

BU MECHANICAL ENGINEERING

DEPARTMENT SEMINAR



Brian D. Storey

Olin College

Brian D. Storey is currently Associate Professor of Mechanical Engineering at the Franklin W. Olin College of Engineering in Needham, MA. He joined Olin College in 2000 and is one of its founding faculty members. Olin is a new educational institution which seeks to redefine engineering as a profession of innovation. Professor Storey received BS, MS, and PhD degrees from the University of Texas, the University of Illinois at Urbana-Champaign, and the University of California at Berkeley, respectively, all in mechanical engineering. His general research interests are in fluid mechanics and computational science, the more recent work concentrating on microfluidics and electrokinetic flows.

Electrokinetic flow in microfluidics: problems at large voltages

11:00 AM Friday, April 9th, 2010

Room 245, 110 Cummington Street

Refreshments served at 11:45 AM

Many microfluidic devices make use of electric fields to manipulate fluids, particles, cells, or charged molecules. Some such devices manipulate fluids through micron sized electrodes inside flow channels. Most models of these applications are rooted in the classical theory of electrokinetics, now older than a century. However, these models fail at moderately large to large voltages. (In the case of microfluidic flow, the failure occurs at only a few volts.) A discussion is given of the break-down of classical theory, and some simple remedies are proposed. While some experimental trends may be explained, more problems have been uncovered than have been solved. The current level of understanding of the overall topic confirms Wolfgang Pauli's assertion that "surfaces are the work of the devil."