



**Welcome to the  
18<sup>th</sup> Annual Meeting of the**

***SRC Engineering Research Center for  
Environmentally Benign  
Semiconductor Manufacturing***

**March 25-27, 2014**



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# ERC Program and Meeting Agenda

## Overview

**March 25-27, 2014**

# ERC: A Pioneer in University-Industry Collaborative Research on the ESH Aspects of SC Manufacturing

## Founding Universities (1996)

- U Arizona
- U California – Berkeley
- MIT
- Stanford

*18 years of  
Experience*

## Other University Members

- U Texas - Dallas (2009 - )
- UCLA (2011 - )
- Arizona State U (1998 - )
- U North Carolina (2009 - )
- Johns Hopkins (2012 - )
- North Carolina A&T (2012 - )
- Colorado School of Mines (2012 - )
- U Washington (2008 - )
- Columbia (2006 - 2009)
- Cornell (1998 - 2012 )
- Georgia Inst. of Tech. (2009 - 2012)
- U Maryland (1999-2003)
- U Massachusetts (2006 - 2009)
- Purdue (2003 - 2008 )
- Tufts (2005 - 2008 )
- U Wisconsin (2009- 2012)

# Sources of Funding

- **SRC (core)**
- **Industrial membership**
- **Customized projects (including Intel/ERC initiative)**
- **Cost sharing by participating universities**
- **Grants from Federal and State agencies (NSF, SFAz, WSP, etc.)**
- **Donations**
- **Endowments (currently 3)**

*Success in creating research leverage for S/C industry*

# Types of ERC Research Projects

## Core projects

- Primarily funded by the core SRC contract; some cost sharing by other ERC funds.
- Selected through RFP process: pre-proposals, proposals, and review/selection by a panel appointed by SRC.
- Currently 10 three-year projects that started in 2012.

## Customized projects

- Added throughout the year; review and selection procedures are primarily by the sponsoring member company.
- Currently 5 projects; more are expected in 2014.

# AGENDA

## Wednesday, March 26

- 8:00 – 8:20 AM**      **Welcome and Introduction**
- 8:20 – 8:40**      **Core Projects**  
**Preparation and Characterization of Model CMP Nano-Particles**  
*(U Arizona)*
- 8:40 - 9:05 AM**      **Cell-Based Toxicity Assay-on-Chip for the Next-Generation CMOS Technology**  
*(North Carolina A&T, U North Carolina/Greensboro)*
- 9:05 – 9:30 AM**      **Non-PFC Plasma Chemistries for Patterning Complex Materials and Structures** *(UCLA)*
- 9:30 – 10:00 AM**      **Pad-in-a-Bottle: Planarization with Slurries Containing Suspended Polyurethane Beads** *(U Arizona, MIT)*
- 10:00 – 10:15 AM**      **Break**
- 10:15 – 10:45 AM**      **Detection of Engineered Nanomaterials: Semi-Conductor Facilities and Consumer Devices** *(Arizona State U, Colorado School of Mines, U Washington)*
- 10:45 – 11:10 AM**      **Interactions of Chemical Mechanical Planarization Nanoparticles with Model Cell Membranes: Implications for Nanoparticle Toxicity** *(Johns Hopkins U)*
- 11:10 – 11:40 PM**      **Dispersion, Bioaccumulation, and Mechanisms of Nanoparticle Toxicity**  
*(U Texas/Dallas)*
- 11:40 – 12:50 PM**      **Lunch**

## Wednesday, March 26

- 12:50 – 1:15 PM**      **ESH-Friendly Cleaning and Rinsing of Multi-Material Surfaces and Structures (*U Arizona*)**
- 1:15 – 1:30 PM**      **Computer-Aided Design of Nanomaterials with the Desired Bioactivity and Safety Profiles (*U North Carolina/Chapel Hill*)**
- 1:30 – 1:45 PM**      **Development of QNAR Models to Prioritize Nanoparticles for Biological and Safety Studies (*U North Carolina/Chapel Hill*)**
- 1:45 – 1:55 PM**      **Summary of Interactions on Nano-Materials Projects**
- Customized Projects**
- 1:55 – 2:15 PM**      **Alternative Etchants for Magnetic Materials (*UCLA*)**
- 2:15 – 2:35 PM**      **Detection of Radicals and Reactive Species Formed in Wafer Cleaning Solutions Irradiated with Megasonic Waves (*U Arizona*)**
- 2:35 – 2:55 PM**      **Methods for Reducing UHP Gas Usage in Fabs (*U Arizona, Intel*)**
- 2:55 – 3:05 PM**      **General Discussion**



## Wednesday, March 26

3:05 – 3:20 PM Presentation of Simon Karecki Award

3:20 – 3:35 PM Break

**3:35 – 6:00 PM Poster session**

5:15 – 6:00 PM SRC Student/Industry Networking Event





6:00 – Open Dinner

5:30 – 7:45 PM TAB Caucus w/ working dinner

7:00 – Open Group discussion and planning meetings



## Thursday, March 27

|                         |  |
|-------------------------|--|
| <b>7:00 – 8:00 AM</b>   | <b>Continental Breakfast</b>   |
| <b>8:00 – 8:25 AM</b>   | <b>N<sub>2</sub>O Abatement: Reaction Mechanisms and Methods for Improving Efficiency;</b><br><i>Jost Wendt (U Utah)</i>                             |
| <b>8:25 – 8:55 AM</b>   | <b>Solvent-Free Polymer Films from Inception to Commercialization</b><br><i>Karen Gleason (MIT)</i>  |
| <b>8:55 – 9:20 AM</b>   | <b>Advances in Water and Wastewater Metrology</b><br><i>Shane Snyder (U Arizona)</i>   |
| <b>9:20 – 9:50 AM</b>   | <b>ESH Research Needs and Roadmap</b><br><i>David Speed (IBM), Mansour Moinpour (Intel), Reed Content (GlobalFoundries)</i>                          |
| <b>9:50 - 11:10 AM</b>  |  <b>IAB meeting</b><br><i>Chair: Reed Content (GlobalFoundries)</i> |
| <b>9:50 - 11:10 AM</b>  |  <b>Meeting and planning session of ERC PIs</b>                     |
| <b>11:10 - 11:45 AM</b> | <b>Review Feedback to PIs</b>  |
| <b>11:45 – 1:30 PM</b>  |  <b>Buffet Lunch</b>  |
| <b>12:00 – 2:00 PM</b>  |  <b>Executive Advisory Board Meeting w/ working lunch</b>         |
| <b>2:00 PM</b>          | <b>Program End</b>   |

## **Online Access to Presentation Slides:**

**Marriott WiFi Access:**

**Conference Code: [access](#)**

**Marriott Router: [MarriottConf](#)**

**ERC Website: [www.erc.arizona.edu](http://www.erc.arizona.edu)**

***2014 ERC Annual Review Meeting ; #PRESENTATIONS#***

**User Name: *ERC***

**PW: *ebsmWeb5***