复旦大学物理系 物质科学报告

Time:2:00pm, Tuesday, 2020.01.14

Location: Room C108, Jiangwan Physics Building

Title: Some Puzzles and Research Opportunities in Soft Matter Science

Speaker: Steve Granick

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Abstract: A fundamental challenge of modern physical science is to form structure that is not frozen in place but instead reconfigures internally driven by energy throughput and adapts to its environment robustly. Predicated on fluorescence imaging at the single-particle level and on liquid-cell TEM, this talk describes quantitative studies of how this can happen. With Janus colloidal clusters, we show the powerful role of synchronized motion in self-assembly. In living cells, we find that transportation efficiency problems bear a provocative parallel with polymer chain trajectories with their spatial extent, and with jammed matter in their time evolution. With catalytic enzymes, we find problems of mechanobiology. A picture emerges in which simple experiments, performed at single-particle and single-molecule resolution, can dissect macroscopic phenomena in ways that surprise.

Steve Granick

Member of the U.S. National Academy of Sciences

Member of American Academy of Arts and Sciences.

He received his PhD degree in University of Wisconsin in 1982. In 1982, he joined the French University of France and University of Minnesota for postdoctoral research. He became an professor in University of Illinois at Urbana-Champaigns. Since 2015, he became the director of the Laboratory at the Korea Institute of Basic Science in Soft Materials and Life Materials. Among his other major awards are the Paris-Sciences Medal, APS national Polymer Physics Prize, and ACS national Colloid and Surface Chemistry Prize.