

## **453g Catalysis and Recycling of Metal Nanoparticles Stabilized by Microemulsions**

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Metal nanoparticles (Pd, Rh, Pt) stabilized by microemulsions are highly active for catalyzing chemical reactions. Two types of microemulsions, water-in-oil and water-in-CO<sub>2</sub>, have been studied as templates for synthesizing and stabilizing metal nanoparticles and their subsequent applications for chemical catalysis. Bis(2-ethylhexyl)sulfosuccinate (AOT) and fluorinated AOT were used as surfactants for making microemulsions in organic solvents and in supercritical CO<sub>2</sub>, respectively. Examples of hydrogenation reactions and coupling reactions catalyzed by microemulsion-stabilized metal nanoparticles in organic solvents and in supercritical fluid CO<sub>2</sub> will be presented. The advantages of using water-in-CO<sub>2</sub> microemulsions versus water-in-oil microemulsions for stabilizing metal nanoparticles for catalytic applications will be discussed. Methods of recycling metal nanoparticles for catalysis in supercritical CO<sub>2</sub> will also be discussed.