 10.1117/12.2608098
THZ SOURCES

Passive terahertz source based on graded composition InGaAs structures
Ping-Keng Liu, Deniz Turan, Mona Jamsari
Proc. SPIE 12000, Terahertz, RF, Millimeter, and Submillimeter-Wave Technology and Applications XV, 1200007 (7 March 2022); doi: 10.1117/12.2607905

A logarithmic spiral antenna for polarization and incident angle insensitive broadband electromagnetic wave absorption
Puabir Gaur, Wei-Chih Wang
Proc. SPIE 12000, Terahertz, RF, Millimeter, and Submillimeter-Wave Technology and Applications XV, 1200003 (7 March 2022); doi: 10.1117/12.2608882

SPECTROSCOPY AND RELATED TECHNOLOGIES

Characterization of the dynamics of the tunable topological crystalline insulator Ptl-xSnxAs using optical pump-probe terahertz probe measurements
Zhenyang Xiao, Jiaxu Jiang, Xin Yu Liu, Badshu Asif, David Burghoff
Proc. SPIE 12000, Terahertz, RF, Millimeter, and Submillimeter-Wave Technology and Applications XV, 1200009 (7 March 2022); doi: 10.1117/12.2609663

THz generation with photoconductive emitters with a low-noise GHz repetition rate laser
Proc. SPIE 12000, Terahertz, RF, Millimeter, and Submillimeter-Wave Technology and Applications XV, 120000A (7 March 2022); doi: 10.1117/12.2608161

RF, MILLIMETER AND SUBMILLIMETER-WAVE GENERATION, MODULATION, AND DETECTION

Progress toward instantaneous microwave photonic spatial-spectral localization
William L. Beardell, Garrett J. Schneider, Janusz A. Murakowski, Dennis W. Prather
Proc. SPIE 12000, Terahertz, RF, Millimeter, and Submillimeter-Wave Technology and Applications XV, 1200006 (7 March 2022); doi: 10.1117/12.2605538

RF and microwave photonic signal generation and processing based on Kerr micro-combs
Yang Sun, Mengli Tan, Jiayang Wu, Xingyuan Xu, Yang Li, Sai T. Chu, Brent E. Little, Roberto Morandotti, Aman Mitchell, et al.
Proc. SPIE 12000, Terahertz, RF, Millimeter, and Submillimeter-Wave Technology and Applications XV, 1200006 (7 March 2022); doi: 10.1117/12.2604027

Pulse amplitude modulation communication in terahertz-band using asymmetric Mach-Zehnder interferometer-type optical signal emitter
Koichi Takiguchi, Nozomu Nishio
Proc. SPIE 12000, Terahertz, RF, Millimeter, and Submillimeter-Wave Technology and Applications XV, 120000D (7 March 2022); doi: 10.1117/12.2607289

Feature demonstration of terahertz-wave communication with physical-layer security
Y. Kawai, H. Chen, K. Kato
Proc. SPIE 12000, Terahertz, RF, Millimeter, and Submillimeter-Wave Technology and Applications XV, 1200007 (7 March 2022); doi: 10.1117/12.2606717

INNOVATIONS IN THZ AND IR

Investigation of tunable fishnet metamaterials for optimal phase shift effect
Ch-Luen Tse, Wei-Chih Wang
Proc. SPIE 12000, Terahertz, RF, Millimeter, and Submillimeter-Wave Technology and Applications XV, 120000F (7 March 2022); doi: 10.1117/12.2615806

Optical processing for phased-array and beamspace mapping
Janusz Murakowski, Garrett Schneider, Dennis Prather
Proc. SPIE 12000, Terahertz, RF, Millimeter, and Submillimeter-Wave Technology and Applications XV, 120000G (7 March 2022); doi: 10.1117/12.2605480

Fiber-based arrayed waveguide grating for spectral sensing
Hannah I. West, Janusz Murakowski, Dennis W. Prather
Proc. SPIE 12000, Terahertz, RF, Millimeter, and Submillimeter-Wave Technology and Applications XV, 120000H (7 March 2022); doi: 10.1117/12.2603229

CHARACTERIZATION OF MATERIALS AND DEVICES

Time-dependent degradation of hydrogen-terminated diamond MESFETS
Proc. SPIE 12000, Terahertz, RF, Millimeter, and Submillimeter-Wave Technology and Applications XV, 120000J (7 March 2022); doi: 10.1117/12.2607809

Design, fabrication, and spectral characterization of temperature-dependent liquid crystal-based metamaterial to tune dielectric metasurface resonances
Golsa Mirbagheri, David T. Crouse
Proc. SPIE 12000, Terahertz, RF, Millimeter, and Submillimeter-Wave Technology and Applications XV, 120000K (7 March 2022); doi: 10.1117/12.2606407

Estimating dielectric parameters by reflecting evanescent waves at THz frequencies
Zoıtan Vlagos, Nergin Foroughi, Alireza Lajevardipour, Dominique Appadoes, Saitos, Aoudadakis, Andrew W. Wood
Proc. SPIE 12000, Terahertz, RF, Millimeter, and Submillimeter-Wave Technology and Applications XV, 120000L (7 March 2022); doi: 10.1117/12.2608533

PL and PLE characterization of high current density resonant tunnelling diodes for THz applications
Michele Cito, Razvan Baha, Osamu Kojima, Ben J. Stover, Toshikazu Mukai, Richard A. Hogg
Proc. SPIE 12000, Terahertz, RF, Millimeter, and Submillimeter-Wave Technology and Applications XV, 120000M (7 March 2022); doi: 10.1117/12.2608236

THZ APPLICATIONS

High stable optical beats in laser chaos for CW THz-TDS system
Fumiyoshi Kuwashima, Mona Jamsari, Sameh Cahmakysyan, Osamu Morikawa, Takuya Shira, Kazuaki Iwao, Kazuyoshi Kunihara, Hideaki Kishana, Takashi Furuya, et al.
Proc. SPIE 12000, Terahertz, RF, Millimeter, and Submillimeter-Wave Technology and Applications XV, 120000N (7 March 2022); doi: 10.1117/12.2607854

Direct demultiplexing method of terahertz-wave multiple carrier channels in terahertz domain utilizing terahertz-wave asymmetric interferometer
Koichi Takiguchi, Nozomu Nishio
Proc. SPIE 12000, Terahertz, RF, Millimeter, and Submillimeter-Wave Technology and Applications XV, 120000Q (7 March 2022); doi: 10.1117/12.2608541
Printed terahertz metasurfaces for multispectral imaging by thermo-conversion

Cyprien Brunon, Baptiste Fu, Clément Verhac, Patrick Bouchon

THZ AND SUB-MILLIMETER NOVEL DETECTORS AND APPLICATIONS

Discrimination between cosmological and stellar phenomena by the intensity interferometry II

P. B. Lerner, N. M. Miskovsky, P. H. Cutler, T. E. Sullivan
Proc. SPIE 12000, Terahertz, RF, Millimeter, and Submillimeter-Wave Technology and Applications XV, 120000Q (7 March 2022); doi: 10.1117/12.2623539

Opto PLENARY SESSION

Frontier electronics in memory of Professor Isamu Akasaki

Hiroshi Amano
Proc. SPIE 12001, Gallium Nitride Materials and Devices XVII, 1200107 (5 March 2022); doi: 10.1117/12.2608680

FUNDAMENTAL PHYSICS AND CHARACTERIZATION

Micro-photonoluminescence to investigate lateral diffusion of charge carriers in InGaN/GaN MQWs

Conny Becht, Michael Binder, Bastian Galie, Jürgen Ott, Maximilian Tauer, Alvaro Gomez Iglesias, Heng Wang, Martin Strassburg, Ulrich Theodor Schwarz
Proc. SPIE 12001, Gallium Nitride Materials and Devices XVII, 1200108 (5 March 2022); doi: 10.1117/12.2608701

Optimization of InGaS quantum well interfaces for fast interwell carrier transport and low nonradiative recombination

Rinal Yapparov, Cheyenne Lynsky, Yi-Chao Chow, Shui Nakamura, James S. Speck, Saulius Marcinkevičius
Proc. SPIE 12001, Gallium Nitride Materials and Devices XVII, 1200109 (5 March 2022); doi: 10.1117/12.2608765

DEGRADATION

Deep defects in InGaN LEDs: modeling the impact on the electrical characteristics

Proc. SPIE 12001, Gallium Nitride Materials and Devices XVII, 1200105 (5 March 2022); doi: 10.1117/12.2606560

Micro-electroluminescence and micro-photonoluminescence study on GaN-based laser diode aging

Lukas Uhlig, Conny Becht, Erik Freier, J. Hye Kang, Veit Hoffmann, Christoph Stölmacker, Sven Einfeldt, Ulrich T. Schwarz
Proc. SPIE 12001, Gallium Nitride Materials and Devices XVII, 1200106 (5 March 2022); doi: 10.1117/12.2609194

GaN-based solar cells degradation kinetics investigated at high temperature under high-intensity 405nm optical stress

Alessandro Caria, Carlo De Santi, Marco Nicotto, Matteo Buffolo, Xuanqi Huang, Houqiang Fu, Hong Chen, Yuj Zhao, Gaudenzio Meneghesso, et al.
Proc. SPIE 12001, Gallium Nitride Materials and Devices XVII, 1200107 (5 March 2022); doi: 10.1117/12.2608680

VCSEL, SEMIPOLAR LASER DIODES, AND SINGLE-PHOTON EMITTERS

Mode control in long cavity VCSELS with a curved mirror

Proc. SPIE 12001, Gallium Nitride Materials and Devices XVII, 1200108 (5 March 2022); doi: 10.1117/12.2606537

IN-PLANE LASER DIODES I

Edge-emitting blue laser diode with high CW wall-plug efficiency of 50 %

Yoshitaka Nakatou, Yoji Nagao, Tatsushi Hirao, Kazuma Kozumi, Tatsuya Tanaka, Shingo Matsu, Eiichiro Okahisa, Tomoya Yamamoto, Shino-ichi Nagahama
Proc. SPIE 12001, Gallium Nitride Materials and Devices XVII, 1200109 (5 March 2022); doi: 10.1117/12.2601154

IN-PLANE LASER DIODES II

Lateral-longitudinal near-field measurements of 10µm broad-ridge blue laser diodes

Dominic J. Kunzmann, Lukas Uhlig, Jannina J. Tepaß, Anna Kafar, Szymon Stanczyk, Piotr Perlin, Ulrich T. Schwarz
Proc. SPIE 12001, Gallium Nitride Materials and Devices XVII, 120010A (5 March 2022); doi: 10.1117/12.2608109

UV LED

UV LED reliability: degradation mechanisms and challenges

Matteo Meneghini, Francesco Piva, Carlo De Santi, Nicola Trivellin, Matteo Buffolo, Nicola Roccato, Riccardo Breccianci, Massimo Grigollo, Davide Fiorimonti, et al.
Proc. SPIE 12001, Gallium Nitride Materials and Devices XVII, 120010B (5 March 2022); doi: 10.1117/12.2606858

On the performance and reliability of state-of-the-art commercial UV-C LEDs for disinfection purposes

F. Piva, D. Fiorimonti, N. Trivellin, C. De Santi, M. Buffolo, G. Maneghesso, E. Zanoni, M. Meneghini
Proc. SPIE 12001, Gallium Nitride Materials and Devices XVII, 120010C (5 March 2022); doi: 10.1117/12.2625979
Functional Oxides
Enhanced nonlinear optics in nanowires, waveguides, and ring resonators integrated with graphene oxide films
Yuning Zhang, Jayang Wu, Yang Gu, Yunji Yang, Yang Sun, Linnan Jia, Baohua Jia, David J. Moss
Proc. SPIE 12002, Oxide-based Materials and Devices XIII, 120020F (5 March 2022); doi: 10.1117/12.2620948

Synthesis and characterization of semiconducting oxide nanoparticles and hybrid composites with energy-related applications
Antonio Vázquez-López, Javier García-Alonso, Svitlana Nahmik, Javier Bartolomé, Julio Ramírez-Castellanos, David Maestre, Bilge Saruhan, Ana Cremades
Proc. SPIE 12002, Oxide-based Materials and Devices XIII, 120020G (5 March 2022); doi: 10.1117/12.2620954

Investigation of dynamic optical processes of tapered silicon pillars
Sande Kelem
Proc. SPIE 12002, Oxide-based Materials and Devices, 120020H (5 March 2022); doi: 10.1117/12.2620957

PIEZO- AND DI-ELECTRIC OXIDES
Second harmonic generation in multiferroic BaTiO3-BiFeO3 film and nanorod arrays grown on Si substrate
Rathnara R. H. H. Mudiyanselage, Nicholas W. G. Smith, Brendan A. Magli, Min Guo-Kang, Shashank Priya, Shil A. Khodaparast
Proc. SPIE 12002, Oxide-based Materials and Devices XIII, 120020L (5 March 2022); doi: 10.1117/12.2620957

FULLY CMOS-COMPATIBLE PYROELECTRIC INFRARED DETECTOR BASED ON DOPED HFO2 THIN FILM IN 3-D INTEGRATION
Proc. SPIE 12002, Oxide-based Materials and Devices XIII, 120020M (5 March 2022); doi: 10.1117/12.2620971

Poster Session
Electron parameter estimations of oxide-based silver crystals
Nadezhda P. Netesova, Sarks R. Arakelyan, Ekaterina A. Arakelyan
Proc. SPIE 12002, Oxide-based Materials and Devices XIII, 120020N (5 March 2022); doi: 10.1117/12.2620949

ZNO AND MGZNO
Structural properties and absorption band edge tunability in ZnMnO by metal-organic chemical vapor deposition and atomic layer deposition
Vishal Saravade, Amirhossein Ghods, Zahra Manzoor, Chuanjie Zhou, Na Lu, Benjamin Klein, Ian Ferguson
Proc. SPIE 12002, Oxide-based Materials and Devices XIII, 120020I (5 March 2022); doi: 10.1117/12.2620558

Polarization-resolved photoluminescence study of an atom probe tip containing a ZnO-(Mg,Zn)O heterostructure
Proc. SPIE 12002, Oxide-based Materials and Devices XIII, 120020I (5 March 2022); doi: 10.1117/12.2620470

Nanostructures wetting evaluation using ultra high frequency ultrasound
A. Salhab, J. Carlier, M. Tsaiuh, P. Campistron, M. Neyens, B. Norgaillard, V. Thomy
Proc. SPIE 12002, Oxide-based Materials and Devices XIII, 120020L (5 March 2022); doi: 10.1117/12.2620959

Investigation of transition metal-doped zinc oxide for spintronics
Vishal Saravade, Chuanjie Zhou, Na Lu, Benjamin Klein, Ian Ferguson
Proc. SPIE 12002, Oxide-based Materials and Devices XIII, 120020K (5 March 2022); doi: 10.1117/12.2620583

ZnO NANOSTRUCTURES WETTING EVALUATION USING ULTRA HIGH FREQUENCY ULTRASOUND
PHOTONIC INTEGRATION I

Group IV mid-infrared photonics for communications and sensing
Goran Z. Mashanovich, Laurent Reid, Georgi Georgiev, Chen Wei, Yarri Qi, Callum J. Sterling, Ahmed Osman, Yangbo Wu, Zhiguo Quat.

Low loss reactive sputter-coated titanium oxide waveguides
A. Aguirre Fontana, I. Hegeman, W. A. M. Hendriks, C. E. Oomsnoo-Martínez, M. Dijkstra, S. M. García-Blanco

Micro-transfer printed silicon nitride grating couplers for efficient on-chip light coupling
Zuyang Liu, Grigorij Muliuk, Jing Zhang, Günther Roelkens, Nicolas Le Thomas, Roel Baets

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Ultra-low power stress-based phase actuation in Triplex photonic circuits
Aarnoud S. Everhardt, T. Lai Anh Tran, Charoula Mitsoloski, Tom R. Horner, Robert Grotjans, Rudi Oldenburg, Rick Hennink, Dick Geuzebroek, Arne Leinsieck, al.

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Riccardo Franch, Stefano Iaisci, Filippo Moro, Lorenzo Petresi

Multimode sensing using optical whispering-gallery mode barcodes for high-precision and wide-range temperature measurements
Jie Liao, Lan Yang

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Metal-organic framework coated planar polymer optical waveguide for carbon dioxide detection and sensing
Lei Zhang, Nils Keppler, Huijun Zhang, Axel Günther, Peter Behrens, Bernhard Roth

INTEGRATED QUANTUM OPTICS

Telecom-compatible, on-chip generation and processing of complex photon states in time and frequency
Marco Chemnitz, Hao Yu, Stefania Sciara, Bernat Fischer, Piotr Roztocki, Benjamin Crockett, Christian Reimer, Lucia Caspani, Michael Kuesieck, al.

Supporting quantum technologies with a micron-scale silicon photonics platform
Mathias Chen, Arjot Bera, Annti-Kaapio Mäki-Peiskonen, Jaan Nissilä, Krisi Tappura, Marco Caputo, Laura Lehtimäki, Jaak Lehtinen, Joonas Gounevius, al.

Universal photonic processors fabricated by femtosecond laser writing
Ciro Pantanella, Francesco Caccarelli, Simona Riccanti, Riccardo Albisini, Emanuela Ursulati, Niki Di Gianio, Simone Alizeni, Andrea Crespi, Roberto Osellame

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INTEGRATED ACTIVE DEVICES

Increasing the reliability of DFB lasers on glass: the approach of encapsulation by wafer bonding
Lies Heier, Lionell Bastard, Jean-Emmanuel Broquin, Julien Poëtte

Performant on-chip photonic detectors with lateral p-n silicon-germanium heterojunctions

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Thin-film lithium niobate based dual-polarization IQ modulator for single-carrier 1.6Tb/s transmission

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Synthesis of ultra-dense interferometric chains in planar lightwave circuits
S. Bldytki, K. Yadav, A. Babakishvani

Combining micro-optics and integrated optics: a case study on bulk resonators

Versatile, high bandwidth, RF and microwave photonic Hilbert transformers based on Kerr micro-combs
Yang Li, Mengqi Tan, Jiayang Wu, Yingyu Xu, Yang Sun, Andreas Bowers, Bill Corcoran, Thach G. Nguyen, Tai S. Chueh, al.

Spectral shaping based on optical waveguides with advanced Sagnac loop reflectors
Harmed Arianfard, Jiayang Wu, Saulius Jaudzitis, David J. Moss

PLASMONICS

Effective plasmonic modulator and plasmonic isolator: challenges of design and fabrication technology
Vadym Zayets, Iryna Serdeha, Valerii Grygoruk

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Simulation and fabrication of slow light suspended air-bridge AlGaAs photonic crystal waveguide
Kasubath Vyas, Ross Cheriton, David Liu, Hassan Ahmed, Sebastian Studz, Ksenia Dolgiakova
Tunable guided-mode resonance filters operating in the longwave infrared spectral region
N. Gupta, R. Magnusson, K. J. Lee, Y. H. Ko, J. Song

A new compact snapshot multispectral mosaic imager with an improved deposition process
Bert Geelen, Klaas Tack

Lanthanide super crystals used for nano-optics studies to increase energy within solar cell technologies
Alexis Bullock, Marvin Clemmons

A low-loss 3D printed ridge waveguide via stereolithography
Heico Ramollan, Philip Measor

Evaluating the most efficient 2D Zn nanostructures for broadband metasurface absorbers
Sumbal Iqsh, Ahsan Sarwar Rana, Muhammad Zubak, Muhammad Qasim Mahmood

Noise effects on time delay reservoir computing using silicon microring resonators
Giovanni Donati, Apostolos Argyris, Claudio R. Mirasso, Mattia Mancinelli, Lorenzo Pavesi

Nano-diffractive elements in BSI pixel CMOS image sensors: optical design and process integration co-optimization with pixel scaling

Development of optical phased arrays in a micron-scale silicon photonics platform
Sidra Tul Murtaza, An Ho Khanh, Mikko Harjanne, Matteo Cherci, Pekka Suopajarvi, Petri Kivirnen, Markku Pakkariinen, Matthieu Roussy, Timo Aalto

Light-harvesting microcuboidal arrays integrated with photodetector FFAs for enhancing infrared imaging devices
Boya Jin, Aaron Breth, Grant W. Sidney, Nicholas I. Limberopoulos, Joshua M. Duran, Garnini Ariyayawana, Igor Anisimov, Augustine M. Ubrus, Kenneth W. Allentuch et al.

Fs laser writing in Nd3+ doped GeO2-PbO glasses for the production of a new double line waveguide architectures for photonic applications
Camila D. S. Bordon, Niklaus U. Wettler, Wagner de Rossi, Luciana R. P. Kassab

The influence of the different parameters used for the production of double line waveguides in Nd3+ doped TeO2-ZnO glasses by fs laser writing
Evelyn S. Magalhaes, Daniel K. Kumada, Niklaus U. Wettler, Luciana R. P. Kassab, Wagner de Rossi

Facet optimization for edge-coupling of fiber to foundry fabricated SOI waveguides
Amir Begovic, Lewis G. Carpenter, Siti Khadija Binti, M. Rakib Uddin, Amit Dasikht, Christopher Baizoo, Gerald Leake, Z. Rina Huang, Nicholas M. Fahrenkopf et al.

PZT based actuator for an efficient electro-optomechanical interaction in Si-photonics integrated circuits
Irfan Ansari, Gilles F. Faustin, Emiel Dieussaert, John P. George, Jensen Beeckman, Dries Van Thourhout

Self-written waveguides as low-loss interconnections and sensing elements
A. Günther, K. Kuhl, M. Baran, A. K. Rössler, F. Carstens, D. Riedau, W. Kowalsky, B. Roth

Evaluating the most efficient 2D Zn nanostructures for broadband metasurface absorbers
Sumbal Iqsh, Ahsan Sarwar Rana, Muhammad Zubak, Muhammad Qasim Mahmood

Noise effects on time delay reservoir computing using silicon microring resonators
Giovanni Donati, Apostolos Argyris, Claudio R. Mirasso, Mattia Mancinelli, Lorenzo Pavesi

Small-scale online simulations in guided-wave photonics
Manfred Hammer
Novel glass etching process based on molten salts for optical fiber components
Norbert Arnold-Stauffenbaur, Stefan Emde, Varvara Zamora, Tiet Nguyen, Christian Janacek, Holger Schulz, Harving Schröder, Martin Schneider-Framl
Proc. SPIE 12007, Optical Interconnects XXII, 120070E (5 March 2022); doi: 10.1117/12.2609301

Chip-to-chip optical interconnect using direct optical wire bonding
Hyun-Woo Rhee, Jong-Bum You, Jae-Yong Kim, Hyo-Young Yoon, Myeongho Kim, Chong Cook Kim, Hyo-Hoon Park
Proc. SPIE 12007, Optical Interconnects XXII, 120070F (5 March 2022); doi: 10.1117/12.2609302

Flexographically printed optical waveguides for complex low-cost optical networks
Ken Pflegar, Ludger Overmeyer, Evjnd Olsen
Proc. SPIE 12007, Optical Interconnects XXII, 120070G (5 March 2022); doi: 10.1117/12.2609303

Transceiver circuits for high-baudrate optical interconnects
Proc. SPIE 12007, Optical Interconnects XXII, 120070H (5 March 2022); doi: 10.1117/12.2609304

Energy efficient transmitters for high bandwidth density links
Sudharsanan Sriravanan, Di Liang, Geza Kuroczi, Yingtao Hu, Antoine Desros, Bloem Tessoum, Yuan Yuan, Zhonghu Huang, Raymond Bausell
Proc. SPIE 12007, Optical Interconnects XXII, 120070I (5 March 2022); doi: 10.1117/12.2609305

Heterogeneous integration of VCSELs on 3 µm SOI silicon photonics platform with up-reflecting mirrors
Proc. SPIE 12007, Optical Interconnects XXII, 120070J (5 March 2022); doi: 10.1117/12.2609306

Assembly of mobile 5G transceiver based on photonic motherboard
Bradley W. Snyder, Zhehui G. Tegegne, Nienke Nijenhuis, Tianwen Qian, David de Felipe, Simon Nielsen, Milan Daumer, Y. Durvasa Gupta, Mortiz Baisler, et al.
Proc. SPIE 12007, Optical Interconnects XXII, 120070K (5 March 2022); doi: 10.1117/12.2609307

HYBRID DEVICE INTEGRATION APPROACHES FOR PIC

An uncooled CW-WDM MSA compliant multi-wavelength laser source operating from 15-100°C for WDM CMOS applications
Matthew Sysak, Radek Roudn, Songtao Liu, Chen Li, Fernando Luna, John Frey, Marian Raval, Chong Zhang, Li Fan Yang, et al.
Proc. SPIE 12007, Optical Interconnects XXII, 120070L (5 March 2022); doi: 10.1117/12.2609401

Glass-molded optical interposers for wafer scale photonic integrated circuit packaging in 800G modules and co-packaged optics
Manuel Ackermann, Bin Shen, Florian Merget, Michael Wolz, Jeremy Witzens
Proc. SPIE 12007, Optical Interconnects XXII, 120070M (5 March 2022); doi: 10.1117/12.2608205

Silicon nitride C-band grating couplers with reduced waveguide back-reflection
Ibrahim Ghanam, Florian Merget, Jeremy Witzens
Proc. SPIE 12007, Optical Interconnects XXII, 120070N (5 March 2022); doi: 10.1117/12.2607729

Inverse designed broadband on-chip photonic couplers and polarization-independent wavelength demultiplexing
Hamza Kurt
Proc. SPIE 12007, Optical Interconnects XXII, 120070O (5 March 2022); doi: 10.1117/12.2606663

Analytical analysis of the optical parameters of lenses for astigmatic beams
Giorgio Quaranta, Jeremy Béguelin, Wilfried Noell, Toralf Scharf, Reinhard Völkel
Proc. SPIE 12007, Optical Interconnects XXII, 120070P (5 March 2022); doi: 10.1117/12.2615832

HYBRID INTEGRATED OPTICAL LINK MODULES

FIBER OPTICS AND MICRO-OPTICS INTEGRATION

Fiber management for high-density connectivity in co-packaged switches
U. Neukirch, David Chiasson, Benoit Fleury, Riley Fresland, David Robinson, Stephen Smith
Proc. SPIE 12007, Optical Interconnects XXII, 120070Q (5 March 2022); doi: 10.1117/12.2608893

Advancement in optical interconnect technology for high speed data transmission
Tiger Ninomiya, Bernard H. L. Lee, Richard Pitwon
Proc. SPIE 12007, Optical Interconnects XXII, 120070R (5 March 2022); doi: 10.1117/12.2609301
This program is current as of 17 December 2021—Find the latest on the SPIE Conference and Exhibition App.
Development of a single crystal fiber probe for Raman distributed temperature sensing above 1000°C
Jeffrey Wunschel, Subhabrata Bera, Geunik Lim, Judhua Thapa, Michael Buric, Benjamin Choppening
Proc. SPIE 12008, Photonic Instrumentation Engineering IX, 120080R (5 March 2022); doi: 10.1117/12.2610162

APPLICATIONS OF PHOTONIC INSTRUMENTS II
Compressed ultrafast tomographic imaging using standard streak cameras
Yingming Lu, Ruibo Shang, Christian-Yves Côte, Xianglei Liu, Antoine Laramée, François Légaré
Proc. SPIE 12008, Photonic Instrumentation Engineering IX, 120080S (5 March 2022); doi: 10.1117/12.2613938

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Measurement of highly reflective surface compensating correlated error by sampling window
Jurim Jeon, Sungtae Kim, Yangjin Kim
Proc. SPIE 12008, Photonic Instrumentation Engineering IX, 120080T (5 March 2022); doi: 10.1117/12.2605982

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Optimizing the light penetration depth in APDs and SPADs for high gain-bandwidth and ultra-wide spectral response
Proc. SPIE 12009, Quantum Sensing and Nano Electronics and Photonics XVIII, 1200905 (5 March 2022); doi: 10.1117/12.2601086

ADVANCES IN SENSING
High efficiency electrically-driven single photon sources: advanced design concepts
N. Ladentsova Jr., S. A. Blökhin, M. A. Bobrova, N. A. Maleev, A. A. Blökhin, V. A. Shchukin, N. N. Ladentsova, S. Reitzenstein, V. M. Ustinov
Proc. SPIE 12009, Quantum Sensing and Nano Electronics and Photonics XVIII, 1200908 (5 March 2022); doi: 10.1117/12.2602248

GaN laser diodes for quantum sensing, optical atomic clocks, and precision metrology
Proc. SPIE 12009, Quantum Sensing and Nano Electronics and Photonics XVIII, 1200909 (5 March 2022); doi: 10.1117/12.2606255

Effects of Gadolinium precursors on the magnetic properties of Gadolinium-doped Gallium Nitride for spintronic applications
Vishal Saravade, Austin Crawford, Jahn Williams, Chuanle Zhou, Na Lu, Benjamin Klein, Ian Ferguson
Proc. SPIE 12009, Quantum Sensing and Nano Electronics and Photonics XVIII, 120090A (5 March 2022); doi: 10.1117/12.2607401

Novel nitride quantum structures for infrared sensing
Dana Malis, Trong-Huy, Yang Cao, Brendan A. Megill, Brandon Dzuba, Stephen McGill, Carlos Garcia, Gilli A. Khodareapar, Michael J. Mandra
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**Editor(s):** Georg von Freymann, Eva Blasco, Debashis Chanda

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Chip-scale gyroscope using silicon-nitride waveguide resonator with a Q factor of 100 million
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Investigation of bias stability enhancement using frequency comb source in resonant fiber optic gyroscope
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A high-sensitivity temperature sensor based on liquid-infiltrated large lateral offset structure
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Optical temperature measurement across IR opaque layers by means of visible excitation and photoluminescence
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Dual-parameter amplification sensing of temperature and strain by using parallel dual Fabry-Perot interferometer
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Complex Light and Optical Forces XVI

Editor(s): David L. Andrews, Enrique J. Galvez, Halina Rubinsztein-Dunlop

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Generalized Lorenz-Mie theory of nonlinear optical trapping of core/shell hybrid nanoparticles
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Proc. SPIE 12017, Complex Light and Optical Forces XVI, 120170D (3 March 2022); doi: 10.1117/12.2607047

WORKSHOP ON METHODS OF COMPLEX LIGHT

Digital micromirror devices, Mitchell A. Cox
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Proc. SPIE 12017, Complex Light and Optical Forces XVI, 120170E (3 March 2022); doi: 10.1117/12.2626881

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Proc. SPIE 12017, Complex Light and Optical Forces XVI, 120170G (3 March 2022); doi: 10.1117/12.2607692

Spin-orbit interaction of light in inhomogeneous-anisotropic medium: higher-order effects
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New insights on complex light shaping
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Proc. SPIE 12017, Complex Light and Optical Forces XVI, 120170I (3 March 2022); doi: 10.1117/12.2626435

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Quartz-enhanced photoacoustic spectroscopy employing a Vernier-effect distributed feedback-quantum cascade laser for multiple analytes detection
Andrea Zifarelli, Raffaello De Paolo, Pietro Patimisco, Martina Giglio, Angelo Sampao, Stéphane Blaser, Tobias Gresch, Oliver Landry, Antoine Müller, et. al.
Proc. SPIE 12021, Novel In-Plane Semiconductor Lasers XXI, 120220E (4 March 2022); doi: 10.1117/12.2607725

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Longitudinal spatial hole burning and associated non-uniform current and carrier density profile as a power limit in high power diode lasers
Proc. SPIE 12021, Novel In-Plane Semiconductor Lasers XXI, 120220F (4 March 2022); doi: 10.1117/12.2607879

Investigation of astigmatism in tapered edge-emitting diode amplifiers at 980 nm
P. Hildenstein, N. Werner, Katrin Paschke, G. Tränkle
Proc. SPIE 12021, Novel In-Plane Semiconductor Lasers XXI, 120220G (4 March 2022); doi: 10.1117/12.2607881

Comparison of electro-optical, spectral, and spatial beam parameters of 785 nm DBR tapered lasers with different grating lengths
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Image sources in next-generation near-to-eye applications: challenges and solutions
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Proc. SPIE 12022, Light-Emitting Devices, Materials, and Applications XXVI, 1202207 (4 March 2022); doi: 10.1117/12.2607474

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David A. Montealegre, Matt Z. Bellus, Alex C. Walhof, Logan M. Nichols, John P. Prinos
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Management of split intersections using vehicular visible light communication
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LED assessment based on an improved quality factor for LiFi communication
Jean-Paul M. G. Linnartz, Christoph Hoelen, Paul van Voorthuisen, Thiago Elias Bitencourt Cunha, Haimin Tao

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Enhanced conversion efficiency and tailored radiation patterns assisted by photonic-crystal light-extractors in compact MQW based color-converters for µLED applications
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Analysis of high-power operation of laser excited stationary phosphor
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Proc. SPIE 12022, Light-Emitting Devices, Materials, and Applications XXVI, 120220L (4 March 2022); doi: 10.1117/12.2609135

Rapid fabrication of YAG-Ce phosphor glass composites on borosilicate glass for white light LEDs
Javed Ali, Christi Madsen

A low-cost AI-enabled automated UV LED lifetime testing system with angular beam mapping
Pratibha Sharma, Pao Chen, Saiya Han, Peter Chung

Low-cost LED UV source with power and wavelength variable emission
Proc. SPIE 12022, Light-Emitting Devices, Materials, and Applications XXVI, 120220Q (4 March 2022); doi: 10.1117/12.2608877

QUANTUM DOTS AND PEROVSKITES

Tunable emission color of methylammonium lead bromide perovskite quantum dots by varying ligand quantity
E. Enlow, S. A. Carter
Proc. SPIE 12022, Light-Emitting Devices, Materials, and Applications XXVI, 120220I (4 March 2022); doi: 10.1117/12.2608960

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Matthias Cizland, Benoit Racine, Sylvia Meunier-Della-Gatta, David Grosso, Badre Kerzabi, William Milard, Yann Lee, Audélien Shum, Olivier Haebeler et al.

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Maria Isabel Azevedo

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Julian Gamboa, Tabassom Hamidfar, Jason Bonacum, Selim M. Shahrir

Proc. SPIE 12026, Practical Holography XXXVI: Displays, Materials, and Applications, 1202602 (4 March 2022); doi: 10.1117/12.2602776

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**Development of pixelated holograms recording strategies and aging study of different holographic photopolymer mechanisms for Augmented Reality applications**

Paul Legentil, Cédric Burelciat, Matthias Colard, Yann Lee, Marie-Claude Gentet, Christophe Martinez

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**Evaluating automated reconstruction methods for digital inline holographic images of plankton**

Thomas Zimmerman, Johnny K. B. Duong, Ziah Dean, Simone Bianco, Raymond Esquivar


**Compact phase-only spatial light modulator with pixel pitch of 4.25 μm and high photostability**

Y. Isomae, N. Sugawara, N. Iwasaki, S. Ohkawa, T. Honda, K. Amari

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Andrew Kadis, Youcheo Wang, Fan Yang, Ralf Morthaun, Benjamin Wetherfield, Daoming Dong, Timothy Wilkinson


**Mastering challenges in holography with widely tunable CW optical parametric oscillators**

Stefan Tristany, Andrew Mark, Niklas Waasem, Ronja Gärner, Korbinian Hens

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**The full-color 3D image for holographic waveguide-type AR system using optical elements**

Nyamuren Darkhanbaatar, Mukh-Uchral Erdenebat, Md. Shahnur Alam, Md. Biddudd Hossain, Sang-Kueun Gil, Jong-Rae Jeong, Nam Kim

Proc. SPIE 12026, Practical Holography XXXVI: Displays, Materials, and Applications, 120260F (10 March 2022); doi: 10.1117/12.2601463

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Proc. SPIE 12026, Practical Holography XXXVI: Displays, Materials, and Applications, 1202608 (4 March 2022); doi: 10.1117/12.2601076
Development of ultra-wide field-of-view white light laser-based visible light communication system
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Proc. SPIE 12027, Metro and Data Center Optical Networks and Short-Reach Links V, 120270T (4 March 2022); doi: 10.1117/12.2608018

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Proc. SPIE 12027, Metro and Data Center Optical Networks and Short-Reach Links V, 120270W (4 March 2022); doi: 10.1117/12.2609724

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To verify registered participants and provide a measure of security, SPIE will ask attendees to present a government-issued photo identification at registration to collect registration materials. Individuals are not allowed to pick up badges for other attendees. Further, SPIE reserves the right to request that some other person/participant in the event display government identification. Individuals not complying with this policy will be asked to register on their own behalf to participate. For online events, SPIE requires individuals to register with their legal identity.

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