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“Enabling Function in Soft Materials through Molecular Design”

The convergence of synthetic organic and polymer chemistry enables opportunities to create materials with unprecedented function. This seminar will explore the use of molecular design strategies to develop soft materials with exciting properties for applications ranging from sensing to self-healing. The first part of the talk will highlight a case study involving azulene-based polymers, illustrating how small variations in monomer structure can be harnessed to systematically modulate optoelectronic and stimuli-responsive behavior. The second part of the talk will investigate the emerging genre of polymer mechanochemistry and the relationship between mechanical force and chemical reactivity. Recent advances in the field including the discovery of a mechanically-facilitated retro-Staudinger cycloaddition and the development of a new mechanochromic force probe for stress sensing in polymeric materials will be discussed as well as new insights into fundamental mechanochemical processes. Finally, a closely related topic will address the translation of simple chemical concepts to create a technological platform for visual damage detection in engineering materials.

Thursday

Dec. 8

3:30 pm

1315

Chemistry

SPECIAL SEMINAR