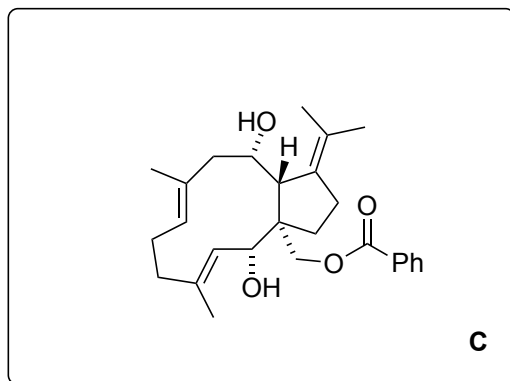
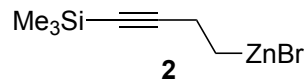
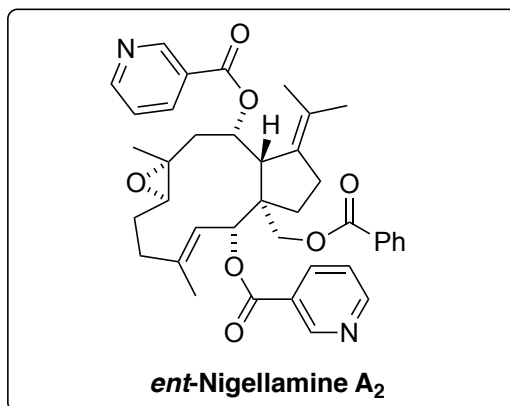


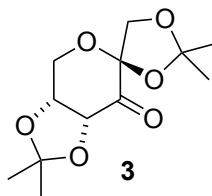
15 – 23



24 – 25

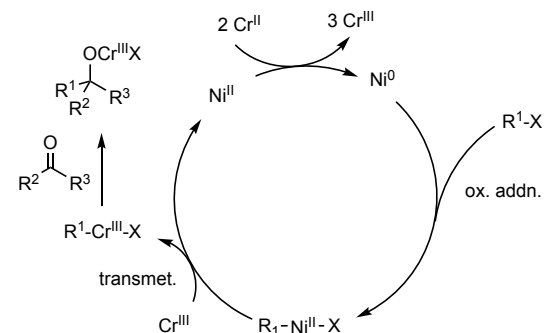


- 15) PdCl₂(dppf) cat., **2**
- 16) Bu₄NF
- 17) Cp₂ZrCl₂, Al₃Me, H₂O, then I₂
- 18) PCC, 4 Å MS
- 19) CrCl₂, Ni(acac)₂ cat., sonication
- 20) DMP
- 21) LiAlH(*i*-Bu)₂*t*-Bu
- 22) LAH
- 23) NEt₃, BzCl



- 24) **3**, oxone, K₂CO₃, Bu₄NHSO₄, MeCN/DMM
- 25) Nicotinic acid, DCC, DMAP

19) Please draw the mechanism.

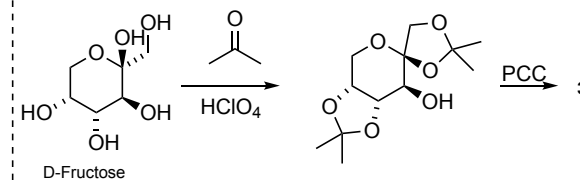


Nozaki-Hiyama-Takai-Kishi

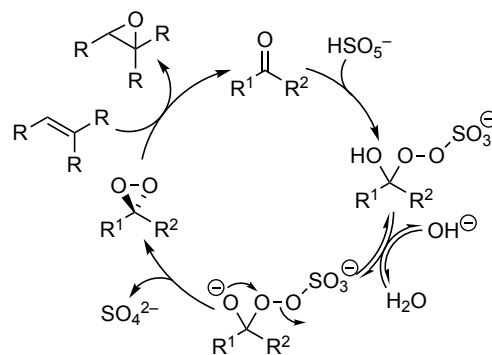
21) reagent formed from *t*-BuLi + DIBAL-H

24) what is the catalyst derived from? what is the mechanism?

Do you know the Name? *Shi epoxidation*



Mechanism of the Shi epoxidation:



Baeyer-Villiger Oxidation

