Aerobic Epoxidation with a Polyoxomolybdate Nanoball

**Significance:** The aerobic epoxidation of olefins in aqueous solution takes place with the Keplerate-type polyoxomolybdate Mo$_{132}$ Catalyst 1 under oxygen to give the corresponding products 2a–h in up to 97% yield. In contrast, MoO$_3$, (NH$_4$)$_6$Mo$_7$O$_{24}$, and Na$_2$MoO$_4$ showed no catalytic activity under similar conditions.

**Comment:** The Mo$_{132}$ nanoball decomposed at pH >8. The decomposed material had no catalytic activity for the epoxidation. The Mo$_{132}$ nanoball catalyst 1 was readily recovered as an aqueous solution and reused nine times without significant loss of its catalytic activity. The solid Mo$_{132}$ catalyst was also readily recovered by removal of water.