

Development of Novel Light-Absorbing and Emitting Materials Based on Molecular/Supramolecular Systems

Project Leader

ITO Akitaka, Ph.D.

Assistant Professor, Material and Life Systems Engineering

1. Objective

This project is aimed at:

Developing novel light-absorbing and emitting (fluorescent/phosphorescent) materials based on molecular/supramolecular systems. We have succeeded in elucidating and controlling the spectroscopic, photophysical and photochemical properties of organic molecules, transition metal complexes and their complex systems. These materials are possible candidates to act as the key element in a variety of photochemical applications such as sensors, organic light-emitting diodes (OLEDs) and solar-energy conversion systems.

2. Project Outline

To that end, the project will consist of the following phases:

- (a) The design, synthesis, and preparation of photofunctional materials
- (b) Photophysical measurements for (a)
- (c) Understanding molecular/electronic structures of (a) in the ground and excited states

3. Expected Performance

In this project, the successful candidate would be expected to:

- (a) Synthesize organic/inorganic molecules
- (b) Perform photophysical measurements

4. Required Skills and Knowledge

The successful candidate for this project will have the following knowledge and skills:

- (a) Photochemistry and coordination chemistry
- (b) Fundamental experimental manipulations
- (c) Operating absorption/emission spectrometers and pulsed laser

References

1. A. Ito, K. Kawanishi, E. Sakuda and N. Kitamura, *Chem.–Eur. J.*, **2014**, *20*(14), 3940–3953.
2. A. Ito and T. J. Meyer, *Phys. Chem. Chem. Phys.*, **2012**, *14*(40), 13731–13745.
3. A. Ito, D. J. Stewart, Z Fang, M. K. Brennaman and T. J. Meyer, *Proc. Nat. Acad. Sci. USA*, **2012**, *109*(38), 15132–15135.
4. A. Ito, T. Hirokawa, E. Sakuda and N. Kitamura, *Chem. Lett.*, **2011**, *40*(1), 34–36

See our admission guidelines:

http://www.kochi-tech.ac.jp/kut_E/graduate/admission.html

Contact

E-mail: ito.akitaka@kochi-tech.ac.jp