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Department of Chemistry

Seminar

9:45 a.m. Tuesday, December 11, 2012 • 331 Smith Hall



Postdoctoral Scholar

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Molecular Engineering on Mechanically Interlocked Molecules and Conductive Polymers

Abstract

The application of mechanically interlocked molecules remains an area of intense activity in research. The performance of the related devices are governed by the switching behavior of the mechanically interlocked molecules in the different environments, such as in aqueous solutions, in polymer scaffolds, or on the surfaces of nanostructures. The first part of this talk describes my efforts to explore switchable mechanically interlocked molecules in environments, other than traditionally in solution of organic solvents, using molecular engineering approaches. On the basis of the knowledge gained from these investigations, we have been able to produce some promising blueprints for the future development of MIMs-related devices that can be used in the fabrication of artificial muscles, active plasmonics and molecular prosthetics.

The second part of my seminar describes the molecular engineering for the enhancement of intramolecular charge transport by confined organization of conductive units along high polymer chains. Conductive fullerene units were arranged in one dimension by locally organizing them with spatially constrained covalent bonds. The electron mobility measured for the thin film transistor devices from the polymers was more than an order of magnitude higher than that of the monomers, as a result of the confined inter-fullerene interactions within the long polymer chains.

Host: Andrew Taton

Refreshments will be served prior to the seminar.