



FMRC Fluid Mechanics Research Seminar Series

AC Electrokinetic Phenomena in Microfluidic Systems

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İTÜ Uçak ve Uzay Bilimleri Fakültesi, TAV Konferans Salonu

Abstract: Experimental and theoretical research on manipulation of colloids and biological particles in microfluidic systems using AC electric fields will be presented. Navigating the AC frequency-amplitude phase space, we effectively and reversibly tune colloidal interactions to yield various steady-state configurations. The colloidal system response can be predicted using a scaling analysis based on the relative importance of dielectrophoresis, electrophoresis, AC-electroosmosis, gravity and Brownian motion. Specific applications of AC electrokinetic phenomena for water and food safety and biomedical use will be presented.

Biography: Prof. Ali Beskok received his B.S. in Mechanical Engineering from Middle East Technical University, Ankara, Turkey in 1988. He received an MS degree in Mechanical Engineering from Indiana University Purdue University in Indianapolis in 1991, and M.S. and Ph.D. degrees from Princeton University, Mechanical and Aerospace Engineering in 1994 and 1996, respectively. Dr. Beskok was a Visiting Scholar at Brown University, Center for Fluid Mechanics from 1994 to 1996, and a Post Doctoral Research Associate at Massachusetts Institute of Technology, Research Laboratory of Electronics from 1996-1998. He joined Texas A&M University Mechanical Engineering Department as an Assistant Professor in 1998, and became an Associate Professor in 2004. In 2007, he moved to Old Dominion University, Mechanical and Aerospace Engineering Department as the Batten Endowed Chair Professor of Computational Engineering. He is the founding director of the ODU Institute of Micro and Nanotechnology. In August 2013, he moved to Southern Methodist University as the chair of the Mechanical Engineering Department.

