

ABOUT INDUSTRY DAY

Industry Day brings together graduate students, early career scientists, industry professionals, and academics who want to stay up-to-date on what's happening in industrial and applied physics.

This year's Industry Day theme is "Physics for Tomorrow," which highlights the many ways that technology developed by physicists helps shape our daily lives. Industrial physicists in many different sectors of the economy advance technology through modeling and designing experiments, developing new materials and instruments, and improving and maintaining processes that ensure product quality.

JOIN FIAP

Stay up-to-date on news and trends in the field of industrial physics by becoming a member of the Forum on Industrial Physics (FIAP).

Learn more: aps.org

INDUSTRY MENTORING FOR PHYSICISTS



Get involved with industrial physics on a new level—sign up to become a mentor or mentee!

The APS Industry Mentoring for Physicists (IMPact) program connects graduate students, postdocs, and early career scientists with industrial physicists and entrepreneurs.



Learn more: impact.aps.org



INDUSTRY DAY

Physics for Tomorrow

Presented by the APS Forum on Industrial and Applied Physics (FIAP)

WEDNESDAY, MARCH 6

8:00 A.M. - 5:30 P.M.

TUESDAY AND THURSDAY,

MARCH 5 AND 7

SATELLITE SESSIONS



American Physical Society
One Physics Ellipse, College Park MD 20740
aps.org



MARCH
MEETING 2019
MARCH 4-8 BOSTON, MA

Monday, March 4

12:00 noon - 2:15 p.m. | Westin Hotel, Grand Ballroom B

FIAP

B80. Meet Your Future: Careers in the Private Sector

Chair: **Steven Lambert, American Physical Society**

This special lunchtime session features representatives from industry who will discuss their career paths and answer questions about private sector physics careers. Topics will include research opportunities for industrial physicists, strategies for landing industrial jobs, and advice on how to thrive in this exciting and challenging work environment. Pizza included!

Tuesday, March 5

8:00 a.m. - 11:00 a.m. | BCEC 205A

GMED-
FIAP

E34. Radiation Detection and Monitoring in Medical Imaging and Therapy

Chair: **Wojtek Zbijewski, Johns Hopkins University**

Modeling of Detector Performance Jeffrey H. Siewerdsen, Johns Hopkins University

New Scintillators for Medical Imaging Vivek Nagarkar, Imaging Sciences PMD Inc.

Detector Technology for Photon-Counting CT Mats Danielsson, KTH Royal Institute of Technology

Range Verification of Proton Therapy Beams Joost Verburg, The Francis H. Burr Proton Therapy Center

Targeted Radionuclide Therapy Robert Jeraj, National Institutes of Health

11:15 a.m. - 2:15 p.m. | BCEC 205A

GSOFT-
FIAP

F34. Polymer Physics to Address the Dual Energy Challenge at Global Industrial Scale

Chair: **Gus Bosse, ExxonMobil**

A New Carbon Ontology: Hydrocarbons as Benign Material Resource for Civilizational-Scale Building Mark Goulthorpe, Massachusetts Institute of Technology

Tools for Polymer Design: Predicting Rheology from Molecular Weight Distribution and Branching Topology Daniel Read, University of Leeds

Micromechanics of Oriented Semi-Crystalline Polymers from Structure to Properties Hans Van Dommelen, Eindhoven University of Technology

A Better Future for Fossil Hydrocarbons and Carbon Nanomaterials Matteo Pasquali, Rice University

Quantifying Tie-Chain Fraction and its Impact on Charge Transport in Model Conjugated Polymers Lynn Loo, Princeton University

12:30 p.m. - 2:00 p.m. | BCEC, Ballroom 3rd Floor

FIAP

G71. Students Lunch with the Experts

Undergraduate and graduate students are invited to lunch with the experts. Learn about careers in industry or a topical area that interests you. Sign up in advance near the Registration desk.

2:30 p.m. - 5:30 p.m. | BCEC 205A

FIAP

H34. Five Decades of Physics at ExxonMobil Corporate Strategic Research

Chair: **Hubert King, ExxonMobil**

Physics at ExxonMobil Corporate Strategic Research: Today and Tomorrow Amy Herhold, ExxonMobil

How Scientific Research at ExxonMobil in the 1980s Showed the Way for Solar Electricity 35 Years Later Tom Tiedje, University of Victoria

Roll and Stumble: A Robust Mechanism for Efficient Self-organization of Granular Matter Sabyasachi Bhattacharya, Ashoka University

Optimal Sound Absorption Metastructures: Practical Solutions from Fundamental Physics Ping Sheng, Hong Kong University of Science & Technology

Pore-scale Study of Multiphase Flow in Porous Media Dave Weitz, Harvard University

Wednesday, March 6

8:00 a.m. - 11:00 a.m. | BCEC 205A

FECS-
FIAP

K34. Future of Physics and Evolving Careers of Physicists

Chair: **Maria Longobardi, Forum on Early Career Scientists**

Emergence by Design in Artificial Spin Ice Cristiano Nisoli, Los Alamos National Laboratory

Imaging Quantum Materials Maria Iavarone, Temple University

The Role of Communications in the Future of Physics Jessica Thomas, American Physical Society

The Career of a Nuclear Physicist at IBM Michael Gordon, IBM Thomas J. Watson Research Center

Distinguished Lectureship Award on the Applications of Physics Talk: Career Opportunities from Fundamental Physics to Patient Treatments Cynthia Keppel, Jefferson Lab

11:15 a.m. - 2:15 p.m. | BCEC 205A

FIAP

L34. The Future of Transportation

Chair: **Michael Gordon, IBM Thomas J. Watson Research Center**

Findings of the Governor's Commission on the Future of Transportation in the Commonwealth of Massachusetts Steven Kadish, Taubman Center, Harvard University

Crowdsourcing Inclusive, Accessible Last Mile Transportation with Self-Driving #AccessibleOlli Joe Speed, IoT Solutions & Technology, ADLINK Technology

The State of the Art for Drone Technology Tim Meyer, IBM

Self-Driving Cars and Lidar Simon Verghese, Waymo

Future of Flight Brian Tillotson, Boeing

2:30 p.m. - 5:30 p.m. | BCEC 205A

FIAP

P34. Recent Advances on Spintronics-based Computing: from Deterministic to Probabilistic

Chair: **Ernesto Marinero, Purdue University**

Recent Progress in Reducing the Current and Time for Magnetization Switching in Magnetic Tunnel Devices for Memory Applications Jonathan Sun, IBM Thomas J. Watson Research Center

Spintronic Devices for Neural Networks Shunsuke Fukami, Tohoku University

Supervised Learning of an Artificial Opto-Magnetic Neural Network with Picosecond Laser Pulses Theo Rasing, Radboud University

P-bits for Probabilistic Spin Logic Supriyo Datta, Purdue University

Bioinspired Computing Leveraging the Physics of Magnetic Nano-Oscillators Damien Querlioz, University of Paris-Sud

5:30 p.m. - 6:30 p.m. | BCEC 205A

FIAP

Q33. FIAP Business Meeting

Get updates on FIAP activities and take part in recognizing new APS Fellows and Prize winners.

- Distinguished Lectureship on Applications of Physics: Cynthia Keppel, Jefferson Lab
- Ken Hass Outstanding Student Paper Award

Thursday, March 7

8:00 a.m. - 11:00 a.m. | BCEC 205A

FEd-
FIAP

R34. Live Long and Prosper as Physicist, Innovator, and Entrepreneur

Chair: **Chuhe Kwon, California State University, Long Beach**

Physicists as Master Innovators: Why Innovation and Entrepreneurship Should be Highlighted in Physics Education Douglas Arion, Carthage College

Live Long and Prosper as a Physicist, Innovator, and Entrepreneur Crystal Bailey, American Physical Society

Understanding the Value of Intellectual Property in Entrepreneurship: Finding Your Path Down the Yellow Brick Road Cynthia Pillote, Snell & Wilmer

Making the Shift from Research to Revenue: Skills that Physicists Need to be Successful in Business Sam Wurzel

Academia to Entrepreneurship- A Multi-pronged Journey Thirumalai Venkatesan, National University of Singapore

11:15 a.m. - 2:15 p.m. | BCEC 205A

FIAP

S34. Adventures of Entrepreneurial Physicists or Where You Should Find Your Next Job

Chair: **Matt Kim, QuantTera**

Harnessing the Nanoscale Physics of Living Systems to Transform the Delivery of Healthcare Anita Goel, Nanobiosym

Physicists who Lead: You Don't Need Your Own Invention To Found a Deep-Tech Startup Omar Zahr, Tandem Launch

Physics and Entrepreneurship – Changing the World with your Brain Jesko Von Windheim, Duke University

Rules for Successful Startups John Fan, Kopin Corp.

Panel Discussion with Speakers on their Wisdom and Future Jobs at Startups

2:30 p.m. - 5:30 p.m. | BCEC 205A

FIAP-
AIP

V34. Innovations from Industry

Chairs: **Steven Lambert, American Physical Society, and Brad Conrad, American Institute of Physics**

Innovations from Texas Instruments- M⁷: MEMS Mirrors Moving in Many Modes for a Multitude of Markets Rick Oden, Texas Instruments

Next Generation Technology from Google's Quantum AI Lab Alan Ho, Google

The Economic Impact of Industrial Physics on the U.S. Economy: What Value We Physicists Bring to Economic Activity John Rumble, R&R Data Services

Future Computing for AI Heike Riel, IBM Thomas J. Watson Research Center

Physics for Tomorrow: Optical Imaging and Sensing Systems Alexander Majewski, United Technologies, Collins Aerospace

5:30 p.m. - 7:30 p.m. | BCEC Northwest Lobby, Meeting Level 2

Industry Day Closing Reception

Join your colleagues, in the lobby near rooms 207-208, for a social time with light refreshments including beer and wine to wrap up this year's Industry Day activities. There will be brief remarks by some of the organizers and sponsors. Hope to see you there!

FIAP-
AIP-
FECS