Silicon Carbide Micro-/Nanosystems for Harsh Environment Applications

Roya Maboudian
Department of Chemical & Biomolecular Engineering
Berkeley Sensor & Actuator Center
University of California, Berkeley, CA 94720, USA

Abstract:
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 this talk, I will present recent advances, by our group and others, in the materials science and manufacturing technology of SiC thin film and low dimensional structures, and some applications that these advances have enabled ranging from harsh environment sensing to energy technologies.

Biography:
Professor; Ph.D. California Institute of Technology. IBM Postdoctoral Research Fellowship; AT&T Foundation Special Grant Award; National Science Foundation Young Investigator Award; National Academy of Sciences’ Sixth Annual Symposium on Frontiers of Science; Hellman Family Award; The Arnold and Mabel Beckman Young Investigator Award; DOE - DP Early Career Award for Scientist and Engineers; Presidential Early Career Award for Scientist and Engineers (PECASE); Departmental Citation for Excellence in Teaching; Fellow of the American Vacuum Society.