



Panamerican Advanced Studies Institute

Micro-Electro-Mechanical Systems

San Carlos de Barileche, Patagonia, Argentina
9th - 15th June 2014

AGENDA

Monday, June 21

9:00 – 9:45

Tutorial 1A: pepe
MEMS devices for Force Sensing in Biology
Tom Kenny (Stanford University)

9:45 – 10:30

Tutorial 2A:
Surface Micromachining and Inertial Sensors
Bob Sulouff (Analog Devices)

10:50 – 11:35

Electroacoustic for MEMS-based microphone systems
Gary Elko (Avaya Labs)

11:35 - 12:20

Fabrications of MEMS devices: fundamentals and state-of-the-art
Bill Mansfield (NJNC)

14:30 – 15:15

Tutorial 1B:
Packaging of MEMS
Tom Kenny (Stanford University)

15:15 – 16:00

Tutorial 2B:
Design and development of accelerometers and gyros
Bob Sulouff (Analog Devices)

16:30 – 17:15

Single molecule detection using silicon nanotechnology
Greg Timp (University of Illinois at Urbana Champaign)

17:15 – 18:00

Science and technology of ultrananocrystalline diamond films and applications to MEMS/NEMS multifunctional devices
Orlando Auciello (ANL)

18:00 – 18:45

MEMS activities in Argentina: the INTI experience
Daniel Lupi (INTI – Argentina)

Tuesday, June 22

9:00 – 9:45

Tutorial 3A:
RF MEMS – Switches and Tunable Capacitors
Jeff De Natale (Rockwell)

9:00 – 9:45

Tutorial 4A:
Approaching the Quantum Limit of Nanomechanics
Keith Schwab (Maryland University)

10:50 – 11:35

MEMS for RF and Microwave Applications
Gabriel Rebeiz (University of Michigan)

11:35 – 12:20

MEMS microrelay on SOI technology
Alex Lozano (INTI - Argentina)

14:30 – 15:15

Tutorial 3B:
RF MEMS – Circuits and applications
Jeff De Natale (Rockwell)

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21-25 June 2014

- 15:15 – 16:00 **Tutorial 4B:**
Beyond linear detection of motion: coupling Qubits to Nanomechanics
Keith Schwab (Maryland University)
- 16:30 – 17:15 **Casimir Force Measurements with MEMS**
Ho Bun Chan (University of Florida)
- 17:15 – 18:00 **Actuation of MEMS devices using radiation pressure**
Rafi Kleiman (Mc Master University – Canada)
- 18:00 - 18:45 **Use of MEMS for detecting small forces: the search for corrections to Newtonian gravity**
Ricardo Decca (Indiana University Purdue Univ. Indianapolis)
- Wednesday, June 23**
- 9:00 – 9:45 **Tutorial 5A:**
Drug delivery: a case for implantable electronics
Michael Cima (MIT)
- 9:45 – 10:30 **Tutorial 6A:**
Microactuators and Sensors for Microfluidics and Lab on a Chip applications
Massood Tabib-Azar (Case Western Reserve University)
- 10:50 – 11:35 **Microfluidics chips for integrated DNA Assays**
Carlos Mastrangelo (Corning)
- 11:35 - 12:20 **Microdevices for biomolecular detection**
Scott Manalis (MIT)
- 14:30 – 15:15 **Tutorial 5B:**
Drug delivery: a case for implantable electronics
Michael Cima (MIT)
- 15:15 – 16:00 **Tutorial 6A:**
Multilayer soft lithography: Fabricating microfluidics devices for high-density biological assays
Todd Thorsen (MIT)
- 16:30 - 17:15 **Bio-MEMS: reducing size and time. The example of the Salmonella testing probe.**
Flavio Aristone (CCET – UFMS, Brasil)
- 17:15 – 18:00 **Challenges with MEMS/NEMS technology development for Space applications at NASA/JPL.**
Thomas George (JPL- NASA)
- 18:00 – 18:45 **Non-Packaging applications of LTCC technology**
Mário Gongora (IPT, Brasil)
- Thursday, June 24**
- 9:00 – 9:45 **Tutorial 7A:**
Grating Light Valve Technology – Principles and Applications
Olav Solgaard (Stanford University)



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- 9:45 – 10:30 **Tutorial 8A:**
Optical MEMS: actuating light
Vladimir Aksyuk (Bell Labs, Lucent Technologies)
- 10:50 – 11:35 **MEMS and Integrated nanophotonics for sensor applications**
Dustin Carr (Sandia National Labs)
- 11:35 – 12:20 **Exploring the limits of optical lithography in MEMS and nano devices fabrication**
Ray Cirelli (NJNC)
- 14:30 – 15:15 **Tutorial 9A:**
Pumped Microfluidics for Tunable Photonic Systems
John Rogers (University of Illinois at Urbana Champaign)
- 15:15 – 16:00 **Tutorial 6B:**
Microactuators and Sensors for Microfluidics and Lab on a Chip applications
Massood Tabib-Azar (Case Western Reserve University)
- 16:30 – 17:15 **Micro Chemical Systems: New solutions to chemical engineering problems through miniaturization**
Ronald Besser (Stevens Institute of Technology)
- 17:15 – 18:00 **Toner-polyester and toner-glass: dry, fast, easy and inexpensive processes for fabrication of microfluidic devices**
Claudimir Lucio Do Lago (Sao Pablo University, Brasil)
- 18:00 – 18:45 **Recent progress in the mathematical analysis and numerical simulation of magnetic head sliders**
Gustavo Buscaglia (CAB – Argentina)
- Friday, June 25**
- 9:00 – 9:45 **Tutorial 10A:**
Deep Lithography for Microfabrication
Luiz Ferreira (UNICAMP, Brasil)
- 9:45 – 10:30 **Tutorial 6B:**
Multilayer soft lithography: Fabricating microfluidics devices for high-density biological assays
Todd Thorsen (MIT)
- Saturday, June 26**
- 9:00 – 9:45 **Tutorial 9B:**
Soft Lithographic Methods for Micro/Nanofabrication
John Rogers (University of Illinois at Urbana Champaign)
- 9:45 – 10:30 **Tutorial 10B:**
Deep Lithography for Microfabrication
Luiz Ferreira (UNICAMP, Brasil)
- 10:50 – 11:35 **Microsystems Technology Lab: a MEMS fabrication facility**
Vicky Diadiuk (MIT)
- 11:35 - 12:20 **Microfluidics devices and microsystems: Technologies and perspectives**
Eliphaz Simoes (Univ. de São Pablo, Brasil)



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21 - 25 June 2014

- 14:30 – 15:15 **Tutorial 8B:**
Optical MEMS: actuating light
Vladimir Aksyuk (Bell Labs, Lucent Technologies)
- 15:15 – 16:00 **Tutorial 7B:**
Diffractive Optical MEMS
Olav Solgaard (Stanford University)
- 16:30 - 17:15 **Optical MEMS devices for Telecom systems**
Flavio Pardo (Lucent Technologies)
- 17:15 – 18:00 **Self-positioning micromachined structures made by Micro-origami**
Pablo Vaccaro (ATR Wave Engineering Lab, Japan)
- 18:00 – 18:45 **Silicon 3D patterning and applications**
Cyro Ketzer Saul (Univ. Federal do Parana, Brasil)
- Monday, June 28 - MEMS Case Studies (MCS)**
- 9:00 - 9:45 **MEMS Case Studies I**
Thomas George (JPL- NASA)
- 9:45 – 10:30 **MCS II: Surface patterning of MEMS related materials**
Omar Azzaroni (INIFTA, Argentina)
- 10:50 – 11:35 **MCS III: Micromachined gas sensor and integrated optical circuit**
Alberto Lamagna and Maximiliano Fischer (CNEA)
- 11:35 – 12:20 **MCS IV: Packaging of MEMS: an experience on LTCC**
Liliana Fraigi (INTI- Argentina)
- 14:30 – 15:15 **MCS V: The use of Molecular Simulations in the study of Micro/Nano fluidics: Progress, Applications and challenges**
German Drazer (Levich Institute, CUNY)
- 15:15 – 16:00 **MCS VI: Fabrication and detection NEMS**
Dustin Carr (Sandia National Labs)