The Catalytic Kulinkovich Reaction

**Significance:** The Kulinkovich reaction generates cyclopropanols from simple Grignard reagents and esters in the presence of a titanium(IV) alkoxide catalyst. This reaction has been subsequently expanded to a wide range of substrates (see Review below) and an asymmetric version was also demonstrated by the group of Corey (*J. Am. Chem. Soc.* 1994, 116, 9345).

**Comment:** Although the group of Kulinkovich previously reported the synthesis of cyclopropanols through a titanium(IV) alkoxide mediated reaction (*Zh. Org. Khim. 1989, 25, 2244*), the current report demonstrated a method that was catalytic in titanium.


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**Selected examples:**

- 76% yield
- 79% yield
- 91% yield
- 90% yield
- 94% yield
- 95% yield

**Proposed mechanism:**