T. MITSUDOME, Y. MIKAMI, H. MORI, S. ARITA, T. MIZUGAKI, K. JITSUKAWA, K. KANEDA* (OSAKA UNIVERSITY, JAPAN)

Supported Silver Nanoparticle Catalyst for Selective Hydration of Nitriles to Amides in Water
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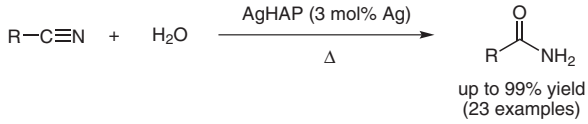
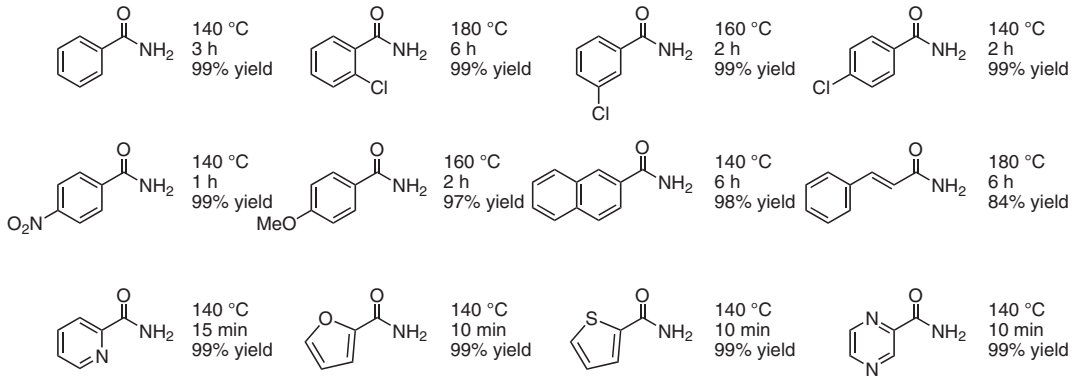
Hydration of Nitriles to Amides with Supported Silver Nanoparticles



Typical results:



Significance: Hydroxyapatite-supported silver nanoparticles (AgHAP) catalyzed the hydration of various nitriles in water at 140–180 °C to give the corresponding amides in up to 99% yield (23 examples). In the hydration of pyrazinecarbonitrile, the catalyst was readily separated by centrifugation and reused four times without significant loss of catalytic activity.

Comment: The authors previously reported that AgHAP efficiently catalyzed the oxidation of phenylsilanes to silanols in water (*Angew. Chem. Int. Ed.* **2008**, *47*, 7938). The catalytic activity of AgHAP for the hydration of nitriles was superior to that of the other supported silver catalysts such as Ag/MgO, Ag/SiO_2, and Ag/C. FTIR analysis for the interaction between the surface of AgHAP and nitriles suggested that the nitrile groups were coordinated to the silver nanoparticles in the side-on fashion.

SYNFACTS Contributors: Yasuhiro Uozumi, Takao Osako
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Category
Polymer-Supported Synthesis

Key words
silver nanoparticles
hydration
nitriles
amides