

William Mickelson - COINS

Title:

Nanotechnology-Enabled Environmental Monitoring

Abstract:

The mission of the Center of Integrated Nanomechanical Systems (COINS) is to inspire and realize applications directed towards monitoring of environmental conditions through fundamental nanoscience research and nanotechnology development, integrated with suitable societal implications studies and educational, outreach, and knowledge transfer programs. Specifically, the technical focus of COINS is to develop the means for realizing its three major technology applications – (1) Personal Environmental Monitoring, (2) Community-based Environmental Monitoring, and (3) Mobile Environmental Monitoring. These platforms combine technologies of molecular recognition and signal transduction, energy harvesting and conversion, efficient signal processing and wireless communications, and mobility. A key to successful achievement of mission goals lies in the unique COINS nanoscience environment, which brings together highly interdisciplinary teams to solve problems and bridge technology gaps in new ways.

To demonstrate the utility of low power environmental monitoring systems, COINS has designed and built low-cost prototype systems capable of measuring a variety of COINS nanosensors, powering itself using input from energy harvesting devices, and transmitting this information wirelessly to hand-held devices, such as a smart phone, or through a mesh network of monitoring systems.

Bio:

Willi Mickelson is currently the Executive Director of the Center of Integrated Nanomechanical Systems (COINS), a nanoscale science and engineering center headquartered at UC Berkeley dedicated to enabling and realizing novel environmental monitoring applications using nanotechnology. He received his BS from UC Davis in chemistry and physics and his MA and PhD degrees from UC Berkeley in experimental condensed matter physics. In addition to his academic research in nanoscience, Dr. Mickelson has led nanotechnology research and development teams pursuing the commercialization of carbon nanotube-based sensors for industrial and medical applications.