Contents

Volume 5261 Smart Medical and Biomedical Sensor Technology
- OPTICAL BIOMEDICAL INSTRUMENTATION
- BIOPHOTONIC MEDICAL DIAGNOSTICS
- COMPUTATIONAL METHODS FOR OPTICAL DIAGNOSTICS
- FUNDAMENTAL INVESTIGATIONS IN BIOLOGICAL SENSING
- BIOSENSORS I
- BIOSENSORS II
- POSTER SESSION
- ADDITIONAL PAPER

Volume 5262 Environmentally Conscious Manufacturing III
- PRODUCT RECOVERY
- PRODUCT RECOVERY AND END OF LIFE MANAGEMENT
- DISASSEMBLY
- SUPPLY CHAIN
- GREEN MANUFACTURING
- ENVIRONMENTAL ISSUES
- ENVIRONMENTAL MODELING
- POTPOURRI

Volume 5263 Intelligent Manufacturing
- INTELLIGENT CONTROLLERS AND MANUFACTURING PROCESSES
- SMART SENSORS AND SYSTEMS
- INDUSTRIAL APPLICATIONS
- POSTER SESSION
- INTELLIGENT MANUFACTURING II
- INTELLIGENT VISION AND ROBOTIC SYSTEMS
- INTELLIGENT SYSTEMS I
- INTELLIGENT SYSTEMS II

Volume 5264 Optomechatronic Systems IV
MACHINE VISION AND IMAGE PROCESSING FOR OPTOMECHATRONICS I
MACHINE VISION AND IMAGE PROCESSING FOR OPTOMECHATRONICS II
3D SHAPE MEASUREMENT AND RECONSTRUCTION
MACHINE VISION FOR INDUSTRIAL APPLICATIONS
OPTICAL ACTUATORS AND CONTROL I
OPTICAL ACTUATORS AND CONTROL II
OPTOMECHATRONIC DEVICES AND SYSTEMS
OPTICAL SENSORS FOR ROBOTICS AND ASSEMBLY
POSTER SESSION

Volume 5265 Two- and Three-Dimensional Vision Systems for
Inspection, Control, and Metrology
KEYNOTE PAPER
SESSION 1
SESSION 2
SESSION 3
SESSION 4
POSTER SESSION

Volume 5266 Wavelet Applications in Industrial Processing
IMAGE RESTORATION
CLASSIFICATION
PARTIAL DIFFERENTIAL EQUATION
VIDEO CODING AND COMPRESSION
SEGMENTATION
OPTICAL WAVELET TRANSFORM AND MULTIFRACTAL
MULTISCALE AND MULTiresolution analysis

Volume 5267 Intelligent Robots and Computer Vision XXI:
Algorithms, Techniques, and Active Vision
INVITED SESSION: INTELLIGENT ROBOTS AND COMPUTER VISION
INVITED SESSION: INTELLIGENT ROBOTS
MOBILE ROBOTS
CAMERA CALIBRATION, POSE AND MOTION ESTIMATION, AND COLOR PROCESSING
PATTERN RECOGNITION FOR INTELLIGENT ROBOTS AND COMPUTER VISION
IMAGE PROCESSING FOR INTELLIGENT ROBOTS AND COMPUTER VISION
APPLICATIONS FOR INTELLIGENT ROBOTS AND COMPUTER VISION

Volume 5268 Chemical and Biological Standoff Detection
STANDOFF DETECTION IN THE TERAHERTZ REGION
INSTRUMENTATION FOR STANDOFF DETECTION
STANDOFF DETECTION OF BIOLOGICAL AEROSOLS
AIRBORNE STANDOFF DETECTION
STANDOFF MONITORING OF THE ATMOSPHERE
SIGNAL PROCESSING FOR STANDOFF DETECTION
STANDOFF DETECTION OF CONTAMINANTS ON SURFACES

Volume 5269 Chemical and Biological Point Sensors for Homeland Defense
RAMAN CB SENSORS AND DETECTION APPLICATIONS
WAVEGUIDE SENSOR TECHNOLOGIES
SENSOR DEPLOYMENT
INFRARED CB SENSOR TECHNOLOGIES
NANOSPECTROSCOPY AND NOVEL MATERIALS FOR CB SENSORS
FLUORESCENCE IN CB SENSOR APPLICATIONS
POSTER SESSION

Volume 5270 Environmental Monitoring and Remediation III
ADVANCED SENSOR SYSTEMS
ENVIRONMENTAL CHEMICAL SENSORS
ENVIRONMENTAL BIOSENSORS
ADVANCED ENVIRONMENTAL MONITORING SYSTEMS: AEMS SENSORS
SENSORS DATA TREATMENT SYSTEMS
ADVANCED SENSING SYSTEMS
FIELD APPLICATIONS OF ENVIRONMENTAL SENSORS
POSTER SESSION
INSTRUMENTATION FOR AIR POLLUTION AND GLOBAL ATMOSPHERIC MONITORING

Volume 5271 Monitoring Food Safety, Agriculture, and Plant Health
PATHOGEN DETECTION
SPECTROSCOPIC TECHNIQUES
IMAGING TECHNIQUES I
IMAGING TECHNIQUES II
MONITORING AND INTERVENTION
POSTER SESSION
REMOTE SENSING AND IMAGING
PRODUCT QUALITY
POSTER SESSION

Volume 5272 Industrial and Highway Sensors Technology
PROCESS MONITORING AND INDUSTRIAL SAFETY
FIBER BRAgg GRATING SENSORS I
FIBER BRAgg GRATING SENSORS II
CHEMICAL SENSORS
TECHNIQUES
APPLICATIONS
DEVICES
POSTER SESSION
HIGHWAY AND TRAFFIC MANAGEMENT
ITS APPLICATIONS OF BRAgg GRATING SENSORS
SENSORS FOR ITS APPLICATIONS
MONITORING SYSTEMS FOR ASSESSMENT AND CONTROL IN ITS
SESSION 1
OPTICAL BIOMEDICAL INSTRUMENTATION
CHAIRS: Bill W. Colston, Jr., Brian M. Cullum

Measurement of torsional eye movement by spatial moments of iris pattern image [5261-3]
A. Eto, K. Nakamae, H. Fujioka

Study on the design of micromixer and inspection of mixing efficiency [5261-4]
Y. Hu, M. Chang

Instrumentation for noninvasive express-diagnostics bacteriophages and viruses by optical method [5261-5]
T. Moguilnaia, G. Andreev, A. Agibalov, A. Botikov, E. Kosenkov, E. Saguitova

SESSION 2
BIOPHOTONIC MEDICAL DIAGNOSTICS
CHAIRS: Brian M. Cullum, Bill W. Colston, Jr.

Differentiating tissue by fluorescence spectroscopy [5261-7]
S. Woessner, J. Huen, D. Malthan

Portable optical actuator for photodynamic therapy [5261-8]
I. Charamisinau, G. Happawana, G. Evans, A. Rosen, R. Hsi

Photoacoustic sensor for medical diagnostics [5261-9]
M. Wolff, H. Groninga, H. Harde

Development of multiphoton photoacoustic spectroscopy for noninvasive tissue diagnostics [5261-10]
N. Chandrasekharan, R. Mehta, S. Saha, B. Cullum

SESSION 3
COMPUTATIONAL METHODS FOR OPTICAL DIAGNOSTICS
CHAIRS: Karl S. Booksh, Brian M. Cullum

Monte-Carlo-based model for steady-state diffuse reflectance spectroscopy [5261-12]
R. Walther, T. Roths, M. Bohnert, J. Honerkamp

Smart biomechanics strain measurements using 3D image correlation photogrammetry [5261-13]
J. Tyson, T. Schmidt, K. Galanulis

Remote submission and parallel computation of fluorescent lifetime imaging of breast cancer [5261-15]
Y. Yang, R. Pargas

SESSION 4
FUNDAMENTAL INVESTIGATIONS IN BIOLOGICAL SENSING
CHAIRS: William R. LaCourse, Timothy E. McKnight

Benzene degradation pathways investigated by a human-tissue-based biosensor [5261-17]
L. Campanella, P. Ercole, R. Grossi, M. Russo, G. Visco

Pulsed electrochemical detection in bioanalysis: chemical fingerprinting [5261-18]
W. LaCourse

Multichannel surface imaging and analysis of self-assembled monolayers and proteins [5261-19]
H. Pyo, Y. Shin, M. Kim, H. Yoon
SESSION 5
BIOSENSORS I
CHAIRS: Timothy E. McKnight, William R. LaCourse

In vitro biochemical monitoring with fiber-optic-based surface plasmon resonance sensors [5261-22]
J. Masson, K. Hamersky, S. Beaudoin, K. Booksh

Five-minute analysis of chemotherapy drugs and metabolites in saliva: evaluating dosage [5261-23]
A. Gift, C. Shende, F. Inscore, P. Maksymiiuk, S. Farquharson

Development and optimization of SERS-based immuno-nanosensor for single cell analyses [5261-24]
H. Li, B. Cullum

Carbon-nanofiber-based probing arrays for multipoint integration with cellular matrices [5261-25]
T. McKnight, A. Melechko, G. Griffin, D. Austin, T. Sims, M. Guillorn, V. Merkulov, M. Simpson

SESSION 6
BIOSENSORS II
CHAIRS: William R. LaCourse, Karl S. Booksh

Near-infrared Surface-Enhanced-Raman-Scattering (SERS) mediated discrimination of single, optically trapped, bacterial spores [5261-33]
T. Alexander, P. Pellegrino, J. Gillespie

Optical and electronic design for a high-performance surface plasmon resonance imager [5261-35]
T. Chinowsky, T. Mactutis, E. Fu, P. Yager

SESSION 7
POSTER SESSION

Laser-limiting materials for medical use [5261-34]
V. Podgaetsky, T. Kopylova, S. Tereshchenko, A. Reznichenko, S. Selishchev

SESSION 8
ADDITIONAL PAPER

Optomechanical medical devices (instruments) [5261-1]
R. Reiss
SESSION 1
PRODUCT RECOVERY
CHAIR: Surendra M. Gupta

- Reusing single-use devices in hospitals: a case study [5262-2]
  R. Srivastava
- Evaluation of trade-offs in costs and environmental impacts for returnable packaging implementation [5262-3]
  L. Jarupan, S. Kamarthi, S. Gupta
- Optimal control of a remanufacturing system with consideration for product life cycle [5262-7]
  K. Nakashima, S. Gupta

SESSION 2
PRODUCT RECOVERY AND END OF LIFE MANAGEMENT
CHAIR: Rajesh Srivastava

- A fuzzy cost-benefit function to select economical products for reprocessing [5262-5]
  K. Pochampally, S. Gupta, T. Cullinane
- Second-hand market as an alternative in reverse logistics [5262-34]
  K. Pochampally, S. Gupta
- Optimizing decision making at the end of life of a product [5262-8]
  B. González-Torre, B. Adenso-Díaz
- Disassembly analysis before assembly [5262-9]
  K. Banda, I. Zeid

SESSION 3
DISASSEMBLY
CHAIR: Ibrahim Zeid

- Disassembly line balancing with limited supply and subassembly availability [5262-11]
  F. Altekin, L. Kandiller, N. Özdemirel
- 2-opt heuristic for the disassembly line balancing problem [5262-12]
  S. McGovern, S. Gupta
- Multikanban model for disassembly line with demand fluctuation [5262-13]
  G. Udomsawat, S. Gupta, Y. Al-Turki
- Simulation-based disassembly systems design [5262-14]
  M. Ohlendorf, C. Herrmann, J. Hesselbach

SESSION 4
SUPPLY CHAIN
CHAIR: Surendra M. Gupta

- Policy design in closed-loop supply chains for the integrated management of component recycling and spare parts supply in the electronics industry [5262-16]
  M. Schröter, T. Spengler
Integration of service providers into supply chain services and waste disposal transports [5262-17]
S. Wedekind, H. Haasis

Evaluation of production facilities in a closed-loop supply chain: a fuzzy TOPSIS approach [5262-18]
K. Pochampally, S. Gupta, S. Kamarthi

Identification of potential recovery facilities for designing a reverse supply chain network using physical programming [5262-19]
K. Pochampally, S. Gupta, S. Kamarthi

Green supply chain management in China [5262-20]
Q. Zhu, J. Sarkis

SESSION 5
GREEN MANUFACTURING
CHAIR: Seamus M. McGovern

Innovative practices in environmental management [5262-25]
W. Tate, L. Ellram

Environmentally conscious patent histories [5262-27]
D. Crouch, H. Crouch

SESSION 6
ENVIRONMENTAL ISSUES
CHAIR: Surendra M. Gupta

Improving environmental impact and cost assessment for supplier evaluation [5262-28]
S. Beucker, C. Lang

Environmental benchmarking of the largest fossil-fueled electricity generating plants in the U.S. [5262-30]
J. Sarkis

SESSION 7
ENVIRONMENTAL MODELING
CHAIR: Joseph Sarkis

Web-based expert system for foundry pollution prevention [5262-31]
G. Moynihan

A methodology to incorporate life cycle analysis and the triple bottom line mechanism for sustainable management of industrial enterprises [5262-32]
L. Wang, L. Lin

Development and weighting of a life cycle assessment screening model [5262-33]
W. Bates, J. O'Shaughnessy, S. Johnson, R. Sisson

Use of data envelopment analysis for product recovery [5262-6]
N. Kongar, S. Gupta, S. McGovern

Solving a layout design problem by analytic hierarchy process (AHP) and data envelopment analysis (DEA) approach [5262-35]
U. Tuzkaya, A. Eser, G. Argon
Knowledge and decision support management in the circular flow economy [5262-38]
V. Blume, H. Haasis

Pollution prevention applications in batch manufacturing operations [5262-39]
D. Sykes, J. O'Shaughnessy
Volume 5263 Intelligent Manufacturing
Chairs/Editors: Bhaskaran Gopalakrishnan, Angappa Gunasekaran, Peter E. Orban

Conference Committee
Introduction
Part A: Sensors and Controls for Intelligent Manufacturing III

SESSION 1
INTELLIGENT CONTROLLERS AND MANUFACTURING PROCESSES
CHAIR: George K. Knopf

- Open architecture robot control based on Matlab/Simulink and a dSPACE real time system [5263-1]
  K. Heuer, G. Pokar, J. Hesselbach
- Vibration-based machine condition monitoring with attention to the use of time-frequency methods [5263-4]
  A. Rehorn, P. Orban, J. Jiang

SESSION 2
SMART SENSORS AND SYSTEMS
CHAIR: Peter E. Orban

- Optically driven shape memory alloy microactuators [5263-5]
  G. Knopf
- Modeling smart sensor integrated manufacturing systems [5263-6]
  S. Vadde, S. Kamarthi, S. Gupta
- Smart sensor application in teleoperated microassembly systems [5263-7]
  J. Schilp, M. Ehrenstrasser, S. Clarke, B. Petzold, M. Zaeh
- CNC interpolator architecture for on-line error correction [5263-12]
  P. Orban, J. Jiang, Y. Jiang

SESSION 3
INDUSTRIAL APPLICATIONS
CHAIR: Kerstin Heuer

- Sensor fusion of laser trackers for use in large-scale precision metrology [5263-9]
  J. Mitchell, A. Spence, M. Hoang, A. Free
- A self-learning machine vision system [5263-11]
  M. Kelley

SESSION
POSTER SESSION

- Common-path and phase-shift interferometer for length measurement [5263-16]
  X. Han, H. Ai, C. Han

Part B: Intelligent Systems in Design and Manufacturing V

SESSION 4
INTELLIGENT MANUFACTURING I
CHAIR: Bhaskaran Gopalakrishnan

- Case-based reasoning in fixture design [5263-17]
  I. Boyle, K. Rong, D. Brown
SESSION 5
INTELLIGENT MANUFACTURING II
CHAIR: Wafik H. Iskander

Development and implementation of a risk analysis procedure [5263-23]
W. Iskander, M. Jaraiedi

Comparison of ship dismantling processes in India and the U.S. [5263-34]
R. Ahluwalia, P. Sibal, S. Govindarajulu

Multiscale registration algorithm for alignment of meshes [5263-36]
S. Vadde, S. Kamarthi, S. Gupta

SESSION 6
INTELLIGENT VISION AND ROBOTIC SYSTEMS
CHAIR: Gary Kuvich

Image/video understanding systems based on network-symbolic models [5263-24]
G. Kuvich

Research on the application of multiview stereo vision in industrial measurements [5263-25]
B. Shen, M. Zhao, D. Jiang, X. Wu, W. Wu, S. Wang

The mental condition of space system operators during satellite operations [5263-26]
Y. Nagai, S. Kimura

SESSION 7
INTELLIGENT SYSTEMS I
CHAIR: Majid Jaraiedi

Tracking signal test to monitor an intelligent time series forecasting model [5263-29]
Y. Deng, M. Jaraiedi, W. Iskander

SESSION 8
INTELLIGENT SYSTEMS II
CHAIR: Lerpong Jarupan

Simulation study on vehicle dispatching strategies for returnable transport packaging [5263-30]
L. Jarupan, S. Kamarthi, S. Gupta

Real-time intelligent decision making with data mining [5263-31]
D. Gupta, B. Gopalakrishnan

Group telepresence [5263-33]
G. Konesky

Database for dismantling of obsolete vessels [5263-35]
R. Ahluwalia, P. Sibal, S. Govindarajulu
SESSION 1
MACHINE VISION AND IMAGE PROCESSING FOR OPTOMECHATRONICS I
CHAIR: George K. Knopf

Structured light system for teleautonomous and telecollaborative manipulation [5264-2]
Y. Park, H. Kang, T. Ewing

Real-time estimation of 3D human arm motion from markerless images for human-machine interaction [5264-3]
S. Verma, J. Kofman

SESSION 2
MACHINE VISION AND IMAGE PROCESSING FOR OPTOMECHATRONICS II
CHAIR: Jonathan Kofman

A proposal of quantization theorem: How should an image’s gray value be digitized? [5264-4]
H. Koshimizu

Efficient search algorithm based on constraint inequality on correlation coefficients and its applications [5264-5]
T. Mae, S. Kaneko

Real-time iris detection on rotated faces [5264-6]
C. Perez, V. Lazcano, P. Estevez, C. Held

SESSION 3
3D SHAPE MEASUREMENT AND RECONSTRUCTION
CHAIR: Claudio A. Perez

Depth aspect images for robust object recognition [5264-9]
T. Takeguchi, S. Kaneko

Three-dimensional object recognition using two-dimensional complex amplitude including three-dimensional shape information [5264-10]
N. Yoshikawa, Y. Suzuki

An active view planning method for mobile robots using a trinocular visual sensor [5264-11]
M. Kim, H. Cho

Measurement of three-dimensional rotational and translational displacements using a multifaceted mirror [5264-12]
W. Park, H. Cho

SESSION 4
MACHINE VISION FOR INDUSTRIAL APPLICATIONS
CHAIR: Seiji Hata

Face tracking system for facial image capturing [5264-14]
T. Funahashi, T. Yamaguchi, M. Tominaga, H. Koshimizu

Object recognition for autonomous robot utilizing distributed knowledge database [5264-15]
J. Takatori, K. Suzuki, P. Hartono, S. Hashimoto
A mobile unit for memory retrieval in daily life based on image and sensor processing [5264-16]
R. Takesumi, Y. Ueda, H. Nakanishi, A. Nakamura, N. Kakimori

Programless visual inspection with flexible arm camera [5264-17]
T. Anezaki, T. Okamoto, S. Hattlani, K. Suzuki, S. Hashimoto

Relative stereo image processing and its application to visual inspection of assembled PCBs [5264-18]
D. Shima, S. Hata, K. Kaida, N. Higashi

SESSION 5
OPTICAL ACTUATORS AND CONTROL I
CHAIR: Kee S. Moon

Electrostatically driven display device using evanescent coupling between sheet waveguide and multiantilevers [5264-19]
T. Oguchi, M. Hayase, T. Hatsuzawa

Improvement of scanning speed in NSOM-based data storage device [5264-21]
S. Lee, K. Song, E. Kim, J. Kim, K. Park

Micromanipulator by photothermal effect [5264-22]
Y. Otani, Y. Matsuba, S. Chimura, N. Umeda, T. Yoshizawa

Development of a novel translation micromirror for adaptive optics [5264-23]
S. He, R. Ben Mrad

SESSION 6
OPTICAL ACTUATORS AND CONTROL II
CHAIR: Yukitoshi Otani

Design of a PZN-PT piezoelectric linear motor [5264-24]
Y. Hong, K. Moon

Optical control using an acousto-optic scanner [5264-25]
G. Knopf, D. Nancoo

Optical feedback control for mechatronic actuators [5264-26]
D. Neculescu, Z. Khatri

A single-crystal piezoelectric scanner for scanning probe microscopy [5264-27]
K. Moon, Y. Hong, S. Lee

SESSION 7
OPTOMECHATRONIC DEVICES AND SYSTEMS
CHAIR: Rainer Tutsch

Photonic transistor based on bacteriorhodopsin films [5264-28]
W. Wang, G. Knopf, A. Bassi

Deformation measurement by digital holographic interferometry [5264-29]
I. Takahashi, T. Nomura, Y. Morimoto, S. Yoneyama, M. Fujigaki

Robust free-space optical communication for indoor information environment [5264-30]
T. Nakada, H. Itoh, S. Kunifuji, H. Nakashima

High-speed optical interconcted demultiplexing at the Fresnel plane [5264-31]
F. Rivera-Lopez, C. Trevino-Palacios, E. Tepichin-Rodriguez

Beam shaping optics for YAG laser by using a CNC lathe [5264-32]
R. Kuwano, T. Tokunaga, Y. Kataoka, Y. Otani, T. Miyazaki

Shape and height measurement of solder bumps using focus measure difference [5264-33]
A. Ishii, J. Mitsudo, S. Mizushima
Liquid drop analysis using photonic sensors [5264-34]
J. Xu, Z. Qiu, Z. Fang, Q. Sung, I. Reading, X. Li

SESSION 8
OPTICAL SENSORS FOR ROBOTICS AND ASSEMBLY
CHAIR: Young Soo Park

Teleoperation of a robot manipulator from 3D human hand-arm motion [5264-35]
J. Kofman, S. Verma, X. Wu, T. Luu

3D sensor for the control of a microassembly robot [5264-36]
R. Tutsch, M. Petz, M. Berndt, J. Hesselbach, G. Pokar, K. Heuer

High-accuracy microassembly by intelligent vision systems and smart sensor integration [5264-37]
J. Schilp, M. Harfensteller, D. Jacob, M. Schilp

Knowledge-based design of optoelectronic packaging and assembly automation [5264-38]
T. Kurzweg, A. Guez, S. Bhat

A visual servoing method for high-precision chip mounting technology [5264-39]
D. Lee, K. Jang, H. Cho

SESSION 9
POSTER SESSION

Spatial frequency diversity in liquid crystal spatial light modulators applied to signal-to-noise ratio improvement in coherent optodigital processors [5264-40]
A. Sauceda-Carvajal, M. Vera Perez, V. Diaz Ramirez, A. Bocanegra-Haro, E. Tepichin-Rodriguez

Accuracy improvement of phase shift interferometry [5264-42]
K. Moon, Y. Wang

High-speed precision surface profilometry using large phase shifting [5264-43]
M. Adachi, K. Ueda

Silicon micromachined double-rotor scanning mirror [5264-44]
L. de Oliveira, L. Ferreira

Introduction to the robot with multisensors [5264-45]
B. You, C. Li, X. Yang

Research on automatic measuring instrument for deep hole [5264-46]
B. You, X. Yu, S. Xu
Volume 5265 Two- and Three-Dimensional Vision Systems for Inspection, Control, and Metrology
Chairs/Editors: Bruce G. Batchelor, Heinz Hügli
Conference Committee

SESSION 0
KEYNOTE PAPER

The promise and payoff of 2D and 3D machine vision: Where are we today? [5265-1]
K. Harding

SESSION 1

CHAIR: Heinz Hügli

The use of holographic and diffractive optics for optimized machine vision illumination for critical
dimension inspection [5265-2]
T. Lizotte, O. Ohar

3D precision surface measurement by dynamic structured light [5265-4]
E. Franke, M. Magee, J. Mitchell, M. Rigney

TARGET: a flexible installation for inspection of industrial objects [5265-5]
F. Boochs, M. Freisberg, M. Twardochlib

Performance improvement of a 3D inspection process [5265-6]
D. Giri, M. Jouaneh

SESSION 2

CHAIR: John W. V. Miller

Multifunction sensor that measures the width and surface profile of a steel plate [5265-8]
H. Tatsubo, T. Nakashima, M. Sugiyama

Volume holographic imaging for surface metrology with long working distances [5265-10]
A. Sinha, W. Sun, T. Shih, G. Barbastathis

New optoelectronic methodology for nondestructive evaluation of MEMS at the wafer level [5265-12]
C. Furlong, C. Ferguson, M. Melson

Specular-reflection-based flatness tester [5265-13]
S. Tang, K. Harding, G. O'Neil, J. Cai

SESSION 3

CHAIR: Kevin G. Harding

Sonoluminescence bubble measurements using vision-based algorithms [5265-14]
N. Hall, J. Mackey, T. Matula

Framework for distributed and networked vision systems [5265-15]
L. Chatburn, G. Jackson, M. Daley, B. Batchelor

Three-dimensional dynamic range reduction techniques [5265-16]
K. Harding, X. Qian

Modulation-amplitude-locked laser diode interferometry for distance measurement [5265-17]
T. Suzuki, T. Iwana, O. Sasaki
Stroboscopic step height measurement with two-wavelength interferometer using a single diode laser source [5265-18]
X. Zhao, T. Suzuki, O. Sasaki

Applied multifocus 3D microscopy [5265-19]
T. Zamofing, H. Hügli

Full-field dynamic displacement and strain measurement using pulsed and high-speed 3D image correlation photogrammetry [5265-20]
T. Schmidt, J. Tyson, K. Galanulis

SESSION 4
SESSION 4
CHAIR: Bruce G. Batchelor

Total area strain mapping improves total quality of stampings [5265-21]
T. Schmidt, J. Tyson, K. Galanulis

Camera performance considerations for automotive applications [5265-22]
J. Miller, Y. Murphey, F. Khairallah

Fast image processing using finite-state machines: software implementations [5265-23]
F. Waltz, J. Miller

High-speed 3D scanner with real-time 3D processing [5265-24]
J. Lavelle, S. Schuet, D. Schuet

SESSION 5
POSTER SESSION

2D packing using the Myriad framework [5265-27]
L. Chatburn, B. Batchelor

Calibration of an LCD projector with pinhole model in active stereovision applications [5265-28]
A. Lathuilière, F. Marzani, Y. Voisin

Color-encoded digital fringe projection technique for high-speed 3-D shape measurement: color coupling and imbalance compensation [5265-29]
J. Pan, P. Huang, F. Chiang
SESSION 1
IMAGE RESTORATION
CHAIR: Amel Benazza-Benyahia

Wavelet applied to computer vision in astrophysics [5266-1]
A. Bijaoui, E. Slezak, M. Traina

Estimation of anisotropic blur for the restoration of confocal images [5266-2]
F. Rooms, W. Philips, P. Van Oostveldt

Performances of a specific denoising wavelet process for high-resolution gamma imaging [5266-3]
A. Pousse, C. Dornier, M. Parmentier, B. Kastler, J. Chavanelle

Rational wavelet transform: application to signal denoising [5266-4]
A. Baussard, O. Laligant, F. Nicolier, F. Truchetet

Image denoising using fractal- and wavelet-based methods [5266-5]
K. Barthel, H. Cycon, D. Marpe

Noise reduction in video sequences using wavelet-domain and temporal filtering [5266-6]
A. Pižurica, V. Zlokolica, W. Philips

SESSION 2
CLASSIFICATION
CHAIR: Peter Schelkens

Multiscale statistical image models and Bayesian methods [5266-7]
A. Pižurica, W. Philips

Multiresolution hierarchical content-based image retrieval of paleontology images [5266-10]
J. Landré, F. Truchetet

SESSION 3
PARTIAL DIFFERENTIAL EQUATION
CHAIR: Kenneth W. Tobin, Jr.

A partial differential equation for continuous nonlinear shrinkage filtering and its application for analyzing MMG data [5266-11]
K. Bredies, D. Lorenz, P. Maass, G. Teschke

Wavelet-based image decomposition by variational functionals [5266-12]
I. Daubechies, G. Teschke

Applications of compactly supported wavelets to the numerical solution of partial differential equations [5266-13]
J. Weiss

SESSION 4
VIDEO CODING AND COMPRESSION
CHAIR: Aleksandra Pižurica

Block-based adaptive lifting schemes for multiband image compression [5266-15]
H. Masmoudi, A. Benazza-Benyahia, J. Pesquet
Performance evaluation of Motion-JPEG2000 in comparison with H.264/AVC operated in pure intracoding mode [5266-16]
D. Marpe, V. George, H. Cycon, K. Barthel

Near-orthogonal and adaptive affine lifting scheme on vector-valued signals [5266-17]
T. Sliwa, Y. Voisin, A. Diou

A comparative study of scalable video coding schemes utilizing wavelet technology [5266-18]
P. Schelkens, Y. Andreopoulos, J. Barbarien, T. Clerckx, F. Verdicchio, A. Munteanu, M. van der Schaar

SESSION 5
SEGMENTATION
CHAIR: Paul Scheunders

Wavelet-based methods for clutter removal from radar wind profiler data [5266-19]
L. Justen, G. Teschke, V. Lehmann

Development of a spatial method for weed detection and localization [5266-20]
J. Vioix, J. Douzals, F. Truchetet

Comparison of texture features for segmentation of patterned wafers [5266-21]
P. Bourget, F. Meriaudeau, K. Tobin, P. Gorria

Segmentation of blurred objects using wavelet transform: application to x-ray images [5266-22]
C. Barat, C. Ducottet, A. Bilgot, L. Desbat

SESSION 6
OPTICAL WAVELET TRANSFORM AND MULTIFRACTAL
CHAIR: Kai U. Barthel

A wavelet representation of multivalued images [5266-23]
P. Scheunders

Vision system based on optical wavelet transform [5266-24]
J. Shi, X. Wang, H. Yue, S. Dai, Q. Cui

SESSION 7
MULTISCALE AND MULTIRESOLUTION ANALYSIS
CHAIR: Oliver Laligant

Use of time-scale representations for the analysis of seismic signals [5266-26]
A. Roueff, J. Chanussot, J. Mars

Wavelet-based time series prediction for air traffic data [5266-27]
I. Weinreich, H. Rickert, M. Lukaschewitsch

Multiresolution analysis for irregular meshes [5266-28]
M. Roy, S. Foufou, A. Koschan, F. Truchetet, M. Abidi

3D steerable pyramid based on conic filters [5266-29]
C. Delle Luche, F. Denis, A. Baskurt
Volume 5267 Intelligent Robots and Computer Vision XXI: Algorithms, Techniques, and Active Vision

Chairs/Editors: David P. Casasent, Ernest L. Hall, Juha Röning

Conference Committee

SESSION 1

INVITED SESSION: INTELLIGENT ROBOTS AND COMPUTER VISION

CHAIR: David P. Casasent

Face recognition using new SVRDM support vector machine [5267-1]
D. Casasent, C. Yuan

Learning for intelligent mobile robots [5267-2]
E. Hall, X. Liao, S. Alhaj Ali

Illuminant-adaptive diffractive-optical RGB color sensor: 3D grating-optical cross-correlator calculating colored shadows in human vision [5267-3]
N. Lauinger

SESSION 2

INVITED SESSION: INTELLIGENT ROBOTS

CHAIR: David P. Casasent

Expanding venue and persistence of planetary mobile robotic exploration: new technology concepts for Mars and beyond [5267-4]
P. Schenker, A. Elfes, J. Hall, T. Huntsberger, J. Jones, B. Wilcox, W. Zimmerman

11th Annual Intelligent Ground Vehicle Competition: team approaches to intelligent driving and machine vision [5267-5]
B. Theisen, G. Lane

Remote operation of robotics systems using WLAN- and CORBA-based architecture [5267-6]
A. Tikanmaki, J. Riekki, J. Röning

SESSION 3

MOBILE ROBOTS

CHAIR: Gerald R. Lane

Autonomous cross country driving using active vision [5267-7]
M. Pellkofer, U. Hofmann, E. Dickmanns

Internet-based control for the intelligent unmanned ground vehicle: Bearcat Cub [5267-8]
M. Ghaffari, S. Narayanan, B. Sethuramasamyraja, E. Hall

Web-based telerobotics system in a virtual reality environment [5267-9]
W. Ge, Z. Cao, S. Peng, Q. Sun

GPS error compensation algorithm using coordinates matching of vision system for land-vehicle navigation [5267-10]
J. Park, S. Mun, S. Choi, D. Rho

Visual world perception modeling and control of cooperative mobile robots [5267-11]
A. Shirkhodaie

Reduction of computational complexity in the image/video understanding systems with active vision [5267-12]
G. Kuvich
Automatic calibration and neural networks for robot guidance [5267-13]
B. Sethuramasamyraja, M. Ghaffari, E. Hall

SESSION 4
CAMERA CALIBRATION, POSE AND MOTION ESTIMATION, AND COLOR PROCESSING
CHAIR: Norbert Lauinger

Study on camera calibration parameters estimation using the perspective variation ratio [5267-15]
J. Jeong, H. Lee, D. Rho

Recursive least squares approach to calculate motion parameters for a moving camera [5267-17]
S. Chang, J. Fuller, A. Farsaie, L. Elkins

Efficient color representation for image segmentation under nonwhite illumination [5267-18]
J. Park

New class of onboard absolute orientation measurement sensor for robotic mobile platforms [5267-19]
J. Rastegar, Q. Ge, C. Pereira

SESSION 5
PATTERN RECOGNITION FOR INTELLIGENT ROBOTS AND COMPUTER VISION
CHAIRS: Surendra M. Gupta, Ernest L. Hall

Reduction of spatial uncertainties as a criterion for sensing planning of hand-eye calibration [5267-22]
M. Sallinen, T. Heikkila

Estimation of state, shape, and inertial parameters of space objects from sequences of range images [5267-23]
M. Lichter, S. Dubowsky

Parametric eigenspace method using multiple discriminant analysis [5267-24]
S. Nakanishi, T. Sugiura, Y. Nomura, N. Kato

Face recognition method based on independent component analysis and BP neural network [5267-26]
M. Wang, Y. Mo

Computer simulations for comparison of pattern recognition based on different variants of distortion invariant correlation filters [5267-27]
N. Evtikhiev, P. Ivanov, A. Lyapin, A. Shevchuk, S. Sirotkin, R. Starikov, A. Zaharcev

Improving object recognition accuracy and speed through nonuniform sampling [5267-28]
B. Super

SESSION 6
IMAGE PROCESSING FOR INTELLIGENT ROBOTS AND COMPUTER VISION
CHAIR: Ernest L. Hall

Automated morphological analysis approach for classifying colorectal microscopic images [5267-29]
K. Marghani, S. Dlay, B. Sharif, A. Sims

Experimental approach for the evaluation of neural network classifier algorithms [5267-31]
M. Ghaffari, E. Hall

Testing digital halftoning filters by generating test images and filters coevolutionarily [5267-32]
T. Mantere, J. Alander

SESSION 7
APPLICATIONS FOR INTELLIGENT ROBOTS AND COMPUTER VISION
CHAIR: Juha Röning

Micro-assembly cell with dual optical/computer vision control for electrostatic gripping of MEMS [5267-34]
E. Enikov, S. Clark, L. Minkov
Utilization and viability of biologically inspired algorithms in a dynamic multiagent camera surveillance system [5267-35]

Low-cost high-performance mobile robot design utilizing off-the-shelf parts and the Beowulf concept: the Beobot project [5267-36]
T. Mundhenk, C. Ackerman, D. Chung, N. Dhavale, B. Hudson, R. Hirata, E. Pichon, Z. Shi, A. Tsui, L. Itti

Soil sampling sensor system on a mobile robot [5267-37]
P. Cao, E. Hall, E. Zhang

Classification of multispectral satellite image data using improved NRBF neural networks [5267-41]
X. Tao, H. Michel

Visual inspection on paper by machine vision [5267-42]
H. Kalviainen, P. Saarinen, P. Salmela, A. Sadovnikov, A. Drobchenko

Multilevel test and validation of algorithms implemented in a SOPC VisionNode [5267-43]
A. Sluiter, K. Hartmann, B. Hasenmaier, M. Rost, D. Stieler, W. Weihs
Volume 5268 Chemical and Biological Standoff Detection
Chairs/Editors: James O. Jensen, Jean-Marc Thériault
Conference Committee

SESSION 1
STANDOFF DETECTION IN THE TERAHERTZ REGION
CHAIR: James O. Jensen

Integrated terahertz transmitters and receivers [5268-1]
T. Crowe, D. Porterfield, J. Hesler, W. Bishop, D. Kurtz

Terahertz Fourier transform characterization of biological materials in solid and liquid phases [5268-2]
T. Globus, T. Khromova, D. Woolard, B. Gelmont

Terahertz circular dichroism spectroscopy of biomolecules [5268-3]
J. Xu, J. Galan, G. Ramian, P. Savvidis, A. Scopatz, R. Birge, S. Allen, K. Plaxco

Biological and chemical sensing with electronic THz techniques [5268-4]
M. Choi, A. Bettermann, D. van der Weide

Through-container THz sensing: applications for biodetection [5268-5]
D. Cook, B. Decker, G. Dadusc, M. Allen

Quantitative analysis of ammonia by THz time-domain spectroscopy [5268-6]
H. Liu, Y. Chen, T. Yuan, F. Al-Douseri, J. Xu, X. Zhang

Characteristics of nanoscale composites by THz spectroscopy [5268-7]
H. Altan, F. Huang, J. Federici, A. Lan, H. Grebel

Development of an integrated millimeter-wave Fourier transform spectrometer [5268-8]
N. Barker, H. Shen, T. Gernandt

SESSION 2
INSTRUMENTATION FOR STANDOFF DETECTION
CHAIR: Neelam Gupta

Handheld hyperspectral imager for standoff detection of chemical and biological aerosols [5268-9]
M. Hinrichs, J. Jensen, G. McAnally

FTIR modulator for first responder applications [5268-10]
J. Engel, J. Rentz, D. Carlson

A no-moving-parts UV/visible hyperspectral imager [5268-11]
N. Gupta

Monitoring of chemical degradation in propellants using AOTF spectrometer [5268-12]
R. Feigley, F. Jin, J. Lorenzo, J. Soos, S. Trivedi

Acousto-optic tunable filter-based active long-wave IR spectropolarimetric imager [5268-13]
N. Prasad

A new 'semi-active' method for chemical standoff detection [5268-14]
T. Johnson, B. Roberts, G. Morgen, M. Hughes, C. Heitschmidt, J. Kelly

Compact interferometers for chemical and biological agent detection [5268-15]
C. Manning, M. Gross, T. Hanshaw, R. Kirlin, A. Samuels

Mid-wave IR liquid crystal tunable retarder for spectropolarimetric imaging [5268-16]
N. Prasad, K. Arnett, N. Gupta
Comparison of radiometric and chemical detection sensitivities for heterodyne and direct detection DIAL [5268-17]
D. Senft, D. Pierrottet

Compact tunable all-solid-state LWIR source for standoff chemical detection [5268-18]
Y. Isyanova, E. Slobodtchikov, J. Flint, P. Moulton, C. Swim, J. Fox

SESSION 3
STANDOFF DETECTION OF BIOLOGICAL AEROSOLS
CHAIR: William J. Marinelli

Passive standoff detection of BG aerosol: method and field trial results [5268-21]
J. Theriault, E. Puckrin, J. Jensen

Outdoor chamber measurements of biological aerosols with a passive FTIR spectrometer [5268-22]
F. D’Amico, D. Emge, G. Roelant

Backscatter measurements of aerosolized CB simulants with a frequency agile CO2 lidar [5268-23]
R. Vanderbeek, K. Gurton

SESSION 4
AIRBORNE STANDOFF DETECTION
CHAIR: Francis M. D’Amico

The Airborne Chemical Imaging System (ACIS) [5268-24]
F. D'Amico, D. Emge, W. Marinelli, C. Gittins, T. Ricks

Stabilized electro-optical airborne instrumentation platform (SEAIP) [5268-25]
T. Ricks, M. Burton, W. Cruger, R. Reynolds

SESSION 5
STANDOFF MONITORING OF THE ATMOSPHERE
CHAIR: Wayne F. J. Evans

Passive standoff detection of radiological products in the thermal infrared region [5268-28]
E. Puckrin, J. Theriault, D. Dubé

Remote sensing measurements of greenhouse gas radiative fluxes [5268-29]
W. Evans, E. Puckrin

Evaluation of the ACE FTS for obtaining nadir measurements [5268-31]
E. Puckrin, W. Evans, C. Ferguson, K. Walker, D. Dufour

Performance model of imaging FTS as a standoff chemical agent detection tool [5268-32]
M. Chamberland, V. Farley, P. Tremblay, J. Legault

SESSION 6
SIGNAL PROCESSING FOR STANDOFF DETECTION
CHAIRS: Chein-I Chang, Hsuan Ren, Qian Du

Multistage pulse code modulation for progressive spectral signature coding [5268-34]
C. Chang, J. Wang, F. D'Amico, J. Jensen

FPGA design for constrained energy minimization [5268-35]
J. Wang, C. Chang, M. Cao

Segmented PCA-based compression for hyperspectral image analysis [5268-37]
Q. Du, C. Chang

Subpixel land cover detection and classification for hyperspectral imagery [5268-38]
H. Ren, C. Lin, C. Chang
Extended linear hyperspectral mixing models [5268-39]
A. Banerjee, H. Ren, J. Jensen

SESSION 7
STANDOFF DETECTION OF CONTAMINANTS ON SURFACES
CHAIR: Anna Wong

Standoff liquid CW detection [5268-47]
A. Bell, C. Dyer, A. Jones, K. Kinnear

Passive standoff detection of liquid surface contaminants: recent results with CATSI [5268-41]
J. Theriault, J. Hancock, J. Jensen, E. Puckrin, F. D'Amico, C. Jackson-Lepage

Expanding applications for surface-contaminant sensing using the laser interrogation of surface agents (LISA) technique [5268-43]
P. Ponsardin, N. Higdon, T. Chyba, W. Armstrong, A. Sedlacek, S. Christesen, A. Wong

Standoff Raman measurement with COTS components [5268-44]
J. Rentz, C. Schwarze, R. Vaillancourt, M. Hercher

Surface-enhanced Raman for monitoring toxins in water [5268-45]
K. Spencer, J. Sylvia, S. Clauson, J. Bertone, S. Christesen

Raman sensor to monitor the nitrate and nitrite in the nuclear waste tank [5268-46]
S. Khijwania, A. Kumar, F. Yueh, J. Singh
Volume 5269 Chemical and Biological Point Sensors for Homeland Defense
Chairs/Editors: Arthur J. Sedlacek III, Steven D. Christesen, Richard Colton, Tuan Vo-Dinh

Conference Committee
Introduction

SESSION 1
RAMAN CB SENSORS AND DETECTION APPLICATIONS
CHAIR: Steven D. Christesen

Surface-enhanced Raman spectroscopy for homeland defense [5269-3]
K. Spencer, J. Sylvia, P. Marren, J. Bertone, S. Christesen

Differentiating bacterial spores from hoax materials by Raman spectroscopy [5269-4]
S. Farquharson, W. Smith

Chemical agent detection by surface-enhanced Raman spectroscopy [5269-5]
S. Farquharson, A. Gift, P. Maksymiuk, F. Inscore, W. Smith, K. Morrisey, S. Christesen

Application of UV-Raman spectroscopy to the detection of chemical and biological threats [5269-6]
A. Sedlacek, S. Christesen, T. Chyba, P. Ponsardin

High-resolution UV echelle spectrograph for environmental sensing [5269-7]
S. Clauson, S. Christesen, K. Spencer

SESSION 2
WAVEGUIDE SENSOR TECHNOLOGIES
CHAIR: Thomas H. Chyba

Waveguide infrared spectrometer platform for point and standoff chemical sensing [5269-9]
S. Chadha, P. Henning, F. Landers, A. Weling

Reagentless optical biosensor [5269-10]

Sensing arrays based on integrated optics microresonators for homeland security applications [5269-11]

Application of telecom planar lightwave circuits for homeland security sensing [5269-12]
G. Veldhuis, J. Elders, H. van Weerden, M. Amersfoort

Increasing lifetimes of fiber-optic sensor arrays for chemical warfare detection [5269-13]
S. Bencic, D. Walt

Intrinsic optical fiber sensor for sensing organophosphate nerve agent using the modified cladding approach [5269-14]
L. Bansal, M. El-Sherif

Fiber-optic-based surface plasmon resonance (SPR) sensors for the detection of toxic nerve agents [5269-16]
A. Prakash, Y. Kim, S. Banerji, J. Masson, K. Booksh

SESSION 3
SENSOR DEPLOYMENT
CHAIR: James B. Gillespie

Design and development of a personal alarm monitor for use by first responders [5269-18]
D. Ehntholt, A. Louie, I. Marenchic, R. Forni
pH dependence of methyl phosphonic acid, dipicolinic acid, and cyanide by surface-enhanced Raman spectroscopy [5269-19]
S. Farquharson, A. Gift, P. Maksymiuk, F. Inscore, W. Smith

Pyrolysis gas-chromatography ion-mobility spectrometry data analysis for chemical detection in water monitoring [5269-20]
H. Ren, J. Jensen, W. Loerop

SESSION 4
INFRARED CB SENSOR TECHNOLOGIES
CHAIR: Roger J. Combs

Evolution of FTIR technology as applied to chemical detection and quantification [5269-21]
H. Buijs, L. Rochette, F. Chateauneuf

An FTIR point sensor for identifying chemical WMD and hazardous materials [5269-23]
M. Norman, A. Gagnon, J. Reffner, D. Schiering, J. Allen

Infrared point sensors for homeland defense applications [5269-24]
R. Thomas, M. Carter, C. Homrighausen

The PNNL quantitative infrared database for gas-phase sensing: a spectral library for environmental, hazmat, and public safety standoff detection [5269-25]
T. Johnson, R. Sams, S. Sharpe

Two-dimensional angular optical scattering patterns of aerosol particles in the mid-infrared: measurements designed to obtain particle absorption [5269-26]
K. Aptowicz, Y. Pan, R. Pinnick, S. Hill, R. Tober, R. Chang, B. Bronk

FTIR transmission and photoacoustic spectroscopy for the statistical identification of bacteria [5269-27]
N. Foster, N. Valentine, S. Thompson, T. Johnson, J. Amonette

SESSION 5
NANOSPECTROSCOPY AND NOVEL MATERIALS FOR CB SENSORS
CHAIR: Gary C. Tepper

Microsphere-based DNA biosensor arrays [5269-28]
L. Song, J. Epstein, D. Walt

Investigating photonic nanostructures for reproducible characterization of bacterial spores [5269-31]
J. Pendell Jones, N. Fell, T. Alexander, C. Tombrello, A. Fountain

Influence of polymer coating morphology on microsensor response [5269-32]
N. Levit, D. Pestov, G. Tepper

SESSION 6
FLUORESCENCE IN CB SENSOR APPLICATIONS
CHAIR: N. Scott Higdon

Fluorescence measurements of activity associated with a molecularly imprinted polymer imprinted to dipicolinic acid [5269-34]
J. Anderson, D. Pestov, R. Fischer, S. Webb, G. Tepper

Time-resolved and steady-state fluorescence spectroscopy from bacteria subjected to bactericidal agents [5269-35]
Vapor mixture generation for infrared sensor evaluation [5269-38]
P. Field, R. Combs

Application of partial least squares regression to the automatic detection of chemical vapors by passive infrared remotely sensed image data [5269-39]
R. Feudale, S. Brown

Monitoring water supplies for weaponized bacteria and bacterial toxins using rapid fluorescence-based viability and affinity assays [5269-40]
R. Van Tassell, M. Evans
Volume 5270 Environmental Monitoring and Remediation III

Chairs/Editors: Tuan Vo-Dinh, Guenter Gauglitz, Robert A. Lieberman, Klaus P. Schäfer, Dennis K. Killinger

Conference Committee

Introduction

Part A: Advanced Environmental, Chemical, and Biological Sensing Technologies

SESSION 1
ADVANCED SENSOR SYSTEMS
CHAIRS: Tuan Vo-Dinh, Robert A. Lieberman

- New frontiers of sensoristic sciences [5270-1]
  L. Campanella

- Hand-held hyperspectral imager for chemical/biological and environmental applications [5270-3]
  M. Hinnrichs, B. Piatek

- Near-field and far-field characterization of stratified chiral structures [5270-4]
  E. Bahar, P. Crittenden

SESSION 2
ENVIRONMENTAL CHEMICAL SENSORS
CHAIRS: Luigi Campanella, Guenter Gauglitz

- Optical fiber sensor for photosynthetic herbicides detection by time-resolved absorption [5270-5]
  Y. Andreu, F. Baldini, C. Domenici, A. Giannetti, D. Masci, A. Mencaglia

- Development of smart textiles with embedded fiber optic chemical sensors [5270-6]
  S. Khalil, J. Yuan, M. El-Sherif

SESSION 3
ENVIRONMENTAL BIOSENSORS
CHAIRS: Francesco Baldini, Eiichi Tamiya

- Sensors for chemical risk assessment [5270-9]
  L. Campanella

- Development of bacteriophage-based bioluminescent bioreporters for monitoring of microbial pathogens [5270-12]
  A. Ozen, K. Montgomery, P. Jegier, S. Patterson, K. Daumer, S. Ripp, J. Garland, G. Sayler

- Surface plasma resonance biosensor based on prism geometry [5270-13]
  D. Zhang, X. Yuan, S. Tjin, B. Ng, C. Fu, R. Irawan

SESSION 4
ADVANCED ENVIRONMENTAL MONITORING SYSTEMS: AEMS
CHAIRS: Yoshio Ishimori, Mitsuo Mouri, K. Aoshika

- Overview of the AEMS project [5270-14]
  M. Mouri, Y. Ishimori, K. Kawano, H. Uchida, Y. Ishikawa, E. Tamiya, M. Ishizuka

- Development of an eco-sensor based on bilayer lipid membrane for the continuous monitoring of environmental pollutants [5270-15]
  Y. Ishimori, K. Kawano, M. Ishizuka, M. Murahashi, E. Tamiya

- Experimental investigation on the behavior of a microdroplet jet [5270-16]
  M. Ishizuka, S. Nakagawa, Y. Ishimori, K. Kawano
MEMS-based biosensors for environmental monitoring [5270-17]
T. Endo, Y. Morita, E. Tamiya

SESSION 6
SENSORS DATA TREATMENT SYSTEMS
CHAIR: G. Wayne Morrison

Use of neural networks for assessment of adverse impact duration of solid waste disposal facilities on the aquatic environment [5270-23]
E. Kmiecik, I. Twardowska, J. Szczepanska

Model-supported ranking of pesticides with regard to risk assessment exemplified in triazine compounds [5270-25]
R. Brueggemann, G. Nuetzmann, I. Twardowska

SESSION 7
ADVANCED SENSING SYSTEMS
CHAIR: Anna G. Mignani

Advanced high-power superluminescent light sources for environmental, chemical, and biological sensing applications [5270-27]
M. Maiorov, C. Hsu, I. Kudryashov, A. Lunev, N. Morris, R. Roff, J. Connolly, D. Garbuzov

Fiber optic multimeter for interrogating an array of absorption-based optochemical sensors [5270-28]

SESSION 8
FIELD APPLICATIONS OF ENVIRONMENTAL SENSORS
CHAIR: Irena Twardowska

Sensitive detection of chemical agents and toxic industrial chemicals using active open-path FTIRs [5270-31]
W. Walter

Approach to the vadose zone monitoring in hazardous and solid waste disposal facilities [5270-33]
I. Twardowska

On-site comprehensive analysis of explosives using HPLC-UV-PAED [5270-34]
R. Marple, W. LaCourse

SESSION 11
POSTER SESSION

Odor sensor utilizing surface plasmon resonance for environmental monitoring [5270-7]
H. Nanto, Y. Kitade, Y. Sekikawa, Y. Takei, N. Kubota, E. Kusano, A. Kinbara

Airborne surface plasmon resonance biosensing [5270-44]
T. Chinowsky, A. Naimushin, S. Soelberg, C. Spinelli, P. Kauffman, S. Yee, C. Furlong

Part B: Instrumentation for Air Pollution and Global Atmospheric Monitoring II

SESSION 9
INSTRUMENTATION FOR AIR POLLUTION AND GLOBAL ATMOSPHERIC MONITORING

Remote passive detection of aircraft exhausts at airports [5270-36]
K. Schaefer, C. Jahn, R. Harig, C. Aleyt, P. Rusch

Novel switchable circle-to-point converter for lidar detection [5270-37]
Remote sensing of microbial volatile organic compounds with a bioluminescent bioreporter integrated circuit [5270-38]
S. Ripp, K. Daumer, J. Garland, M. Simpson, G. Sayler

Compact broadband tunable short-pulse high-repetition-rate optical parametric oscillator [5270-43]
X. Peng, L. Xu, A. Asundi
SESSION 1
PATHOGEN DETECTION
CHAIRS: Andrew G. Gehring, Arun K. Bhunia

Optical immunosensors for detection of Listeria monocytogenes and Salmonella enteritidis from food [5271-1]
A. Bhunia, T. Geng, A. Lathrop, A. Valadez, M. Morgan

Applications of immunomagnetic capture and time-resolved fluorescence to detect outbreak Escherichia coli O157 and Salmonella in alfalfa sprouts [5271-3]
S. Tu, M. Gordon, W. Fett, A. Gehring, P. Irwin

A model system for pathogen detection using a two-component bacteriophage/bioluminescent signal amplification assay [5271-4]
N. Bright, R. Carroll, B. Applegate

Antimicrobial peptides: a review of how peptide structure impacts antimicrobial activity [5271-5]
J. Soares, C. Mello

SESSION 2
SPECTROSCOPIC TECHNIQUES
CHAIR: Kuanglin Chao

Inspection of pesticide residues on food by surface-enhanced Raman spectroscopy [5271-6]
C. Shende, A. Gift, F. Inscore, P. Maksymiuk, S. Farquharson

Comparison between visible/NIR spectroscopy and hyperspectral imaging for detecting surface contaminants on poultry carcasses [5271-7]
K. Lawrence, W. Windham, B. Park, D. Smith, G. Poole

Spectroscopic detection of abnormality in chicken liver as an inspection tool [5271-8]
B. Dey, D. Chan, Y. Chen, F. Gwozdz

High-speed poultry inspection using visible/near-infrared spectrophotometer [5271-9]
K. Chao, Y. Chen

SESSION 3
IMAGING TECHNIQUES I
CHAIR: Yang Tao

Multispectral fluorescence imaging techniques for nondestructive food safety inspection [5271-10]
M. Kim, A. Lefcourt, Y. Chen

Portable multispectral fluorescence imaging system for food safety applications [5271-11]
A. Lefcourt, M. Kim, Y. Chen

Perspective of inline control of latent defects and diseases on french fries with multispectral imaging [5271-12]
J. Noordam, W. van den Broek, L. Buydens

Noninvasive maturity detection of citrus with computer vision [5271-13]
Y. Ying, Z. Xu, X. Fu, Y. Liu
SESSION 4
IMAGING TECHNIQUES II
CHAIR: Moon S. Kim

High-resolution real-time x-ray and 3D imaging for physical contamination detection in deboned poultry meat [5271-14]
X. Chen, H. Jing, Y. Tao, X. Cheng

Classification of hyperspectral imagery for identifying fecal and ingesta contaminants [5271-15]
B. Park, W. Windham, K. Lawrence, D. Smith

Hyperspectral feature selection and fusion for detection of chicken skin tumors [5271-16]
S. Nakariyakul, D. Casasent

SESSION 5
MONITORING AND INTERVENTION
CHAIR: Jitu R. Patel

Novel membrane technology for food and water monitoring [5271-18]
K. Senecal, J. Soares, C. Mello, P. Pivarnik, A. Senecal

Intervention strategies for control of foodborne pathogens [5271-38]
V. Juneja

New technology for food safety: role of the new technology staff in FSIS [5271-44]
H. Early

Laser instrumentation for express-diagnostics of soy in dairy products [5271-20]
E. Saguitova, T. Moguilnania, K. Prokhorov, A. Botikov

SESSION 8
POSTER SESSION

Image-processing algorithms for inspecting characteristics of hybrid rice seed [5271-17]
F. Cheng, Y. Ying

Analyzing characteristics of hybrid rice seed [5271-21]
F. Cheng, Y. Ying

Nondestructive evaluation of chicken-egg freshness based on its optical properties [5271-39]
Y. Liu, Y. Ying, A. Ouyang, Z. Qiao

Part B: Sensors and Systems for Agriculture and Plant Health Monitoring

SESSION 6
REMOTE SENSING AND IMAGING
CHAIR: Bent S. Bennedsen

Ground-based imaging system for soil surface roughness measurement [5271-22]
Z. Long, P. Jang, J. Su, Y. Sun, J. Thomasson, S. To

Digital-imaging-based spectrophotometric techniques for soil pathogen monitoring and detection [5271-23]
G. Bonifazi, P. Menesatti

Remote sensing mapping of soil and plants as basis for a variable-rate nutrient application system [5271-24]
B. Bennedsen, L. Christensen, A. Pedersen, L. Jensen, N. Nielsen

Hyperspectral imagery vegetation index and temporal analysis for corn yield [5271-25]
H. Yao, L. Tian
Stand-off detection of plant-produced volatile organic compounds using short-range Raman LIDAR [5271-26]
L. Johnson, C. Barnett, C. Brown, D. Crawford, J. Tumlinson

Plant health sensing system for determining nitrogen status in plants [5271-27]
J. Thomasson, R. Sui, J. Read, K. Reddy

An operational fluorescence system for crop assessment [5271-28]
C. Belzile, M. Bélanger, A. Viau, M. Chamberland, S. Roy

Assessment tools for fuzzy clustered regions of interest for site-specific crop management [5271-29]
G. Meyer, J. Camargo Neto, D. Jones

Research on new methods to obtain plant growth information in facility agriculture by near-infrared spectrum analysis [5271-30]
H. Jiang, Y. Ying, Q. Zhang

SESSION 7
PRODUCT QUALITY
CHAIR: George E. Meyer

Aflatoxin detection in whole corn kernels using hyperspectral methods [5271-32]
D. Casasent, X. Chen

Absorption spectroscopy and multi-angle scattering measurements in the visible spectral range for the geographic classification of Italian extra virgin olive oils [5271-31]
A. Mignani, L. Ciacccheri, A. Cimato, G. Sani, P. Smith

Opto-electronic determination of insect presence in fruit [5271-33]
B. Shrestha, D. Guyer, D. Ariana

Integrating reflectance and fluorescence imaging for apple disorder classification [5271-34]
D. Ariana, D. Guyer, B. Shrestha

Near-infrared multispectral scattering for assessing internal quality of apple fruit [5271-35]
R. Lu

SESSION 9
POSTER SESSION

Detecting citrus in a tree canopy using infrared thermal imaging [5271-36]
H. Xu, Y. Ying

Machine vision system for inspecting characteristics of hybrid rice seed [5271-37]
F. Cheng, Y. Ying

Study on rapid valid acidity evaluation of apple by fiber optic diffuse reflectance technique [5271-40]
Y. Liu, Y. Ying, X. Fu, X. Jiang

Application of near-infrared spectroscopy with fiber optics for detecting interior quality in peaches [5271-41]
Y. Liu, Y. Ying, Z. Chen, X. Fu

Predicting beef tenderness using near-infrared spectroscopy [5271-42]
S. Jeyamkondan, G. Kranzler, B. Morgan, S. Rust
SESSION 1
PROCESS MONITORING AND INDUSTRIAL SAFETY
CHAIR: John P. Dakin

- Pharmaceutical process applications of Raman spectroscopy [5272-1]
  S. Farquharson, A. Gift, W. Smith

- Low-cost OP-FTIR spectrometer for workplace monitoring [5272-2]

- Development of a phase diagram to control composite manufacturing using Raman spectroscopy [5272-3]
  S. Farquharson, J. Carignan, V. Khitrov, A. Senador, M. Shaw

- Tunable diode laser sensor for multiple species monitoring in harsh atmospheres [5272-4]
  W. Von Drasek, S. Wehe, M. Allen

SESSION 2
FIBER BRAGG GRATING SENSORS I
CHAIR: Brian Culshaw

- Grating-assisted operating-point tuning for fiber optic Fabry-Perot interferometric sensors [5272-6]
  B. Yu, G. Pickrell, A. Wang

- Improvement of thermal sensitivity of FBG sensors by combined cladding etching and polymer coating [5272-7]
  J. Paul, L. Zhao, B. Ngoi, Z. Fang

- Accurate wavelength interrogation of fiber Bragg grating sensors using Michelson interferometry [5272-9]
  W. Gornall, T. Amarel

SESSION 3
FIBER BRAGG GRATING SENSORS II
CHAIR: Michael A. Marcus

- Small form-factor PANDA-type HiBi fiber for sensing applications [5272-10]

- Fiber coupling of 405-nm laser diode with microlens technology [5272-11]
  Y. Zhang

- Computer-controlled tunable fiber laser [5272-12]
  J. Escalante, F. Núñez-Orozco, J. Hernández-Cordero

- Performance evaluation of fiber Bragg gratings at elevated temperatures [5272-14]
  J. Juergens, G. Adamovsky, B. Floyd

SESSION 4
CHEMICAL SENSORS
CHAIR: Brian Culshaw

- Development of fiber-type surface plasmon resonance sensor for protein detection [5272-17]
  W. Ko, S. Oh, S. Kim, Y. Kwak
Self-calibrated fiber optic transflection probe for NO₂ detection [5272-18]
S. Mechery, J. Singh

Novel optical fiber relative-humidity sensor with optimized parameters [5272-19]
S. Khijwania, K. Srinivasan, J. Singh

Theoretical modelling studies of gas-sensing systems using correlation spectroscopy [5272-57]
P. Chambers, E. Austin, J. Dakin

Study on the online operation of microspectrometer and liquid drop analyzer [5272-21]
Z. Qiu, X. Guo, G. Zhang, X. Li, H. Chen, Q. Song

SESSION 5
TECHNIQUES
CHAIRS: John P. Dakin, Michael A. Marcus

Fiber optic sensor integration system and measurement technique [5272-22]
K. Stinson-Bagby, M. Marcus, R. Fielder

High-spatial-resolution fiber optic distributed force sensing with synthesis of optical coherence function [5272-23]
K. Hotate, K. Makino, M. Ishikawa, Y. Yoshikuni

Localization of a loss-inducing perturbation with variable accuracy along a test fiber using transmission-reflection analysis [5272-24]
V. Spirin, F. Mendieta, S. Miridonov, M. Shlyagin, A. Chtcherbakov, P. Swart

SESSION 6
APPLICATIONS
CHAIR: Michael A. Marcus

Design of fiber laser and sensor systems for gas spectroscopy in the near-IR [5272-26]
G. Stewart, G. Whitenett, P. Shields, J. Marshall, B. Culshaw

Investigation of nonlinear dynamically induced instabilities in a Brillouin fiber ring and their stabilization schemes [5272-27]
J. Foreman, C. Yu, Y. Kim, R. Khan, J. Linford

High-temperature fiber optic sensors for harsh environment applications [5272-28]
R. Fielder, K. Stinson-Bagby

Characterization of integrated fiber optic sensors in smart textiles [5272-29]
J. Yuan, M. El-Sherif, S. Khalil, J. Faimeny

SESSION 7
DEVICES
CHAIR: Brian Culshaw

Random hole optical fibers [5272-30]
G. Pickrell, D. Kominsky, R. Stolen

Cubic-zirconia-based fiber optic pressure sensor for high-temperature environment [5272-31]
W. Peng, G. Pickrell, A. Wang

Novel single-phase fiber optic flow sensor system [5272-32]
W. Peng, G. Pickrell, J. Xu, Z. Huang, D. Kim, A. Wang

CdTe:Ti crystals: materials for optical sensors in the near-IR region [5272-33]
Fiber optic pyrometer and its application in hot-blast stove temperature measurement [5272-34]
W. Li, D. Jiang, W. Zhu

SESSION 8
POSTER SESSION

High-sensitivity pressure sensor based on a fiber Bragg grating [5272-16]
H. Sheng, M. Fu, T. Chen, C. Lin, W. Liu, S. Bor

Novel fiber optic contrast-based sensor [5272-25]
M. Szustakowski, N. Palka

Non-destructive measurement of sugar content in Fuji apple with bifurcated fiber optic sensor [5272-36]
Y. Ying, Y. Liu, J. Wang, H. Jiang

Part B: Intelligent Transportation Sensors and Controls

SESSION 9
HIGHWAY AND TRAFFIC MANAGEMENT
CHAIR: Samuel D. Crossley

Intelligent imaging systems for automotive applications [5272-40]
C. Thompson, Y. Huang, S. Fu

Demonstration of alternative traffic information collection and management technologies [5272-41]
H. Knee, C. Smith, G. Black, J. Petrolino

Highway travel time analysis using license plate image capture techniques [5272-42]
J. Kennedy, C. Cantrell, M. Varney, Z. Czyzewski, B. Smith

SESSION 10
ITS APPLICATIONS OF BRAGG GRATING SENSORS
CHAIR: Peter D. Foote

Smart patches: self-monitoring composite patches for the repair of aircraft [5272-43]
S. Crossley, Z. Marioli-Riga, G. Tsamasphyros, G. Kanderakis, N. Furnarakis, A. Ikiades, M. Konstantaki

Strain and temperature remote sensing of concrete structures using photonic sensors [5272-44]
A. Quintela, C. Jáuregui, F. Madruga, M. Quintela, J. López-Higuera

Polarization-independent high-resolution spectral interrogation of FBGs using a BFBG-CCD array for optical sensing applications [5272-45]
A. Simpson, K. Zhou, P. Foote, L. Zhang, I. Bennion

Civil engineering transducer’s interrogation unit [5272-46]
C. Jáuregui, A. Quintela, O. Conde, A. Cobo, J. López-Higuera

SESSION 11
SENSORS FOR ITS APPLICATIONS
CHAIR: Helmut E. Knee

Acoustic-sensor-based detection of damage in composite aircraft structures [5272-47]
P. Foote, T. Martin, I. Read

Temperature-compensated miniature cylinder pressure sensor for automotive applications [5272-50]
M. Wlodarczyk

Fiber optic sensor technology for air conformal ice detection [5272-51]
A. Ikiades, D. Armstrong, G. Hare, M. Konstantaki, S. Crossley

Cement-based electronics [5272-52]
G. Konesky
SESSION 12
MONITORING SYSTEMS FOR ASSESSMENT AND CONTROL IN ITS
CHAIR: Brian Culshaw

Prototype security system for Mexico City's light train crossings [5272-53]

Fatigue crack monitoring in aero-engines: simulation and experiments [5272-54]
L. Gelman, I. Petrunin, C. Thompson