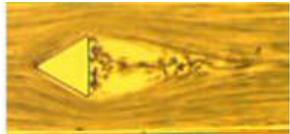
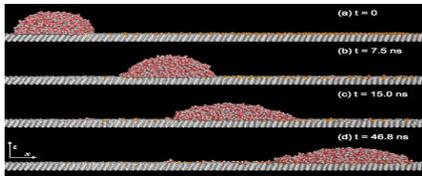


Photoelastic measurement of stress propagation from sinusoidal compression of a densely packed unbonded granular material under constant pressure. (Mark Shattuck)



High-speed imaging of a suspension of micron scale particles past an obstacle, showing segregation of particles from fluid in the re-circulating wake (Jeff Morris).



Molecular dynamics simulation of the motion of a water drop on a solid surface driven by a wettability gradient from left to right. (Joel Koplik)

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Benjamin Levich Institute Current Research and History



Morton Denn, Director (2000—present)

Morton Denn is the Albert Einstein Professor of Science and Engineering and Director of the Institute. His research is broadly concerned with the use of rheology, non-Newtonian fluid mechanics, and polymer physics to solve problems of interest in the processing of complex fluids.



Joel Koplik, Professor of Physics

Joel Koplik's research involves micro-scale numerical simulation in fluid mechanical systems. The principal area is the molecular dynamics simulation of fluid flows, which aims to understand fluid mechanical phenomena at atomic length and time scales that are not adequately handled by the usual continuum equations. Recent work has focused on interfacial and particulate flows.



Hernan Makse, Professor of Physics

Professor Makse's research group focuses on the study of jammed matter, ranging from colloidal suspensions and dense emulsions to granular materials and glasses, in search of unifying theoretical frameworks. His group also explores a variety of out-of-equilibrium systems in terms of their behavior as they experience structural arrest or jamming.



Charles Maldarelli, Professor of Chemical Engineering

Charles Maldarelli's research interests focus on topics in interfacial chemistry and fluid mechanics, microfluidics and nanoscience engineering. Current projects include (i) continuum and molecular dynamics studies of micelle adsorption at a fluid interface, (ii) the use of particle arrays in microfluidic devices for biomolecular, high throughput, screening applications, (iii) the self-propulsion of colloids, and (iv) microfluidic studies of electrocoalescence of water droplets in oils.



Jeffrey Morris, Professor of Chemical Engineering

Current research areas being explored by Professor Jeffrey Morris' group are: structure and rheology of inertial suspensions, transient jamming in concentrated non-Brownian suspensions, reactive emulsions, dynamics of colloidal gels, shear-induced ordering in concentrated colloidal suspensions, and particle ordering in microfluidic channels.



Mark Shattuck, Professor of Physics

Granular materials are an integral part of nature and industry. A fundamental understanding of granular systems, comparable to the current understanding of fluids, does not exist but would have far reaching implications. Professor Mark D. Shattuck and his group study flowing granular material using a combination of laboratory experiments, molecular dynamics, and numerical integration of continuum models.

Levich Institute History



Benjamin Levich, a distinguished Soviet physicist and leading refusenik, came to the City College of New York (CCNY) in 1979 as the Albert Einstein Professor of Science and founding director of a new interdisciplinary Institute of Applied Chemical Physics. Research in the Institute reflected Professor Levich's long interest in physico-chemical hydrodynamics: physical problems in which there is an essential interaction between fluid flow, mass and heat transfer, interfacial phenomena, and chemical reaction. The Institute was renamed the Benjamin Levich Institute for Physico-Chemical Hydrodynamics following Professor Levich's untimely death in 1987, honoring his contributions and reflecting his important book of that title.



Andreas Acrivos became the second Institute Director in 1988. During his tenure the Institute broadened the scope of research activities, enhanced the involvement of Institute faculty members in the programs of the academic departments, and established an international reputation as a research center in fluid mechanics and transport phenomena.

Morton Denn became the Institute Director in 2000, following Professor Acrivos's retirement. The Levich Institute maintains the interdisciplinary focus established at its founding, and it serves as a leading research center for the study of fundamental problems of flow and transport in soft materials with complex structure, including suspensions, colloids, gels, amphiphiles, granular media, liquid crystals, and polymer melts and solutions.

The six full-time faculty members of the Institute are currently associated with the Departments of Chemical Engineering and Physics at the City College of New York. All Levich Institute faculty members, Ph.D. students, and Research Associates are housed together in offices and laboratories in Steinman Hall.