

# Spring 2013 IAB & Research Review - Agenda

## Workshop: The TRILLION Sensor Universe: Manufacturing Challenges

Visions of a trillion sensor universe have been discussed by a growing number of thought leaders, particularly those advancing technologies in sensors, radios, sensor networks, and information management. These are disciplines from which a trillion sensors will emerge. This workshop will begin to examine challenges and enablers of the vision, with a particular eye on manufacturing enablers, with a look also at real world applications that have already begun to generate the demand but that also impose cost, precision, packaging, and deployment constraints.

06 March 2013

Sutardja Dai Hall/ Dado & Maria Banatao Auditorium/ UC Berkeley

| <u>Time</u> | <u>Speaker, Event / Topic Information</u>  |
|-------------|--|
| 08:00       | <b>Arrival &amp; Continental Breakfast</b><br>Sutardja Dai Hall Atrium   |
| 08:30       | <b>John Huggins</b><br>BSAC Welcome and Announcements  |
| 08:40       | <b>Prof. Albert P. Pisano</b><br>Introduction to the Workshop: Overview, Challenges, Opportunities, and Enablers   |
| 09:00       | <b>Dr. Kaigham (Ken) Gabriel, Corp VP Motorola Mobility</b><br>New Manufacturing Paradigm: Seamless Scaling from Rapid Prototyping to Volume Production                              |
| 09:30       | <b>Dr. Janusz Bryzek, VP Fairchild Semiconductor</b><br>TSensors: Roadmap to Accelerated Abundance   |
| 10:00       | <b>BREAK</b>   |
| 10:30       | <b>Dr. John Stephen Smith, Founder/CTO Alien Technology</b><br>Alien Trillion Sensor Contribution: RFID Tags and Related Ultra Low Cost Manufacturing via Microfluidic Self Assembly |
| 11:00       | <b>Markus Lutz, Co-Founder and VP SiTime</b><br>MEMS Timing for The Trillion Sensor Universe   |
| 11:30       | <b>Dr. Mark Zdeblick Co-Founder and CTO Proteus Digital Health, Inc.</b><br>Digital Health, Powered By You   |
| 12:00       | <b>Prof. Albert P. Pisano</b><br>PANEL Discussion: Is Manufacturing the Limitation to 1T Sensors?  |
| 12:45       | <b>Box LUNCH</b><br>Sutardja Dai Hall Atrium   |

## BSAC Faculty Research Investigations

06 March 2013

Sutardja Dai Hall/ Dado & Maria Banatao Auditorium/ UC Berkeley

| <u>Time</u> | <u>Speaker, Event / Topic Information</u>  |
|-------------|--|
| 14:00       | <b>John Huggins</b><br>Intro to the Session and to BSAC  |
| 14:15       | <b>Professor Edward A. Lee</b><br><b>Invited Faculty Talk</b><br>The Teraswarm Research Center at UC Berkeley            |
| 14:45       | <b>Richard M. White</b><br>Environmental Monitoring: Gas Pipelines, Distribution Cables, and Airborne Particulate Matter |
| 15:15       | <b>Liwei Lin</b><br>Microfluidics Components for Point-of-Care Diagnostic Applications                                   |
| 15:45       | <b>BREAK</b>   |
| 16:15       | <b>Bernhard E. Boser</b><br>MEMS AIN Ultrasonic Transducers for Low-Power Gesture Interfaces in Smart Phones             |
| 16:45       | <b>Luke P. Lee</b><br>Bionanoscience for Innovative Global Healthcare Research and Technology (BIGHEART)                 |
| 17:15       | <b>Clark T.-C. Nguyen</b><br>MEMS-Based RF-Channelizing Low Power Radios   |
| 17:45       | <b>MIXING RECEPTION</b><br>Sutardja Dai Hall Atrium  |

**Research Review (Posters and Plenary)**  
**07 March 2013**  
**Sutardja Dai Hall Dado & Maria Banatao Auditorium UC Berkeley**

| <b>Time</b> | <b>Speaker, Event / Topic Information</b>  |
|-------------|--|
| 07:45       | <b>Light Breakfast, Conference Materials</b>   |
| 08:30       | <b>John Huggins</b><br>Open Session & Announcements  |
| 08:40       | <b>Session I Chair: Ali Javey</b>  |
| 08:45       | <b>Plenary 1: E. Yegan Erdem</b><br>From Microfluidic Reactors to Smart Surfaces   |
| 09:00       | <b>Plenary 2: Matthew Chan</b><br>MEMS Sensors in the Built Infrastructure - Bonding Chips to Metals via SLID  |
| 09:15       | <b>Morning Faculty Research Overviews</b><br>Michel M. Maharbiz, Liwei Lin, David A. Horsley, Bernhard E. Boser,<br>Clark T.-C. Nguyen, Albert P. Pisano |
| 10:15       | <b>MORNING POSTER SESSIONS</b><br>2nd Floor Classrooms, Sutardja-Dai Hall  |
| 11:40       | <b>Session II Chair:</b><br><b>David A. Horsley</b>  |
| 11:45       | <b>Plenary 3: Dr. Tristan Rocheleau</b><br>Enhancement of Mechanical Q For Low Phase Noise Optomechanical<br>Oscillators                                 |
| 12:00       | <b>Plenary 4: Yang Lin</b><br>Micromechanical Charge Pump  |
| 12:15       | <b>Plenary 5: Dr. Rehan Kapadia</b><br>III-V Photovoltaics: A Vapor-Liquid-Solid Route Towards High Efficiency<br>Non-Epitaxial Thin Film Cells          |
| 12:30       | <b>Plenary 6: Sarah Nitzan</b><br>Epitaxially-Sealed Polysilicon Disk Resonator Gyroscope  |
| 12:45       | <b>LUNCH</b><br>Sutardja Dai Hall Atrium   |
| 13:40       | <b>Session III Chair:</b><br><b>Kris Pister</b>  |
| 13:45       | <b>Plenary 7: Dr. Xavier Vilajosana</b><br>OpenWSN: Open Standards enablers to the Internet of Things and<br>Trillion Sensor Networks                    |
| 14:00       | <b>Plenary 8: Joseph Greenspun</b><br>Ring GINA: Highly Miniaturized Ring-format Wearable Mote   |
| 14:15       | <b>Plenary 9: Dr. Maysamreza Chamanzar</b><br>Next Generation Nanoscale Neural Optrodes  |
| 14:30       | <b>Afternoon Faculty Research Overviews</b><br>Albert P. Pisano; Ali Javey; Ming C. Wu; Kris Pister; Richard M. White;<br>Luke P. Lee                    |
| 15:30       | <b>AFTERNOON POSTER SESSIONS</b><br>2nd Floor Classrooms, Sutardja-Dai Hall  |
| 16:55       | <b>Session IV Chair: Ming C. Wu</b>  |
| 17:00       | <b>Plenary 10: Kevin Limkralassiri</b><br>CuO Nanowires for Energy and Sensing Applications  |
| 17:15       | <b>Plenary 11: Kosuke Iwai</b><br>A Continuous-Flow Microdroplets Lysing System - Microbeads and<br>Nanoparticles  |
| 17:30       | <b>Plenary 12: Pramod Murali</b><br>Magnetic Particle Flow Cytometer   |
| 17:45       | <b>END SESSION:John Huggins</b><br>Announcements & Directions to Reception & Banquet   |
| 18:00       | <b>PRE-BANQUET RECEPTION</b><br>Hearst Memorial Mining Building<br>Moore Lobby   |
| 18:45       | <b>AWARDS BANQUET</b><br>Hearst Memorial Mining Building<br>Moore Lobby  |

**BSAC Industrial Advisory Board**  
**08 March 2013**  
**250 Sutardja Dai Hall UC Berkeley**

| <b><u>Time</u></b> | <b><u>Speaker, Event / Topic Information</u></b>   |
|--------------------|--|
| 08:00              | <b>Light Breakfast</b>   |
| 08:45              | <b>John Huggins</b><br>Open IAB, Agenda, State of Center   |
| 09:15              | <b>New Member Profiles</b><br>Introductions by New Members: NXP Semiconductor, BP, KWJ Engineering, Load IQ, Rosemount; and in absentia: ST Micro, Delta Electronics |
| 10:15              | <b>Dick Tsina</b><br>Paper Ratings/Research Directions and Survey Feedback   |
| 10:45              | <b>John Huggins</b><br>Questions referred to IAB   |
| 10:50              | <b>Members Closed Session</b>  |
| 11:50              | <b>Callback of co-Directors</b><br>Feedback to Center on Technical Directions and Operations   |
| 12:30              | <b>Adjourn &amp; Lunch</b>   |