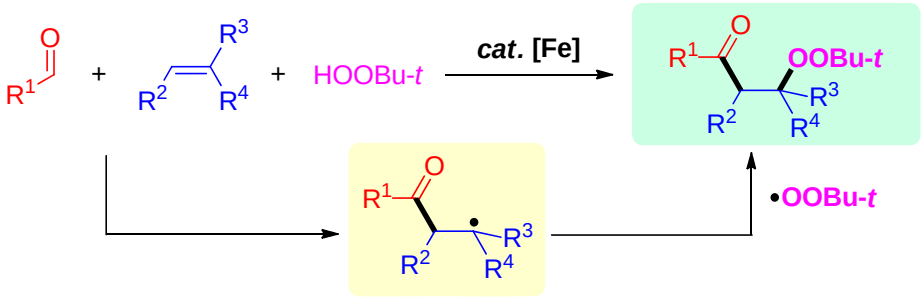
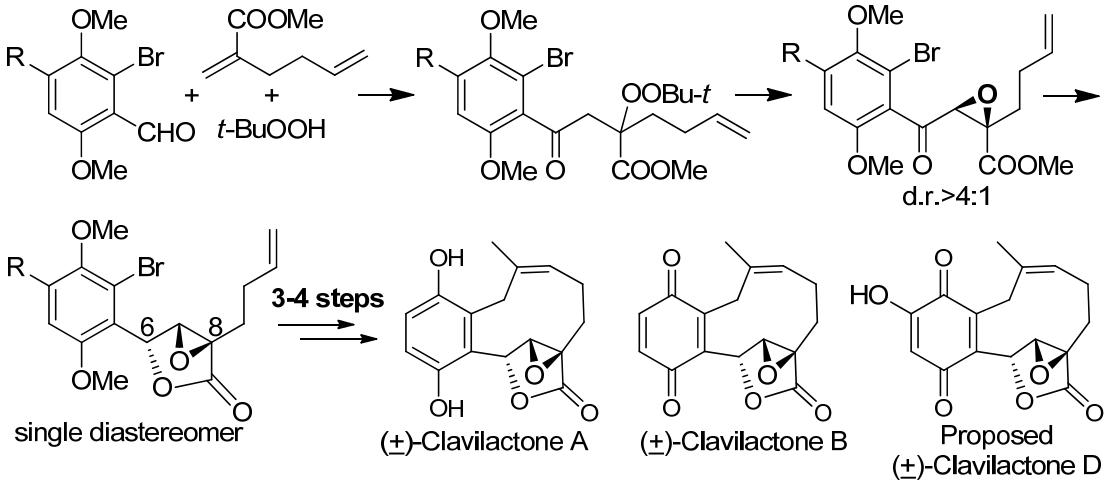
Iron-Catalyzed Acylation-Peroxidation of Alkene

Difunctionalization of alkenes is a class of significant synthetic reactions that allow for the buildup of molecular complexity in a single procedure. Here, a novel iron-catalyzed acylation-peroxidation of olefins with aldehyde and hydroperoxide had been established (Scheme 1).[1]



Scheme 1. Iron-Catalyzed Carbonylation-Peroxidation of Alkene

Clavilactones A, B and proposed D had been synthesized through iron-catalyzed acylation-peroxidation of alkene. Three steps from aldehydes, alkenes, and TBHP build up α,β-epoxy-γ-butyrolactone skeleton[2] as a key building block for synthesis of clavilactone family and its derivatives (Scheme 2).[3]



Scheme 2. Total Synthesis of (±)-Clavilactones

References:

1. a) Liu, W.; Li, Y.; Liu, K.; Li. Z. *J. Am. Chem. Soc.* **2011**, *133*, 10756 – 10759; b) Liu, K.; Li, Y.; Zheng, X.; Liu, W.; Li, Z. *Tetrahedron* **2012**, *68*, 10333 – 10337.
2. Liu, K.; Li, Y.; Zheng, X.; Zong, Z.; Li, Z. *Chem. Asian. J.* **2013**, *8*, 359 – 363.
3. Lv, L.; Shen, B.; Li, Z. *Angew. Chem. Int. Ed.* **2014**, *53*, 4164.

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