S01-1 Development of novel C-C bond formation using heterogeneous platinum metal catalysts

◯Hironao SAJIKI[1]

[1]Laboratory of Medicinal Chemistry, Department of Organic and Medicinal Chemistry, Gifu Pharmaceutical University

C-C bond formation reactions are usually achieved by the use of homogeneous transition metal catalysts and ligands and widely used for the synthesis of functional materials including medicines, agrochemicals and fine chemicals. The development of efficient and selective catalysts or catalytic reactions is quite important to establish “green” organic synthetic processes. Heterogeneous catalysts are especially useful for the environmentally benign processes because of their reusable properties. We recently address our research goals to “the development of functional and heterogeneous catalysts” and “the discovery of some potential functions of commercially available heterogeneous catalysts” and attain some positive results.

In this presentation, the development of Pd/C-catalyzed Suzuki-Miyaura and Sonogashira reactions in aqueous and/or alcoholic media under the ligand-free conditions will be presented including detailed research results and triggers for the discovery and development. Furthermore, presented Suzuki-Miyaura reaction could be surprisingly achieved under solvent-free conditions, in other words, only by blending the solid-substrates, inorganic solid-base, and heterogeneous Pd/C catalyst. It is noteworthy that the cross-coupling reaction between solid substrates could proceed to give the solid products under absolute solid-phase conditions.