

# Development of New Organic Transformations in Supercritical Fluids

## Project Leader

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## Faculty Members Involved in this Project

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## 1. Objective

### This project is aimed at:

Investigating new applications of supercritical fluids as reaction media in synthetic organic chemistry. We have developed new types of organic transformations, such as one-step and non-catalytic intramolecular redox reactions in supercritical water<sup>1</sup>, and reduction and catalytic hydrogenation by biomass as hydrogen source in supercritical water.<sup>2</sup> The knowledge obtained will greatly contribute to understanding of the essential nature of the reaction in supercritical fluids and will further work towards green chemistry.

## 2. Project Outline

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

- (a) The creation of new organic transformations in supercritical fluids.
- (b) The understanding of this reaction mechanism.
- (c) Application of this reaction to the development of new substrates.

## 3. Expected Performance

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

- (a) Creating new organic transformations in supercritical fluids.
- (b) Clarification of the nature of this reaction mechanism.

## 4. Required Skills and Knowledge

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

- (a) Knowledge of synthetic organic chemistry.
- (b) Skills to identify molecular structures by means of IR, UV-Vis, MS, NMR, and XRD.

## References

- (1) X. Chen, K. Sumoto, S. Mitani, T. Yamagami, K. Yokoyama, P. Wang, S. Hirao, N. Nishiwaki, and K. Kobiro, *J. Supercrit. Fluids*, **62**, 178–183 (2012).
- (2) K. Kobiro, K. Sumoto, Y. Okimoto, and P. Wang, *J. Supercrit. Fluids*, **77**, 63–69 (2013). doi: 10.1016/j.supflu.2013.02.012

## See our admission guidelines:

[http://www.kochi-tech.ac.jp/kut\\_E/graduate/admission.html](http://www.kochi-tech.ac.jp/kut_E/graduate/admission.html)

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