

SYNFACTS Highlights in Current Synthetic Organic Chemistry

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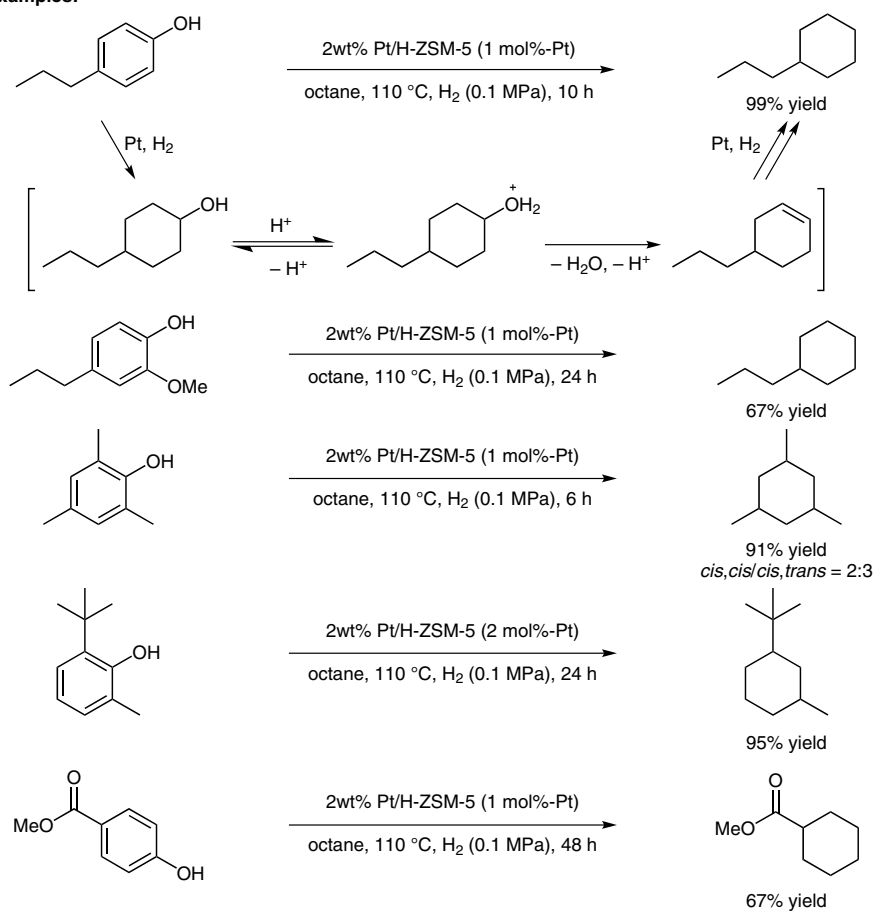
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Low Temperature Hydrodeoxygenation of Phenols Under Ambient Hydrogen Pressure to Form Cyclohexanes
Catalysed by Pt Nanoparticles Supported on H-ZSM-5

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Platinum-Catalyzed Hydrodeoxygenation of Phenols with Hydrogen

Selected examples:



Significance: Platinum nanoparticles supported on H-ZSM-5 zeolite (Pt/H-ZSM-5) catalyzed the hydrodeoxygenation of phenols under hydrogen at ambient pressure. The reaction of 4-propylphenol with hydrogen proceeded in the presence of 2 wt% Pt/H-ZSM-5 (1 mol% Pt) to give propylcyclohexane in 99% yield.

Comment: The following reaction pathway is proposed for the hydrodeoxygenation of 4-propylphenol. Hydrogenation of the aromatic ring of 4-propylphenol affords 4-propylcyclohexanol, which undergoes acid-catalyzed elimination of water in the presence of H-ZSM-5 to give the corresponding cyclohexene. Subsequent hydrogenation of the resulting alkene affords 4-propylcyclohexane as the final product.

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