Mechanical Engineering Department Seminar

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1130 Mechanical Engineering
111 Church Street SE, Minneapolis, MN 55455

Inverse Design of Interactions for Assembly

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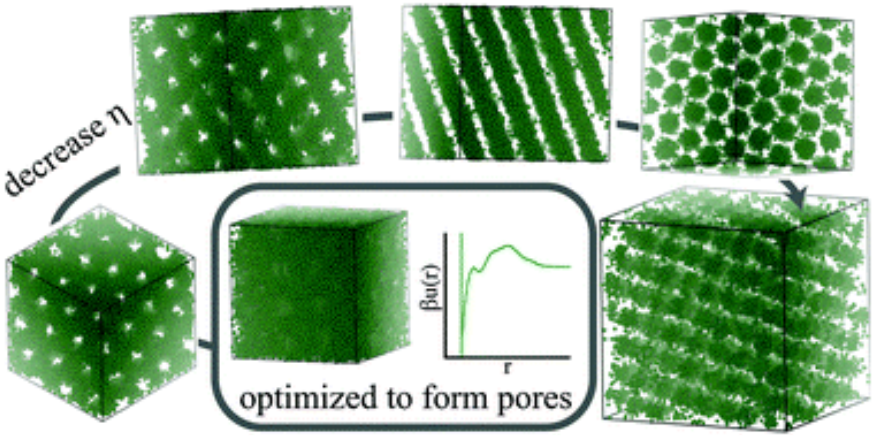
Nanometer-scale, colloidally-stable particles suspended in a fluid can be driven to assemble into a wide variety of different structures depending on the control parameters of the system and the nature of the effective interparticle interactions. In many cases, the relevant interactions are tunable via external fields, physical or chemical modification of the particle surfaces, or changes in the composition of the suspending solvent. In this talk, we explore simple models for the 'inverse' design of such interactions for cluster or superlattice forming systems. We also touch upon practical aspects associated with realizing and characterizing the designed structures.



Bio: Tom Truskett is the Les and Sherri Stuewer Endowed Professor and Department Chair in Chemical Engineering at the University of Texas at Austin. He earned bachelor of science and doctoral degrees in chemical engineering from the University of Texas at Austin and Princeton University, respectively, and was a postdoctoral fellow in biophysics at the University of California, San Francisco. In 2002, he joined the faculty of Chemical Engineering at the University of Texas at Austin. His group studies how interfaces and confinement impact the behavior of soft matter including molecular fluids, colloidal suspensions, protein solutions, and glasses. Tom is a Fellow of the American Physical Society and the American Institute for Medical and Biological Engineers. He is also recipient of an Alfred P. Sloan Research Fellowship, a David and Lucile Packard Foundation Fellowship, a National Science Foundation's CAREER Award, TAMEST's O'Donnell Award for Engineering, and AIChE's Allan P. Colburn Award.