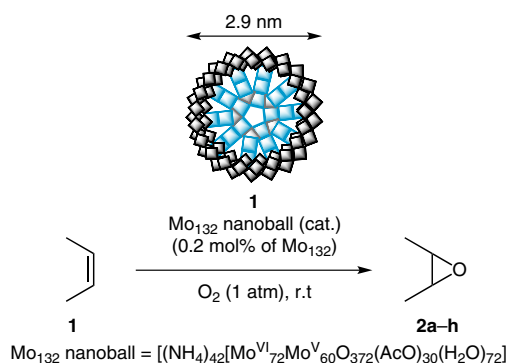


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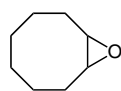
Catalytic Epoxidation Activity of Keplerate Polyoxomolybdate Nanoball toward Aqueous Suspension of Olefins under Mild Aerobic Conditions

J. Am. Chem. Soc. **2013**, *135*, 10036–10039.

Aerobic Epoxidation with a Polyoxomolybdate Nanoball



Selected results:



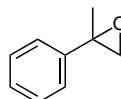
2a
2 h, 96% yield



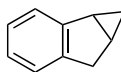
2b
3 h, 92% yield



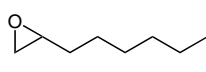
2c
2 h, 95% yield



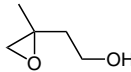
2d
4 h, 94% yield



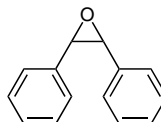
2e
4 h, 89% yield



2f
4 h, 90% yield



2g
5 h, 96% yield



2h
5 h, 97% yield

Significance: The aerobic epoxidation of olefins in aqueous solution takes place with the Keplerate-type polyoxomolybdate Mo₁₃₂ catalyst **1** under oxygen to give the corresponding products **2a–h** in up to 97% yield. In contrast, MoO₃, (NH₄)₆Mo₇O₂₄, and Na₂MoO₄ showed no catalytic activity under similar conditions.

Comment: The Mo₁₃₂ nanoball decomposed at pH >8. The decomposed material had no catalytic activity for the epoxidation. The Mo₁₃₂ nanoball catalyst **1** was readily recovered as an aqueous solution and reused nine times without significant loss of its catalytic activity. The solid Mo₁₃₂ catalyst was also readily recovered by removal of water.

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