

## Control of $\pi$ - $\pi$ Interaction and Electron-Transfer Properties of Photosynthetic Models

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I was engaged in novel projects under the direction of Dr. Jean-Michel Barbe, Dr. Claude P. Gros, and Prof. Roger Guilard at Université de Bourgogne. The projects were mainly focused on the control of  $\pi$ - $\pi$  interactions between porphyrin moieties. The  $\pi$ - $\pi$  interactions between porphyrins play important roles in photosynthetic systems.<sup>1</sup>

The first project is the synthesis of porphyrin dyad linked by flexible ligands. The  $\pi$ - $\pi$  interaction and the electron-transfer properties of this porphyrin dyad are finely controlled by metal coordination. The second project involves the porphyrin triad systems. These systems were analyzed by UV-vis as well as ESR and nanosecond laser flash photolysis. Although the project is just the beginning, it is strongly expected that the comparisons among porphyrin trimer/dimer/monomer systems give us the significant insight into electron-transfer properties of the natural photosynthetic systems as well as artificial ones.

The experience in Dijon provides me not only new possibilities for further expansion of my research but also excellent opportunities to communicate with lots of people from different backgrounds, certainly contributing to the objectives in the current international collaboration program of graduate school for faculty development.



1. Takai, A.; Gros, C. P.; Barbe, J-M.; Guilard, R.; Fukuzumi, S. *Chem.–Eur. J.* **2009**, *15*, 3110.