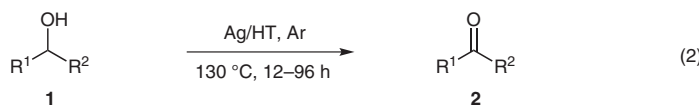
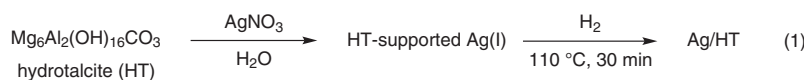
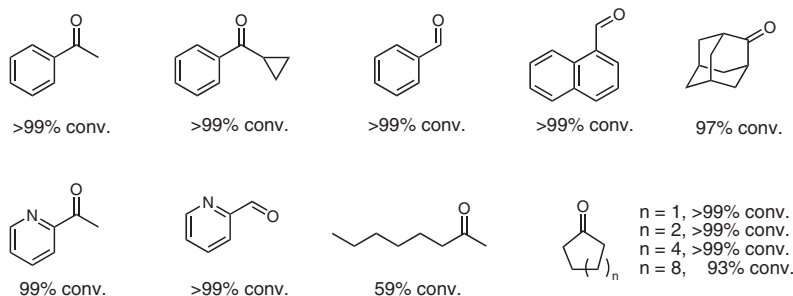


Oxidation of Alcohols Using Hydrotalcite-Supported Silver Nanoparticles



Typical results



Significance: Hydrotalcite (HT) reacted with 5.0 mM aqueous solution of AgNO₃ at 3 °C for 1 h to afford HT-supported Ag(I). The Ag(I) ions were reduced with hydrogen to give the Ag/HT catalyst (eq. 1). The oxidation (dehydrogenation) of various alcohols **1** without oxidant took place under Ar atmosphere in the presence of the Ag/HT catalyst to give the corresponding carbonyl compounds **2** with up to 99% conversion and chemoselectivity (eq. 2). This catalyst was reused four times in the oxidation of 1-phenylethanol with no significant loss of activity and chemoselectivity.

Comment: In this paper, the HT-supported Ag nanoparticle was used as a highly selective catalyst for oxidation of various alcohols. The Ag/HT catalyst is superior to various hetero- or homogeneous catalysts, for example Ag/SiO₂, Ag/TiO₂, Pd/HT, Ru/HT, CP*Ir(PyOH). Generation of an equimolar amount of molecular H₂ was observed as the alcohol oxidation proceeded.

Category

Polymer-Supported Synthesis

Key words

alcohols

dehydrogenation

heterogeneous catalysis

silver nanoparticles

SYNFACT
of the month