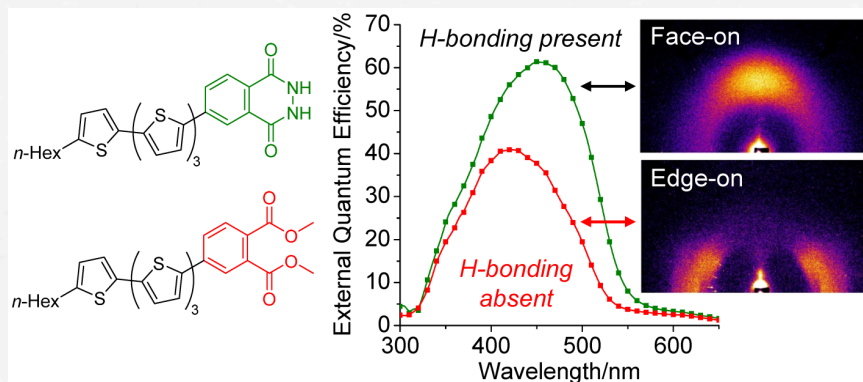


## 講演会のお知らせ

# Hydrogen Bond Directed Self-Assembly of $\pi$ -Systems from Solution to Optoelectronic Thin Films

Prof. Dr. Ronald K. Castellano

Department of Chemistry, University of Florida



日時：8月3日(金)

15:00 ~ 17:00

場所：R1棟 第1会議室

連絡先：福島 孝典 (5220)

### ABSTRACT and REFERENCES

Although “ordered” organic  $\pi$ -conjugated assemblies outperform “disordered” ones in many optoelectronic device applications, we are far from being able to port the well-understood supramolecular recipes of  $\pi$ -systems from solution to solid-state device environments. For the past several years we have been exploring hydrogen bond (H-bond) directed self-assembly of  $\pi$ -systems along these lines, for example, to enhance their absorption and charge transport properties for organic photovoltaic (OPV) applications.<sup>1</sup> Various examples of oligothiophenes outfitted with heterocycles capable of forming H-bonded “rosettes” will be discussed in this context. The second part of the talk will introduce new monomers derived from [2.2]paracyclophane (pCp) that are capable of robust H-bond directed self-assembly into one-dimensional nanostructures in solution and the solid state.<sup>2</sup> The design introduces transannular (intramolecular) H-bonds between pairs of pseudo-ortho-positioned amides as a way to preorganize the molecules for intermolecular H-bonding with two neighbors. The result is formation of homochiral, one-dimensional pCp stacks that show supramolecular polymer signatures in solution.

[1] a) Castellano, R. K. *et al.*, *J. Mater. Chem. A*, **2014**, 2, 1541. b) Castellano, R. K. *et al.*, *Adv. Funct. Mater.*, **2014**, 24, 5993. c) Castellano, R. K. *et al.*, *Org. Biomol. Chem.*, **2014**, 12, 7932. d) Castellano, R. K. *et al.*, *J. Org. Chem.*, **2015**, 80, 1828. e) Castellano, R. K. *et al.*, *Org. Electron.*, **2015**, 19, 61. f) Castellano, R. K. *et al.*, *Adv. Funct. Mater.*, **2015**, 25, 5166. g) Castellano, R. K. *et al.*, *J. Mater. Chem. C*, **2018**, Advance Article.

[2] Castellano, R. K. *et al.*, *Angew. Chem. Int. Ed.*, **2016**, 55, 10726.