

YOUNG INVESTIGATOR AWARD



Professor Assad Oberai
Mechanical, Aerospace and Nuclear Engineering Department
Rensselaer Polytechnic Institute

In recognition of fundamental developments in solving inverse problems and problems with multiple spatial and temporal scales

Assad Oberai is an Associate Professor at Rensselaer Polytechnic University. He is also affiliated with the Scientific Computation Research Center and the Inverse Problems Center at RPI. Professor Oberai received his PhD in Mechanical Engineering from Stanford University in 1998. His doctoral work involved developing accurate and efficient finite element methods for solving time-harmonic, wave propagation problems in unbounded domains. As a postdoctoral researcher at Stanford University he developed multiscale formulations of large eddy simulation for modeling turbulent flows and numerical methods for predicting noise generated by such flows. In 2001, he joined Boston University as an Assistant Professor and in 2006 he moved to the Mechanical, Aerospace and Nuclear Engineering Department at RPI. Professor Oberai's research involves developing numerical methods for solving inverse problems and problems with multiple spatial and temporal scales. His work on multiscale problems includes modeling turbulent flows, problems with shocks, and coupling molecular and continuum descriptions in fluids. In inverse problems he has been working on the promising new area of biomechanical imaging. The application of this technology to the detection and diagnosis of different kinds of cancer is underway.

Two of his papers have been identified by the Institute of Physics editors as Select Papers for "their novelty, significance and potential impact on future research." The papers selected were "Elastic modulus imaging: some exact solutions of the compressible elastography inverse problem," by Barbone and Oberai, 2007, and "Coupling between elastic strain and interstitial fluid flow: ramifications for poroelasticity imaging," by Leiderman, Barbone, Oberai and Bamber, 2006. In January 2005 he received an NSF Career Award, from the Fluid Dynamics and Hydraulics Division, for work on large eddy simulation; in September 2004 he received a DOE Early Career PI Award in Applied Mathematics, for work on multiscale problems; and in July 2004 he received a

Concept Award with Paul Barbone from the DOD Breast Cancer Research Program for work on detection and diagnosis of breast cancer.

The Young Investigator Award is a special achievement award for young investigators in Applied Mechanics. This award is now fully endowed by the generous contributions from numerous friends of Thomas J.R. Hughes and will be renamed in 2008.