Asymmetric Miyaura–Michael Reaction with Polymeric Rh/Ag Catalysts

Category

Polymer-Supported
Synthesis

Key words

bimetallic
nanoparticle
catalysts

rhodium

silver

asymmetric
1,4-addition

Asymmetric 1,4-addition with PI/CB Rh/Ag catalyst 2:

Significance: Polystyrene-based polymer-incarcerated bimetallic rhodium nanoparticle catalysts PI/CB Rh/Ag **2a–b** were prepared from co-polymer **1**, carbon black (CB), [Rh(OAc)₂]₂, and AgSbF₆. Asymmetric 1,4-addition of arylboronic acids to enones was carried out with **2** and chiral ligand **3** to give the corresponding ketones in 70–99% yield with 74–98% ee without leaching of rhodium.

Comment: Catalyst **2a** was reused 13 times for the reaction of phenylboronic acid with 2-cyclohexenone. After the 10th use, the recovered catalyst was heated at 170 °C to regain its catalytic activity (1st–8th use: >94% yield, 9th use: 67% yield, 10th use: 60% yield, 11th–14th use: >90% yield, with 98% ee in all cycles).

SYNFACTS Contributors: Yasuhiro Uozumi, Yoichi M. A. Yamada, Yoshinari Yuyama
 Synfacts 2013, 9(1), 0115 Published online: 17.12.2012
 DOI: 10.1055/s-0032-1317915; Reg-No.: Y14312SF