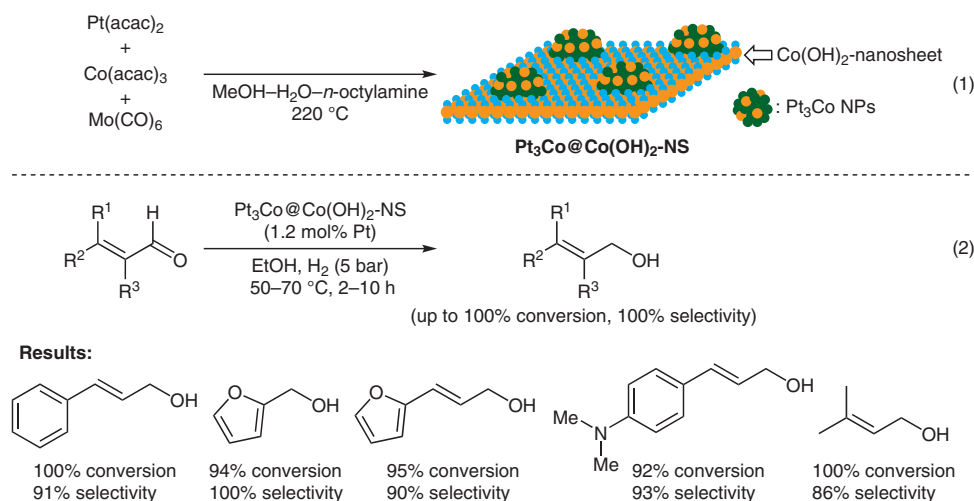


H. WANG, S. BAI, Y. PI, Q. SHAO, Y. TAN, X. HUANG* (SOOCHOW UNIVERSITY, JIANGSU AND HUNAN NORMAL UNIVERSITY, CHANGSHA, P. R. OF CHINA)

A Strongly Coupled Ultrasmall Pt₃Co Nanoparticle-Ultrathin Co(OH)₂ Nanosheet Architecture Enhances Selective Hydrogenation of α,β -Unsaturated Aldehydes
ACS Catal. 2019, 9, 154–159.

Selective Catalytic Hydrogenation of α,β -Unsaturated Aldehydes



Significance: Pt₃Co nanoparticles strongly grafted with Co(OH)₂ nanosheet [Pt₃Co@Co(OH)₂-NS] were prepared by mixing Pt(acac)₂, Co(acac)₃, and Mo(CO)₆ in MeOH–H₂O–octylamine at 220 °C (eq. 1). Pt₃Co@Co(OH)₂-NS catalyzed the selective hydrogenation of α,β -unsaturated aldehydes to give the corresponding allylic alcohols with $\leq 100\%$ conversion and $\leq 100\%$ selectivity (eq. 2; 5 examples).

Comment: The catalyst was characterized by means of TEM, HRTEM, XRD, XPS, AFM, ATR-IR, and ICP-AES analyses. In the hydrogenation of cinnamaldehyde, the selectivity of Pt₃Co@Co(OH)₂-NS for the formation of cinnamyl alcohol was superior to that of the other Pt catalysts such as Pt nanoparticles (NPs), Pt₃Co NPs, Pt NPs on Co(OH)₂-NS, or Pt₃Co NPs on Co(OH)₂-NS. In the hydrogenation of cinnamaldehyde, the catalyst was recovered by centrifugation and reused nine times without loss of its activity. TEM images of the recovered catalyst after tenth run showed almost no changes.