

Novel supported catalyst using metalloporphyrins intercalated inside nano- and micro-clay particles in organic reactions

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Abstract

Researchers are active in finding ways to combine advantages of both homogeneous and heterogeneous catalysts together, by supporting the homogeneous catalysts onto insoluble supports. Such a technique would give a catalyst system that is highly active (like homogeneous systems) and easy to recover (like heterogeneous systems). This work describes how homogeneous catalysts, such as metalloporphyrins, has been intercalated into nano- and micro-scale clays particles to produce a new type of supported catalyst system. We examined the two techniques, metalloporphyrin intercalation between layers and metalloporphyrin encapsulation inside spongy structure of treated nano-clay particles. The supported catalyst was then used in hydrosilylation reactions of terminal olefins. Such reactions are important in glass and sensor industries. Details of our catalyst efficiency results will be presented together with catalyst characterization results. Reaction kinetics and catalyst stability will also be presented.

Key Words: Clay; metalloporphyrin; supported catalysts; nano- and micro-sized particles