講演会のお知らせ

Repurposing Aromaticity for Organic Electronics: Making, Breaking and Stacking π-Circuits

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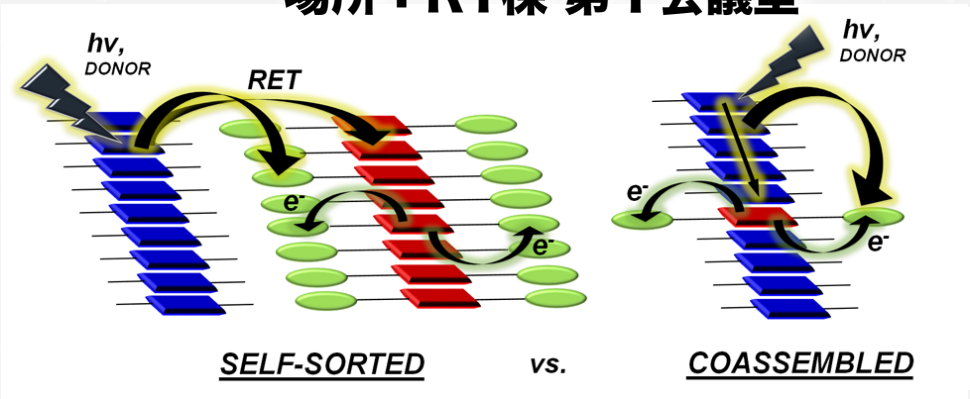
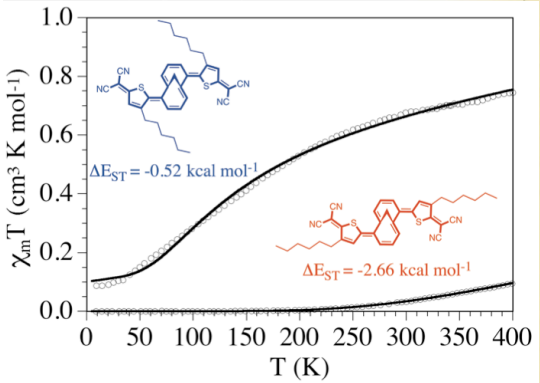
日時：1 月 31 日 (木) 15：30 ～

場所：R1棟 第１会議室





ABSTRACT: Several emerging energy technologies require flexible and solution-processable organic-based electronic materials capable of specific degrees of energy transport in order to achieve desired functions. The range of materials (and applications) is quite diverse, as exemplified by new materials that can facilitate photovoltaic, light emitting or transistor behavior. The molecular requirements necessary to achieve these functions vary greatly, and this lecture will highlight two fundamental structural considerations relevant to the design of materials that can foster or otherwise regulate efficient energy/charge migration. One aspect involves the use of unusual aromatic building blocks with relatively low degrees of resonance stabilization that can encourage intramolecular electronic delocalization. These types of molecules can foster different types of "quantum interference" tunable through anion binding and can display fluxional aromatic properties that support diradical character. Another aspect involves the control of intermolecular electronic delocalization through the use of water-soluble oligopeptides attached to pi-conjugated oligomers that self-assemble into fibrillar bioelectronic nanostructures containing internal pi-stacked electronic conduits. This platform enables peptidic energy transport in completely aqueous environments of high ionic strength. In both aspects, the making, breaking and stacking of aromatic rings plays a critical role to define the physical properties of the materials and the possible arenas where they may be employed.

KEY REFERENCES: (1) *J. Am. Chem. Soc.* **2017**, *139*, 8685–8692. (2) *J. Org. Chem.* **2017**, *82*, 13440–13448. (3) *J. Am. Chem. Soc.* **2016**, *138*, 3362-3370. (4) *Angew. Chem. Int. Ed.* **2015**, *54*, 5888–5893.

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