M. KAUSHIK, K. BASU, C. BENoit, C. M. CIRTIU, H. VALI, A. MOORES* (MCGILL UNIVERSITY, MONTRÉAL AND INSTITUT NATIONAL DE SANTÉ PUBLIQUE DU QUÉBEC, QUEBEC CITY, CANADA)  
Cellulose Nanocrystals as Chiral Inducers: Enantioselective Catalysis and Transmission Electron Microscopy 3D Characterization  

Enantioselective Hydrogenation of Ketones on Palladium/Cellulose Nanocrystals

**Significance:** Palladium(0) deposited on cellulose nanocrystals (Pd@CNCs) was prepared by treatment of CNCs with palladium(II) chloride in aqueous hydrochloric acid, followed by the reduction with hydrogen gas. The Pd@CNCs was used in an enantioselective hydrogenation of prochiral ketones under hydrogen pressure in water to give the corresponding alcohols in 67–91% yield and 5–65% ee.

**Comment:** The aqueous suspension of Pd@CNCs was reused twice without significant loss of the catalytic activity or enantioselectivity. CSCs did not catalyze the carbonyl hydrogenation in the absence of palladium. Hydrogenation of 2-methoxyacetophenone on PdNPs@C under similar conditions gave the corresponding racemic alcohol in 38% yield.

**SYNFACTS Contributors:** Yasuhiro Uozumi, Yoichi M. A. Yamada, Aya Ohno  
Synfacts 2015, 11(8), 0879  
Published online: 20.07.2015  
DOI: 10.1055/s-0034-1381113; Reg-No.: Y08515SF

---

**Category:** Polymer-Supported Synthesis

**Key words:** palladium, cellulose nanocrystals, asymmetric catalysis, hydrogenation, ketones