2025

CHEMISTRY SEMINAR

Date: June 25 (WED, 5 PM - 6 PM), 2025

Venue: Science Hall 429, Yonsei University

Exceeding the Shockley–Queisser Limit in Solar Energy Conversion with Singlet Fission

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Molecular triplet excitons are ‘dark states’ because of the forbidden nature of the electronic transitions. However, they can be harvested to enhance the efficiency of optoelectronic devices such as organic light-emitting diodes and solar cells. For example, multiexciton generation through singlet fission has the potential of exceeding the Shockley–Queisser limit in photovoltaic devices. However, only very few materials suitable for singlet fission are available at present, and the mechanism of inter- and intra-molecular singlet fission are not fully understood. Detailed knowledge regarding the processes is crucial for developing new materials. In this talk, I will present the molecular design and synthesis strategies to meet the exchange energy and morphology criteria for molecules to undergo singlet fission.

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