

NANO HOUR

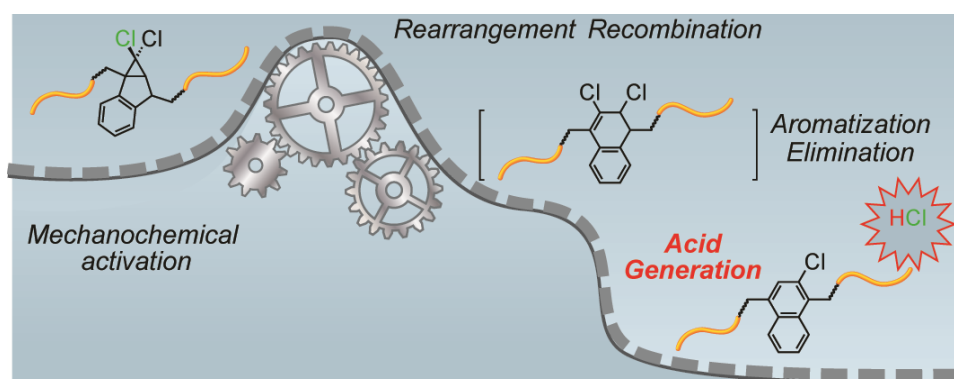
Wednesday, December 5, 2012 at 3:00 pm
Beckman Institute - *Room 1005 (Special Room)*

Proton-Coupled Mechanochemical Transduction – Mechanogenerating Acids

Dr. Charles E. Diesendruck, Chemistry

Postdoctoral Researcher with Professor Jeffrey S. Moore

Biological structural materials have the intrinsic capability to self-reinforce, self-heal or remodel in response to macroscopic damage. Incorporation of these features in synthetic polymers could lead to materials with service lifetimes well beyond current generation materials, circumventing costly repairs. Acid catalyzed reactions can be used to promote the remodeling of a polymer backbone and/or side chains because the catalyst is simple, stable and can diffuse in the solid state, allowing it to reach high turnover. Using known photochemically and thermally-promoted acid-producing reactions, unique mechanically sensitive chemical functionalities (mechanophores) with acid-releasing capability were designed to produce a simple catalyst that can induce numerous chemical transformations in materials under mechanical stress. The development of these new mechanophores is a first step towards force-induced remodeling of stressed polymeric materials that will potentially enable the development of smart, autonomic self-healing polymers and composite materials.



Coffee and cookies will be served

<http://nanohour.beckman.illinois.edu>