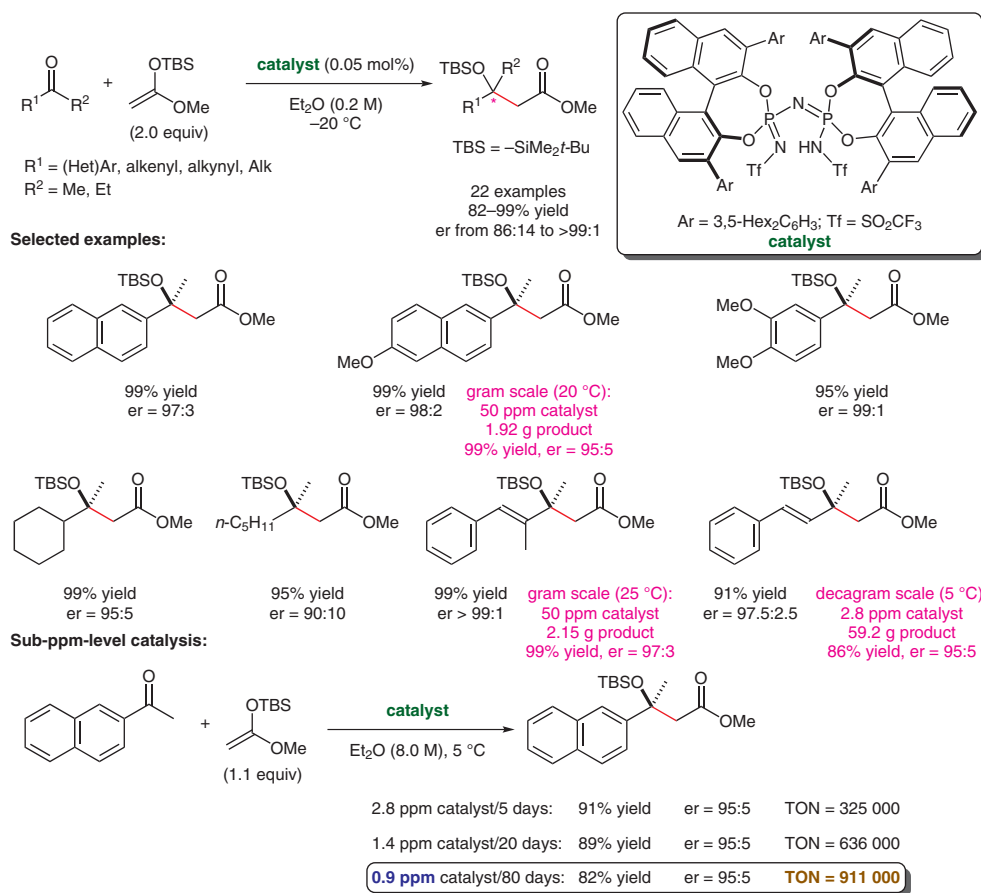


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 Approaching Sub-ppm-Level Asymmetric Organocatalysis of a Highly Challenging and Scalable Carbon–Carbon Bond Forming Reaction
Nat. Chem. **2018**, *10*, 888–894.

Activating Ketones with Low Catalyst Loadings of a Potent Chiral Lewis Acid



Significance: List and co-workers report the use of chiral organic Lewis acids at ppm- and sub-ppm levels as catalysts for the challenging asymmetric Mukaiyama aldol reaction of ketones with silyl ketene acetals. The corresponding products were obtained in excellent yields and enantioselectivities, even on a decagram scale. The extremely low catalyst loading is unprecedented in catalytic asymmetric C–C bond-forming reactions.

Comment: Aldehydes are commonly used as electrophiles in the catalytic asymmetric Mukaiyama aldol reaction, whereas ketones have remained a challenge as substrates for this transformation. The presented work shows the excellent performance of silylated chiral imidodiphosphorimidates (*Angew. Chem. Int. Ed.* **2016**, *55*, 13200) as powerful Lewis acid catalysts in the aforementioned reaction of both aryl- and alkyl-substituted ketones.

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