Postdoctoral fellow job description:
Theory of peptoid-mediated control of carbonate formation

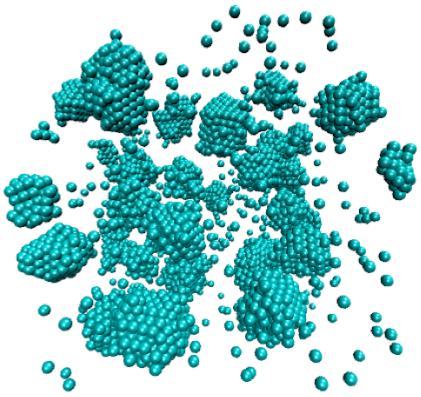
Summary:

Work with theorists and experimentalists at the Molecular Foundry at Lawrence Berkeley National Laboratory to develop theoretical and computational models of the conversion of carbon dioxide to solid forms (including crystalline carbonates), mediated by a class of bio-inspired polymers called peptoids. The aim of this research is to modify current theories of phase ordering and phase separation in order to explain and predict the ability of synthetic polyelectrolytes such as peptoids to control the mineralization of subsurface carbon dioxide.

This is a one-year appointment with the possibility of renewal for up to two additional years.

Background:

This appointment follows the recent establishment of a multi-investigator Energy Frontier Research Center tasked with "Establishing the scientific foundations for the geological storage of carbon dioxide". Carbon dioxide's conversion to storable, solid forms such as crystalline carbonates follows complex assembly pathways that involve multiple amorphous intermediates, challenging current theories of phase ordering and phase separation. Peptoids, synthetic molecules structurally akin to peptides, show promise as mediators of these assembly pathways. This position will provide theoretical support for in-house experiments that will probe peptoid control of carbonate formation; these experiments will be furthered by a postdoc appointment complementary to this theoretical position.



The Molecular Foundry at Lawrence Berkeley National Laboratory is a user facility for the design, synthesis and characterization of materials with nanometer dimensions. One of five such Nanoscale Science Research Centers recently established by the U.S. Department of Energy, its charter defines two primary missions: a) conduct outstanding research across the breadth of nanoscience; and b) collaborate with scientists from around the world who visit to use its state-of-the-art instruments, techniques and expertise to further their own nanoscience research efforts [see http://foundry.lbl.gov/].

Qualifications:

Ph.D. in theoretical condensed matter physics, chemistry, materials science, or a related discipline whose focus is the study of phase changes in dynamically complex materials such as glasses, gels, colloids, polymers etc. Expertise in the construction, analysis and simulation of coarse-grained models of such materials is essential. Experience with atomistic simulation is highly desirable.

Deadline for applications is July 31st 2009. To apply, please follow instructions for job #23134 on the LBNLCareers website (`http://cjo.lbl.gov/LBNLCareers/`).