



THE UNIVERSITY OF
MELBOURNE

Mechanical Engineering

SEMINAR SERIES 2008

Nanomechanical sensors are often used to measure environmental changes with extreme sensitivity. Controlling the effects of surfaces and fluid dissipation presents significant challenges to achieving the ultimate sensitivity in these devices. In this talk, I will give an overview of theoretical/experimental work we are undertaking to explore the underlying physical processes in these systems.

John E. Sader leads an interdisciplinary theoretical group in the Department of Mathematics and Statistics, University of Melbourne. His research interests span a wide range of fields and include studies in nanomechanics, fluid mechanics, elasticity, electromagnetism, colloid and surface science and scientific instrumentation development. This stems from his multidisciplinary background as a trained electrical engineer and subsequent research focus in continuum mechanics.

He holds the position of Associate Professor and Reader at the University of Melbourne, and was recently appointed Adjunct Professor at Trinity College Dublin, Ireland, joint in the School of Physics, School of Engineering, and Centre for Research on Adaptive Nanostructures and Nanodevices (CRANN). He is widely recognised for his work in Atomic Force Microscopy (AFM), for which he developed a calibration technique, now known as the "Sader method" – this method is an established international standard and appears in commercial products sold by several major international companies in the nanoscience area, including Asylum Research (USA), MikroMasch (Estonia) and Novascan (USA).

He was awarded the Barry Inglis Medal 2008 from the National Measurement Institute for his work in the AFM field. In 2003, we received ETS Walton Award from Science Foundation Ireland, from which an ongoing collaboration with Trinity College Dublin spawned. In 2004, he was awarded the Woodward Medal for Science and Technology from the University of Melbourne. A sample of his recent research efforts include development of models for determination of the materials properties of nanowires, dynamic response of nanoparticles under femtosecond laser excitation, failure of plastic materials under gravity, high Reynolds number flow of thin films, rarefied gas dynamics in nanoscale systems, investigation of fundamental properties of microcantilevers/nanocantilevers and development of techniques for their calibration, and models for the dynamic behaviour of elastic beams immersed in fluids.

A/Prof John E. Sader

Reader

Department of Mathematics & Statistics
The University of Melbourne

Tuesday 21st October, 3.30pm
G73 Theatre, Ground Floor, Building 260,
200 Berkeley St, Parkville

4.30pm, Refreshments
Conference Room, Level 4, Building 170,
Mechanical Engineering

The mechanics of nanoscale devices.

MORE INFORMATION

For more Mechanical Engineering seminar information contact:

Professor Ivan Marusic
Department of Mechanical Engineering
E: imarusic@unimelb.edu.au