

# IEEE Santa Clara Valley [Reliability](#) Chapter [April Meeting](#)

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**Title:** **Surface and Materials Engineering for Enhanced MEMS Reliability**

**Invited Speaker:** Prof. Roya Maboudian, Dept of Chemical and Biomolecular Engg, UC Berkeley, CA

**Date:** Thursday, April 2, 2015

**Time:** Check in and food at 6:00PM - 6:30 PM. Presentation from 6:30 PM to 7:30 PM.

**Location:** [Atmel Corporation](#), Main Lobby, 1600 Technology Drive, San Jose, CA 95110 ([View Map](#)). *Thank you to Atmel for providing venue for this meeting.*

**Venue Host:** Syed Hussain, Atmel ([bhassanpk@yahoo.com](mailto:bhassanpk@yahoo.com)), Phone: 408-821-4665)

**Abstract:** Advances in the micro- and nanoelectromechanical systems (M/NEMS) have created a growing interest in evaluating the reliability of these miniaturized devices. The critical reliability issues include adhesion (also called stiction), friction, wear and corrosion. In this presentation, the impact of these interactions in the M/NEMS technology will be discussed. I will also introduce a number of MEMS-based microinstruments that we have developed to study these interactions, the insights we have gained using them about the nature of surface interactions involved in M/NEMS, and some of the solutions we have developed to address them. Silicon has been the dominant semiconducting material in micro-/nanosystems technologies. However, the material and surface properties of silicon impose limitations on its use in applications involving harsh environment (such as high temperature, high radiation and corrosive conditions). Silicon carbide (SiC), a wide bandgap semiconductor, is emerging as a material to address the limitations of silicon as it is temperature tolerant, radiation resistant, and chemically inert. In the second part of my talk, I will present recent advances, by our group and others, in the materials science and manufacturing technology of SiC MEMS, with particular emphasis on sensor and energy technologies.

**Biography:** Roya Maboudian is Professor of Chemical and Biomolecular Engineering and Co-Director of the Berkeley Sensor & Actuator Center at the University of California, Berkeley. She is currently serving as editor to the IEEE Journal of Microelectromechanical Systems (JMEMS), and as associate editor to IEEE/SPIE Journal on Micro/Nanolithography, MEMS and MOEMS (JM3). Prof. Maboudian received her B.S. degree in Electrical Engineering from the Catholic University of America, Washington, D.C., and her M.S. and Ph.D. degrees in Applied Physics from the California Institute of Technology in Pasadena. Her research interest is in the surface/interface and materials science and engineering of micro/nanosystems, with applications in harsh-environment sensing, health and environmental monitoring, and energy technologies. She is the recipient of several awards, including the Presidential Early Career Award for Scientists and Engineers (PECASE) from the White House, NSF Young Investigator award, and the Beckman Young Investigator award. She is a Fellow of the American Vacuum Society.

**Admission:** Open to all IEEE members and non-members for FREE.

**Register here:** <http://meetings.vtools.ieee.org/m/33519> We need to know that you are coming in order to plan for seating and for food.

*Attendance to this seminar will count towards professional development hours for IEEE, ASQ.* Please feel free to forward this message to your friends and colleagues.

Regards,

Ann Yun

IEEE SCV Reliability Chapter Program Committee Chair, Email: [yun.ann.12@gmail.com](mailto:yun.ann.12@gmail.com)

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