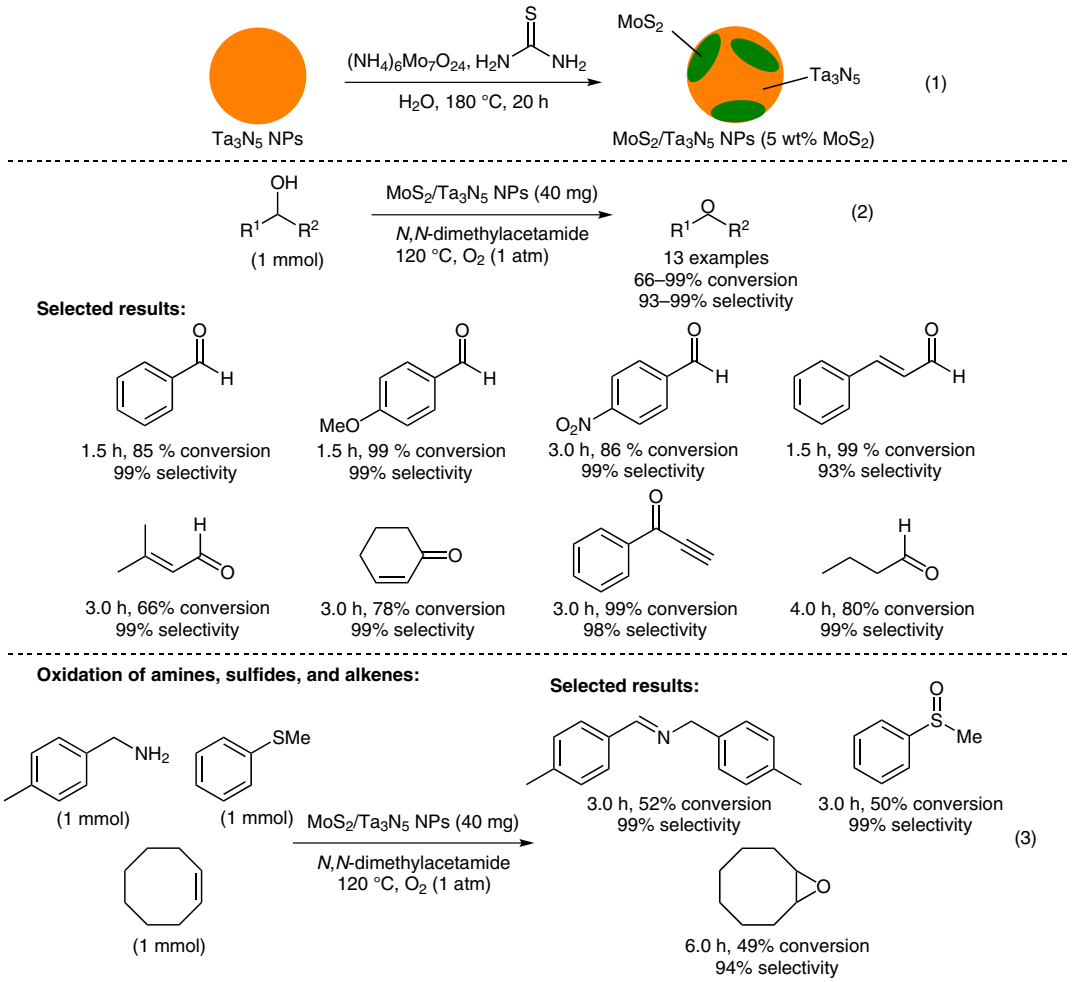
Q. GAO,* C. GIORDANO, M. ANTONIETTI (MAX PLANCK INSTITUTE OF COLLOIDS AND INTERFACES, POTSDAM, GERMANY AND JINAN UNIVERSITY, GUANGZHOU, P. R. OF CHINA)

Biomimetic Oxygen Activation by MoS_2/Ta_3N_5 Nanocomposites for Selective Aerobic Oxidation
Angew. Chem. Int. Ed. **2012**, *51*, 11740–11744.

Aerobic Oxidation of Alcohols with MoS_2/Ta_3N_5 Nanocomposites



Significance: Ta_3N_5 nanoparticles partly coated with a MoS_2 layer (MoS_2/Ta_3N_5 NPs) were prepared by hydrothermal treatment of Ta_3N_5 NPs with $(NH_4)_6Mo_7O_{24}$ in the presence of thiourea (eq. 1). MoS_2/Ta_3N_5 NPs catalyzed the aerobic oxidation of alcohols under oxygen (1 atm) to give the corresponding aldehydes or ketones in up to 99% conversion with 99% selectivity (13 examples, eq. 2).

Comment: MoS_2/Ta_3N_5 NPs were characterized by SEM, TEM, XRD, ICP-AES and elemental analysis. The catalyst also promoted the aerobic oxidation of amines, sulfides, and alkenes to afford the corresponding imines, sulfoxides, and epoxides (eq. 3). In the oxidation of benzyl alcohol, the catalytic activity of MoS_2/Ta_3N_5 NPs was superior to that of Ta_3N_5 NPs and MoS_2.

SYNFACTS Contributors: Yasuhiro Uozumi, Hiroaki Tsuji
Synfacts 2013, 9(2), 0221 Published online: 18.01.2013
DOI: 10.1055/s-0032-1318049; **Reg-No.:** Y15112SF