

# ***Biorobotics Seminar Series***

**ASU** Ira A. Fulton  
Schools of Engineering  
ARIZONA STATE UNIVERSITY

## **Metin Sitti, Ph.D**

### ***Bio-Inspired and Bio-Hybrid Robots at the Small Scale***

**When: Monday, March 25, 2013**

**Where: Schwada Classroom Office Bldg., Room 150**

**Time: 3:30 p.m. – 4:30 p.m.**

This presentation explores bio-inspired and bio-integrated robotic systems at the small scale. Bio-inspired robotics has focused on understanding and adapting the underlying principles of biological systems to enable new robots working in unstructured and complex environments, where animals have evolved to find just-good-enough solutions to survive. Several bio-inspired miniature robotic locomotion systems are introduced. First, novel legged water-surface locomotion systems to walk and run on water surface; next, climbing robots using gecko foot-hair inspired micro-fiber adhesives. Geckos are very agile and robust climbers on a wide range of smooth and slightly rough surfaces. Understanding the underlying principle of gecko foot-hair adhesion, gecko-inspired elastomer micro-fiber adhesives with mushroom shaped tip endings are designed, fabricated and implemented in various miniature climbing robot designs. Moving from bio-inspiration to bio-integration, cells are proposed to be used as on-board micro-actuators by integrating them to synthetic micro-robot bodies to enable sub-millimeter scale swimming robots.

### ***About Professor Sitti***

Metin Sitti received the B.Sc. and M.Sc. degrees in electrical and electronics engineering from Bogazici University, Istanbul, Turkey, in 1992 and 1994, respectively, and the PhD degree in electrical engineering from University of Tokyo, Japan, in 1999. He was a research scientist at University of California at Berkeley during 1999-2002. He is currently a professor in Department of Mechanical Engineering and Robotics Institute at Carnegie Mellon University. He is the director of NanoRobotics Lab and Center for Bio-Robotics. His research interests include mobile micro-robots, bio-inspired miniature robot locomotion, bio-inspired micro/nano-materials, and micro/nano-manipulation.

He received the SPIE Nanoengineering Pioneer Award in 2011, National Science Foundation CAREER Award in 2005, and IBM Smarter Planet Award in 2012. He received best paper and best video awards in major robotics conferences. He was appointed as the Adamson Career Faculty Fellow during 2007-2010. He was the Vice President of the Technical Activities in the IEEE Nanotechnology Council during 2008-2010. He was elected as the Distinguished Lecturer of the IEEE Robotics and Automation Society during 2006-2008. He is the editor-in-chief of Journal of Micro-Bio Robotics.

