

INDUSTRIAL PHYSICS FORUM

The Industrial Physics Forum (IPF) brings together research managers and decision makers from industry, academia, and government, who seek to keep abreast of research and policy issues affecting the physical sciences community. Organized by the Corporate Associates of the American Institute of Physics (AIP), the IPF features invited-speaker sessions to compliment the Member Society program. Experts from across the field discuss new applications of physics, product developments, and other opportunities for science in today's economic environment. The IPF offers participants opportunities to learn about innovations in the field, to interface with the people driving them, and to strategize about directions for future economic and scientific progress. More information about AIP efforts to promote physics in industry and the IPF can be found at the Industrial Outreach page of the AIP website: www.aip.org/industry.

2009 IPF THEME

This year AIP Corporate Associates have collaborated with the American Association of Physicists in Medicine (AAPM) to create the 51st IPF: **"Frontiers in Quantitative Imaging for Cancer Detection and Treatment"**. Eleven theme sessions address the technical aspects of medical imaging related to diagnoses and therapies, and how physics reveals new possibilities. The focus of these sessions ranges from the use of nanotechnology in imaging and therapy, to the challenges of novel proton accelerators, to advances in ultrasound and computed tomography (CT) scanning. In addition, the AAPM President's Symposium addresses the present and future roles of computers in medicine.

While the IPF sessions are underway, science journalist Calla Cofield will report regularly via the meeting blog at <http://blogs.physicstoday.org/industry09/>. IPF speaker presentations will be posted online shortly thereafter.

UPCOMING EVENTS

For details on future Industrial Physics Events Visit www.aip.org/ca/events.html

Regional Industry/Faculty/Student Forums

- Society of Rheology 81st Annual Meeting
4:00 PM, Sunday, 18 October, 2009, Madison, WI
www.rheology.org/sor/annual_meeting/2009Oct/info.htm
- AVS 56th International Symposium and Exhibition
6:00 PM, Sunday, 8 November, 2009, San Jose, CA.
www2.avs.org/symposium/AVS56/pages/info.html

INDUSTRIAL PHYSICS FORUM 2010



As part of LaserFest 2010 celebrations (www.laserfest.org), the Optical Society of America (OSA) will co-host the next Industrial Physics Forum.

AIP CORPORATE ASSOCIATES

Serving the industrial physics community by improving the effectiveness of people and organizations in advancing corporate goals through the use of physics.

Join today, and

- Connect with technology and research leaders; exchange ideas and advice with colleagues facing similar R&D challenges.
- Build a broad knowledge base—about the latest advances in successful laboratories and how diverse applications of physics can translate into new product development.
- Learn about policy issues and global trends that directly impact industry's ability to turn a profit from R&D operations.

To discover how to become a member of AIP Corporate Associates visit www.aip.org/ca/become/html

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Forum 2009

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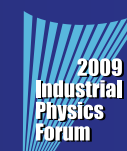
Frontiers in Quantitative
Imaging for Cancer
Detection and Treatment

Co-hosted by the American Association
of Physicists in Medicine at their
51st Annual Meeting

26-28 July, 2009
Anaheim, CA



www.aapm.org



www.aip.org/ipf

Welcoming Reception

6:30 PM to 8:30 PM, Sunday 26 July, 2009

Limited to IPF Registrants and AAPM Invitees
Disney Grand Californian, Sequoia South Ballroom
1600 South Disneyland Drive, Anaheim, CA 92802

AAPM President's Symposium

10:00 AM to 12:00 PM, Monday, 27 July, 2009

Special Session – Ballroom B

MO-C-BRB-1 – Present and Future Role of Computers in Medicine
I. Foster, University of Chicago

Advances in Photon Counting Detectors in X-ray Imaging

1:30 PM to 3:20 PM, Monday, 27 July, 2009

Imaging Session – Room 210A

Moderator: S. Molloy, University of California, Irvine

MO-D-210A-1 – Photon-Counting Detectors for Mammography

M. Danielsson, Royal Institute of Technology, Sweden

MO-D-210A-2 – Clinical CT Applications with Photon-Counting Detectors

R. Levinson, General Electric

MO-D-210A-3 – Energy-sensitive, Photon-counting Computed Tomography: Opportunities and Technological Challenges

E. Roessl, Philips Research Europe

The Physics and Challenges of Novel Proton Accelerators for Radiotherapy

1:30 PM to 3:20 PM, Monday, 27 July, 2009

Therapy Session – Ballroom D

Moderator: E. Colby, Stanford University

MO-D-BRD-1 – Pushing the Limits of Microwave Linear Accelerators

S. Tantawi, Stanford University

MO-D-BRD-2 – Dielectric Wall Accelerator

G. Caporaso, Lawrence Livermore National Laboratory

MO-D-BRD-3 – Laser-Driven Targetry: Clinical Applications

C. Ma, Fox Chase Cancer Center

MO-D-BRD-4 – Innovations in Hadron Beam Generation with Plasmas

M. Cappelli, Stanford University

MO-D-BRD-5 – Innovations in Proton Beam Delivery

T. Garvey, Paul Scherrer Institute

MO-D-BRD-6 – Panel Discussion

2009 Industrial Physics Forum

Challenges of Post-Treatment and Real-Time Imaging of Dose Deposition During Proton Therapy

1:30 PM to 3:20 PM, Monday, 27 July, 2009

Joint Session – Ballroom C

Moderator: T. Bortfeld, Partners Healthcare System

MO-D-BRC-1 – Introduction

T. Bortfeld, Partners Healthcare System

MO-D-BRC-2 – Clinical Significance of in-vivo Proton Range Detection and Potential of MRI Scanning after Proton Therapy.

T. Hong, Partners Healthcare System

MO-D-BRC-3 – Latest Developments in PET Verification of Proton Therapy

K. Parodi, GSI Helmholtz Centre for Heavy Ion Research

MO-D-BRC-4 – Prompt Gamma Measurements for Proton Range Localization

J. Kim, National Cancer Center, Korea

Frontiers in Physics

4:00 PM to 5:30 PM, Monday, 27 July, 2009

Special Session – Ballroom C

Moderator: H.F. Dylla, American Institute of Physics

MO-E-BRC-1 – Single-Molecule Real-Time DNA Sequencing

S. Turner, Pacific Biosciences

MO-E-BRC-2 – Challenges for Next-Generation Accelerators

J. Lykken, Fermilab

MO-E-BRC-3 – Opto-genetics in Brain Imaging

K. Deisseroth, Stanford University

Developments in Breast Imaging

In Memoriam of Carolyn Kimme-Smith

10:00 AM to 12:00 PM, Tuesday, 28 July, 2009

Imaging Session – Room 210A

Moderator: A. Karellas, University of Massachusetts, Dartmouth

TU-C-210A-1 – Recent Advances in Breast Tomosynthesis

W. Zhao, SUNY Stony Brook

TU-C-210A-2 – Molecular Imaging of the Breast

M. O'Connor, Mayo Clinic

TU-C-210A-3 – MR Guided Near-IR Spectral Tomography

K. Paulsen, Dartmouth Medical School

TU-C-210A-4 – MRI of the Breast and Biopsy Techniques

D. Ikeda, Stanford University

Technical and Biological Innovations in Small Animal Image-Guided Radiotherapy

10:00 AM to 12:00 PM, Tuesday, 28 July, 2009

Therapy Session – Ballroom D

Moderators: E. Graves, Stanford University

P. Lindsay, Princess Margaret Hospital, Canada

TU-C-BRD-1 – Applications of Millimeter Precision Small Animal Radiation

E. Ford, The Johns Hopkins Medical Institutions

TU-C-BRD-2 – Integrated Robotic-Based Irradiation System

E. Moros, University of Arkansas

TU-C-BRD-3 – Pre-Clinical Stereotactic Irradiator

T. Solberg, University of Texas Southwestern Medical Center

TU-C-BRD-4 – Carbon Nanotube Field-Emission Technology

S. Chang, University of North Carolina

TU-C-BRD-5 – Pre-Clinical Image Guided Microirradiators

E. Izaguirre, Washington University

TU-C-BRD-6 – Translational Research with Small-Animal IGRT

A. Hope, Princess Margaret Hospital, Canada

TU-C-BRD-7 – Panel Discussion

Advances in Ultrasound Imaging and Therapy

1:30 PM to 3:20 PM, Tuesday, 28 July, 2009

Imaging Session – Room 210A

Moderators: P. Carson, University of Michigan;

Z. Lu, Columbia University

TU-D-210A-1 – 3D Ultrasound Guided Prostate Interventions

A. Fenster, Robarts Research Institute, Canada

TU-D-210A-2 – Catheter-based Ultrasound Technology for Image-guided Hyperthermia and Thermal Ablation

C. Diederich, University of California, San Francisco

TU-D-210A-3 – Ultrasound Current Source Density Imaging

R. Witte, University of Arizona

TU-D-210A-4 – Development of High Frequency Ultrasound Transducers for Medical Imaging

J. Cannata, University of Southern California

Nanotechnology in Imaging and Therapy

1:30 PM to 3:20 PM, Tuesday, 28 July, 2009

Joint Session – Room 303A

Moderators: M. Williams, University of Virginia;

A. Chatziaoannou, University of California, Los Angeles

TU-D-303A-1 – Imaging Technologies: From Cells to Humans

A. Chatziaoannou, University of California, Los Angeles

TU-D-303A-2 – Biomarker Discovery and Molecular Imaging of Pancreatic Ductal Adenocarcinoma

K. Kelly, University of Virginia

TU-D-303A-3 – Inorganic Nanoparticles for Molecular Imaging

S. Chen, Stanford University

TU-D-303A-4 – Immunoliposomes for Targeted Radionuclide Therapy

G. Sgouros, The Johns Hopkins Medical Institutions

Advances in CT Scanning (Computed Tomography)

4:00 PM to 5:30 PM, Tuesday, 28 July, 2009

Imaging Session – Room 210A

Moderator: B. Whiting, Washington University

TU-E-210A-1 – Dual-energy CT with Fast-kVp Switch

J. Hsieh, General Electric Healthcare Technologies

TU-E-210A-2 – Dual-Energy Imaging with Dual Source Systems

B. Schmidt, Siemens Medical Solutions

TU-E-210A-3 – Double-Layer Detector, Dual-Energy CT

A. Altman, Philips Medical Systems

TU-E-210A-4 – Dual-Energy CT Image Reconstruction Algorithms and Performance

J. O'Sullivan, Washington University

Locating and Targeting Moving Tumors

4:00 PM to 5:30 PM, Tuesday, 28 July, 2009

Therapy Session – Ballroom D

Moderator: R. Berbeco, Harvard University

TU-E-BRD-1 – Fluoroscopic Lung Tumor Tracking without Implanted Fiducial Markers

S. Jiang, University of California, San Diego

TU-E-BRD-2 – Predictive Localization of Moving Targets

D. Ruan, Stanford University

TU-E-BRD-3 – DM-LC IMRT Tracking of Moving Anatomy

L. Papiez, University of Texas Southwestern Medical Center

Screening, Diagnosis, and Treatment of Breast Cancer

4:00 PM to 5:30 PM, Tuesday, 28 July, 2009

Joint Session – Room 303A

Moderator: J. Boone, University of California, Davis

TU-E-303A-1 – Contrast-Enhanced Breast Tomosynthesis

A. Maidment, University of Pennsylvania

TU-E-303A-2 – Optical Biomarkers Measured with Diffuse Optical Spectroscopic Imaging

A. Cerussi, University of California, Irvine

TU-E-303A-3 – CT as a Platform for Image Guided Therapies of Breast Cancer

J. Boone, University of California, Davis

Log on to the IPF Blog
for more information and commentary
<http://blogs.physicstoday.org/industry09/>