

2009 Research and Development Conference
Tuesday, November 17, 2009
Kresge Auditorium

7:30 Registration and Continental Breakfast

8:25 ***Welcome & Introduction***

Karl F. Koster, Executive Director

MIT Office of Corporate Relations/Industrial Liaison Program

Plenary Session

8:30 ***Personalized Energy: A Carbon-Neutral Energy Supply for 1 (× 6 Billion)***

Daniel Nocera, Henry Dreyfus Professor of Energy

Professor of Chemistry

MIT Department of Chemistry

9:15 ***Innovation for a Secure Future***

Ray Johnson, Chief Technology Officer

Lockheed Martin Corporation

10:00 Break

10:30 ***From Nature and Back Again... Giving New Life to Materials for Energy, Electronics and the Environment***

Angela Belcher, Germeshausen Professor of Materials Science and Engineering and Biological Engineering

MacArthur Fellow

MIT Department of Materials Science and Engineering

11:15 ***Transportation at MIT***

Cynthia Barnhart, Professor of Civil and Environmental Engineering and Engineering Systems

Associate Dean for Academic Affairs, School of Engineering

Co-Director, Operations Research Center (ORC)

MIT Department of Civil and Environmental Engineering

12:00 Lunch—Startup Exhibit

Concurrent Technology Tracks 2:00 pm to 5:00 pm**Track 1— Life Sciences and Healthcare**

- 2:00 ***Chromatin States and Cell Fate***
Laurie Boyer, Assistant Professor of Biology
MIT Department of Biology
- 2:40 ***Enabling New Capabilities in Drug Delivery Using Gold Nanorods***
Kimberly Hamad-Schifferli, Esther and Harold E. Edgerton Assistant Professor of
Mechanical and Biological Engineering
MIT Department of Mechanical Engineering
- 3:20 Break- Stratton Balcony
- 3:40 ***A Novel Non-invasive ECG-based Method for Predicting Adverse Cardiovascular Outcomes***
Collin Stultz, W. M. Keck Career Development Associate Professor of
Biomedical Engineering
Associate Professor of Health Sciences and Technology
MIT Department of Electrical Engineering and Computer Science
- 4:20 ***Rapid Point-of-Care Monitoring for HIV: Viral Load and CD4 Counts***
Utkan Demirci, HST Affiliated Faculty
Assistant Professor of Medicine and Health Sciences and Technology
Harvard Medical School (HMS) and Brigham & Women's Hospital (BWH)
Harvard-MIT Division of Health Sciences and Technology

Track 2— LIDS

- 2:00 ***Research in MIT's Laboratory for Information and Decision Systems (LIDS) and in The Stochastic Systems Group***
Alan Willsky, Edwin Sibley Webster Professor of Electrical Engineering
Head, Stochastic Systems Group
Director, Laboratory for Information and Decision Systems (LIDS)
- 2:40 ***Networks and Strategic Interactions***
Asuman Ozdaglar, Class of 1943 Career Development Associate Professor of
Electrical Engineering
MIT Department of Electrical Engineering and Computer Science
- 3:20 Break- Stratton Balcony
- 3:40 ***TBD***
Moe Win, Associate Professor of Aeronautics and Astronautics
MIT Department of Aeronautics and Astronautics

- 4:20 ***Computational Optimization, and an application to Photonic Crystals***
Pablo Parrilo, Finmeccanica Career Development Professor of Electrical Engineering and Computer Science
MIT Department of Electrical Engineering and Computer Science

Track 3—Transportation Systems

- 2:00 ***The Role of Information Technology in Improving Transit System Performance***
Nigel Wilson, Professor of Civil and Environmental Engineering
MIT Department of Civil and Environmental Engineering
- 2:40 ***TBD***
Hari Balakrishnan, Professor of Computer Science and Engineering
Research Director, Systems (CSAIL)
Head, Networks and Mobile Systems Group (CSAIL)
MIT Computer Science and Artificial Intelligence Laboratory
- 3:20 Break- Stratton Balcony
- 3:40 ***Autonomous Vehicles and Urban Mobility***
Emilio Frazzoli, Charles S. Draper Associate Professor of Aeronautics and Astronautics
MIT Department of Aeronautics and Astronautics
- 4:20 ***TBD***
P. Christopher Zegras, Ford Career Development Assistant Professor of Urban Studies and Transportation
Lead, Transportation Systems, (MIT Portugal Program)
MIT Department of Urban Studies and Planning

Track 4—Climate Change

- 2:00 ***Climate Change: State of the Science and Implications for Policy***
Ronald Prinn, TEPCO Professor of Atmospheric Chemistry
Director, Center for Global Change Science
Co-Director, Joint Program on the Science and Policy of Global Change
MIT Department of Earth, Atmospheric, and Planetary Sciences
- 2:40 ***Severe Storms and Climate Change***
Kerry Emanuel, Breene M Kerr (1951) Professor of Atmospheric Science
MIT Department of Earth, Atmospheric, and Planetary Sciences
- 3:20 Break- Stratton Balcony

- 3:40 ***Water Availability and Climate Change***
C. Adam Schlosser, Principal Research Scientist
Assistant Director for Research, Joint Program on the Science and Policy of
Global Change (JPSPGC)
MIT Department of Earth, Atmospheric, and Planetary Sciences
- 4:20 ***Air Pollution, Climate Change and Human Health***
Noelle Selin, Research Scientist, Center for Global Change Science
MIT Department of Earth, Atmospheric, and Planetary Sciences
- 5:00 Networking Reception- Kresge Lobby

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Plenary Session

8:05 ***TBD***

Cynthia McIntyre, Senior Vice President, Strategic Operations, Planning and Development

U.S. Council on Competitiveness

8:45 ***America's Energy Innovation Problem (and How to Fix it)***

Richard K. Lester, Head, Department of Nuclear Science and Engineering
Director, Industrial Performance Center

9:30 Break- Kresge Lobby

Concurrent Technology Tracks 10:00 am to 12:40 pm

Track Presentation Schedule

Track 5— Energy

10:00 ***TBD***

Tonio Buonassisi, SMA Assistant Professor of Mechanical Engineering and Manufacturing

MIT Laboratory for Manufacturing and Productivity

10:40 ***A Step Toward Developing Better Fuel Cells for Electric Cars and More***

Yang Shao-Horn, Associate Professor of Mechanical Engineering and Materials Science and Engineering

MIT Department of Mechanical Engineering

11:20 ***Sustainability by Combining Nuclear and Renewable Energy Sources***

Charles Forsberg, Research Scientist

Executive Director, MIT Nuclear Fuel Cycle Project

MIT Department of Nuclear Science and Engineering

12:00 ***Innovation Ecosystem on the Customer Side of the Meter***

Harvey Michaels, Research Scientist

MIT Department of Urban Studies and Planning

Track 6—Leading Edge Electronics

- 10:00 ***Graphene Nanoelectronics: New Opportunities Beyond Moore's Law***
Tomás Palacios, Assistant Professor of Electrical Engineering
MIT Department of Electrical Engineering and Computer Science
- 10:40 ***Integrated CMOS Photonics***
Vladimir Stojanovic, Assistant Professor of Electrical Engineering and Computer Science
MIT Department of Electrical Engineering and Computer Science
- 11:20 ***A Search for an Efficient Reconfigurable Computing Substrate***
Srini Devadas, Professor of Electrical Engineering and Computer Science
Associate Department Head, Electrical Engineering and Computer Science (EECS),
MIT Department of Electrical Engineering and Computer Science
- 12:00 ***Bioelectronics***
Rahul Sarpeshkar, Associate Professor of Electrical Engineering
MIT Department of Electrical Engineering and Computer Science

Track 7—Technologies for Consumer Products and Services

- 10:00 ***Mobile Technologies in Emerging Markets: A Source of Supply Chain Innovation***
Edgar Blanco, Research Associate
Executive Director, MIT Center for Latin-American Logistics Innovation
MIT Center for Transportation and Logistics
- 10:40 ***Consumer Electronics***
V. Michael Bove, Principal Research Scientist
Head, Object-Based Media Group
Director, Consumer Electronics Laboratory (CELab)
MIT Media Laboratory
- 11:20 ***Combinatorial Development of Biomaterials for Medical and Cosmetic Use***
Daniel Anderson, Research Associate
Koch Institute for Integrative Cancer Research (KIICR)
- 12:00 ***Multi-Functional Nanoparticle Coatings***
Michael Rubner, TDK Professor of Materials Science and Engineering
Director, Center for Materials Science and Engineering (CMSE)
MIT Department of Materials Science and Engineering
- 12:40 Adjournment and Bagged Lunch