New dimensions of colloids and nanoparticles
– from Janus Particles to Smart Materials

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Seminar on March 27, 2018 at 11:00 am in 2004 Black

Abstract
Named after an ancient Roman god, Janus particles are new materials with different chemical compositions on the two sides of a single particle. Recent studies have shown that amphiphilic Janus particles will form unique assembly structures. In addition, Janus particles can adsorb strongly at interface. However, it remains challenging to synthesize Janus particles in large quantity. In addition, it is not clear how to utilize Janus particles in real applications. In this presentation, I will address these challenges by first demonstrating our new methods to fabricate Janus particles in large quantity with well-defined geometry. Then I will talk about potential applications of Janus particles as emulsion stabilizers, coating additives and biomedical agents.

Dr. Shan Jiang is an Assistant Professor in the Materials Science and Engineering department at Iowa State University. He obtained his Ph.D. from University of Illinois at Urbana-Champaign, working with Professor Steve Granick on surface, interface and colloidal particles. After graduation, he furthered his study at MIT Langer lab as a postdoc and worked on gene delivery and nano-medicine. He then took a detour and worked as a project leader at the Dow Chemical Company, where he helped develop the coating platforms for different commercial products. Dr. Jiang has published one U.S. patent and more than 30 peer reviewed articles. His research has been cited more than 2000 times. Dr. Jiang received the Racheff-Intel Award, the ACS Younger Chemists Leadership Development Award, and the recent 3M non-tenured faculty award.

This seminar counts towards the ME 600 seminar requirement for Mechanical Engineering graduate students.

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