

Appl. Chem. Department seminar, The 76th CMS International Seminar

The 9th Excited-state Functional Chemistry Seminar, The 32nd Q-Colloquium

Prof. Grace Han (Lab HP)

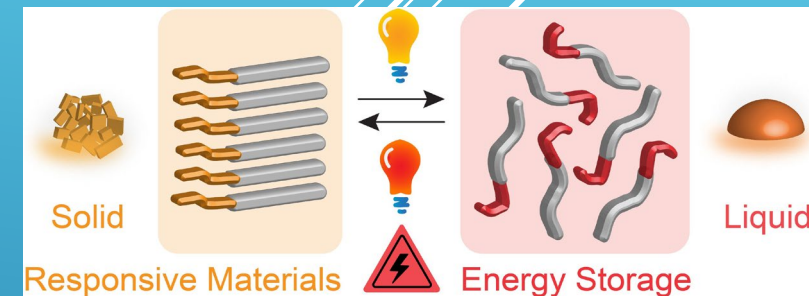
Brandeis University, USA



“Light-responsive materials for a sustainable future”

Date: July 14th (Fri) 2023, 16:00~ (JST)

Place: West 4, 2nd floor, Ito Campus, and Zoom/YouTube



Abstract: Functional organic material systems that exhibit light-responsive phase transitions, solubility changes, and nanoscale mechanical changes, triggered by external stimuli, notably light, have a game-changing potential in waste heat recycling, solar energy conversion and storage, recyclable catalysis, single-molecule sensing, and reversible nanomaterial assembly. Since the photo-switching of molecules has been traditionally studied in dilute solution, there exists a critical need to unravel this process in a crowded environment of condensed liquid or solid for successful applications. Specifically, fundamental knowledge of light-molecule interaction in condensed phases and how such photomechanical switching impacts intermolecular interactions is currently lacking.

In this talk, design principles of optically-controllable materials that incorporate organic photoswitches, ranging from azobenzenes to hydrazones, will be presented. Various photochromic core structures and functional groups have been explored to understand the structure-property relationship of the stimuli-responsive material systems. The application of photo-controlled materials in solar photon and thermal energy storage as well as sustainable catalysis will be discussed.

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Admission: free