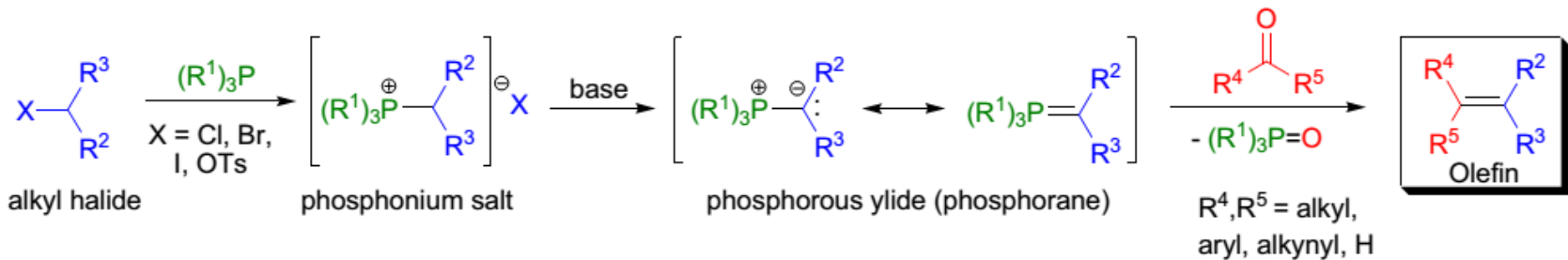


Wittig Reaction

Peihao Chen

2020-12-29

Wittig Reaction



if $R^1 = \text{aryl}$ and $R^2, R^3 = \text{alkyl, H}$

\Rightarrow "nonstabilized" ylide

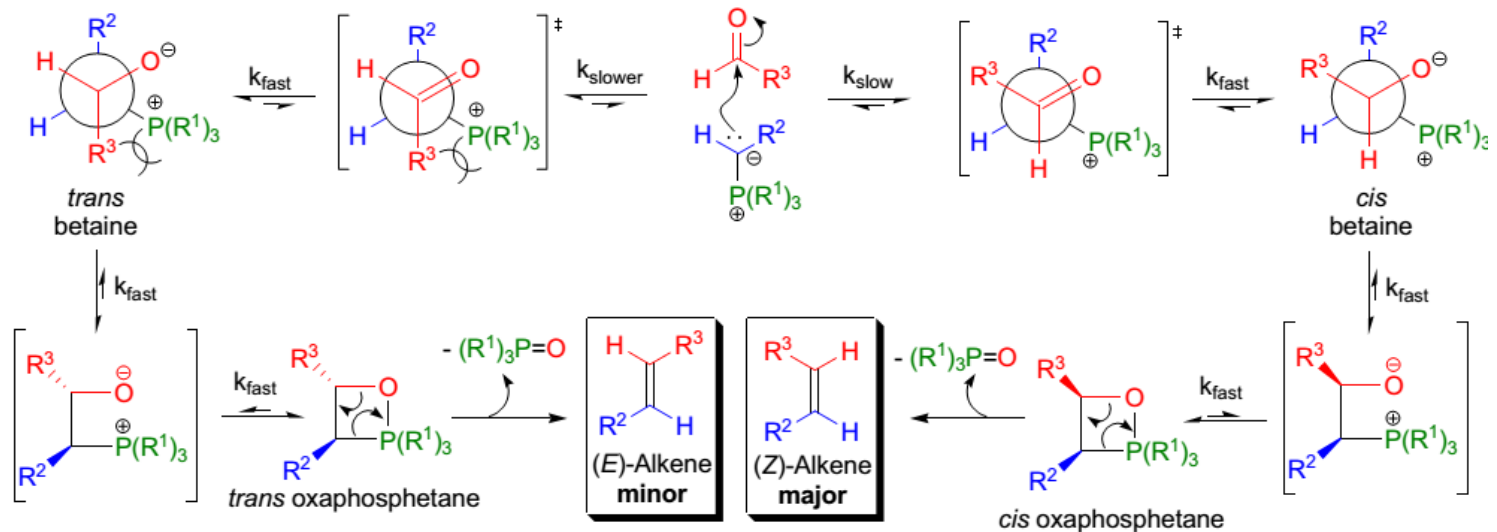
if $R^1 = \text{aryl}$ and $R^2, R^3 = \text{aryl, alkenyl, benzyl, allyl, H}$

\Rightarrow "semi-stabilized" ylide

if $R^1 = \text{aryl}$ and $R^2, R^3 = -\text{CO}_2\text{R}, -\text{SO}_2\text{R}, -\text{CN}, -\text{COR}$

\Rightarrow "stabilized" ylide

Mechanism:

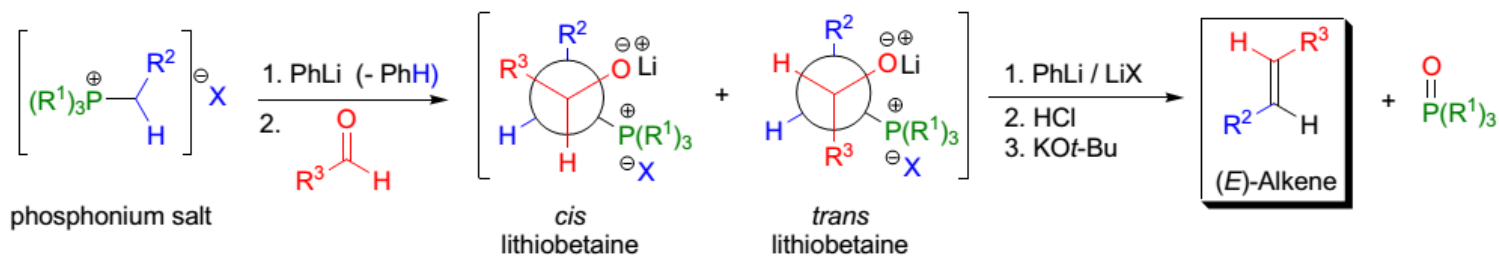


Wittig Reaction



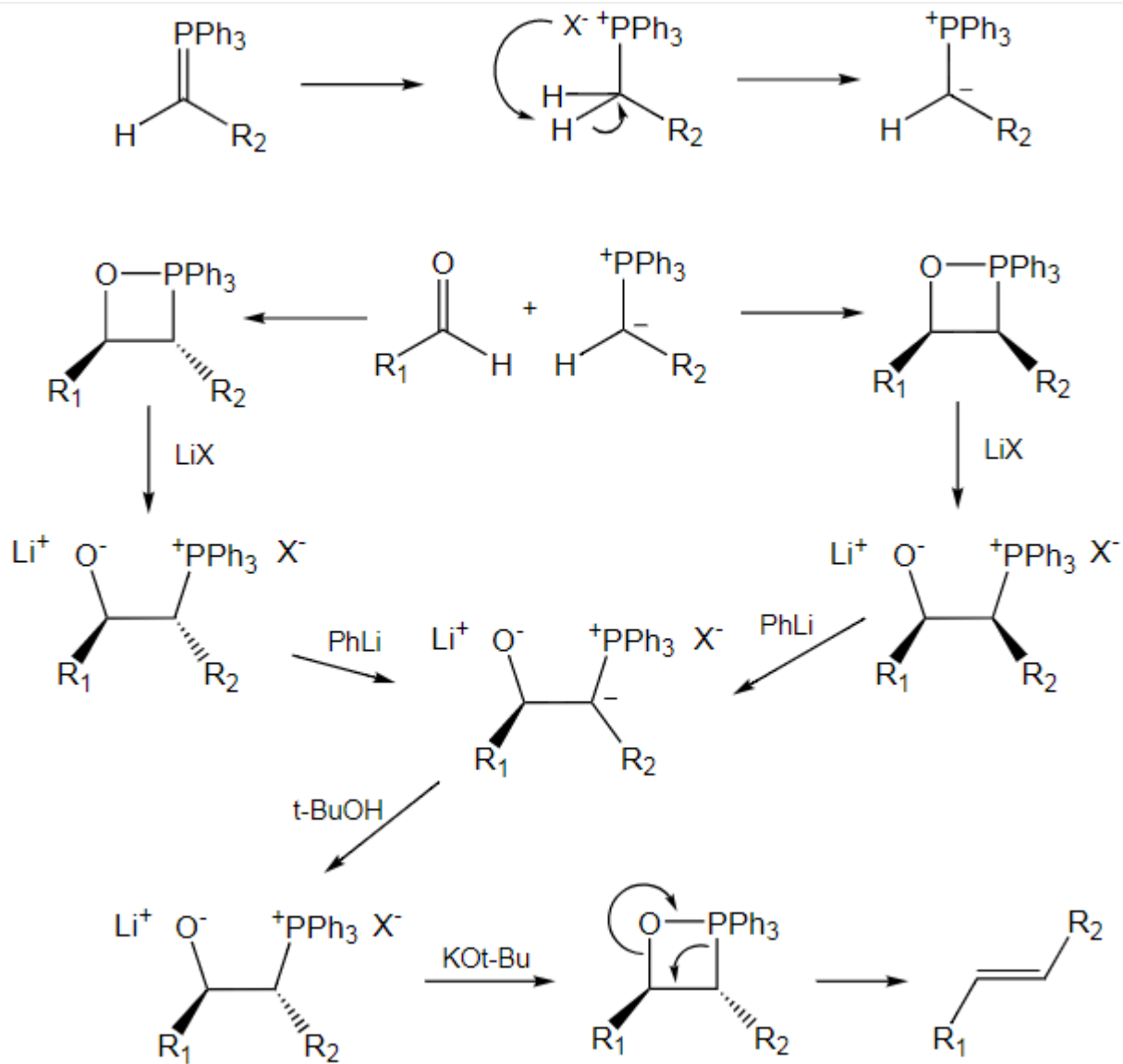
-Master Organic Chemistry

Schlosser Modification



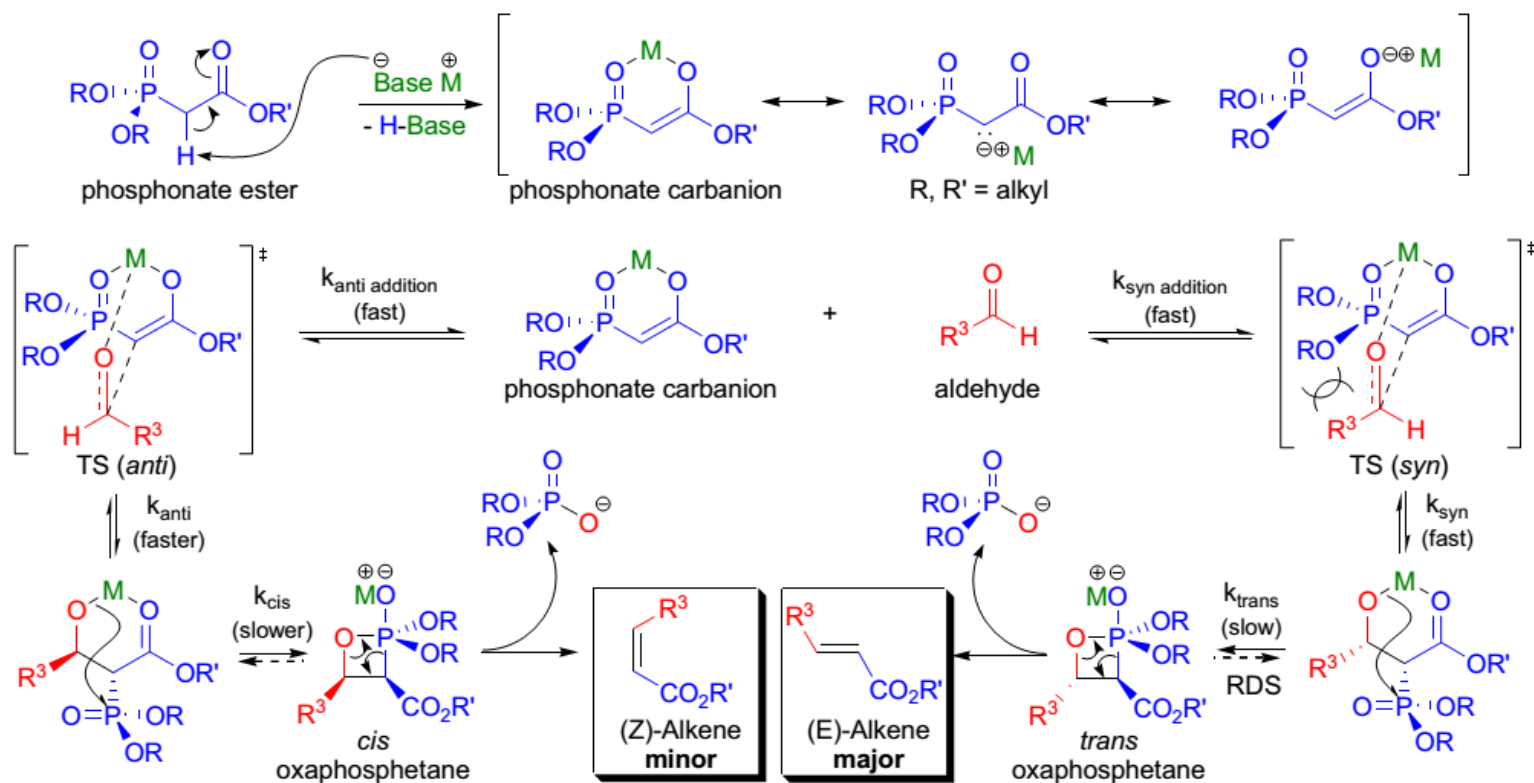
R^1 = aryl; R^2 = alkyl, H; R^3 = alkyl, aryl; X = Cl, Br, I

Schlosser Modification



Horner-Wadsworth-Emmons olefination

Mechanism:



"stabilized" ylide

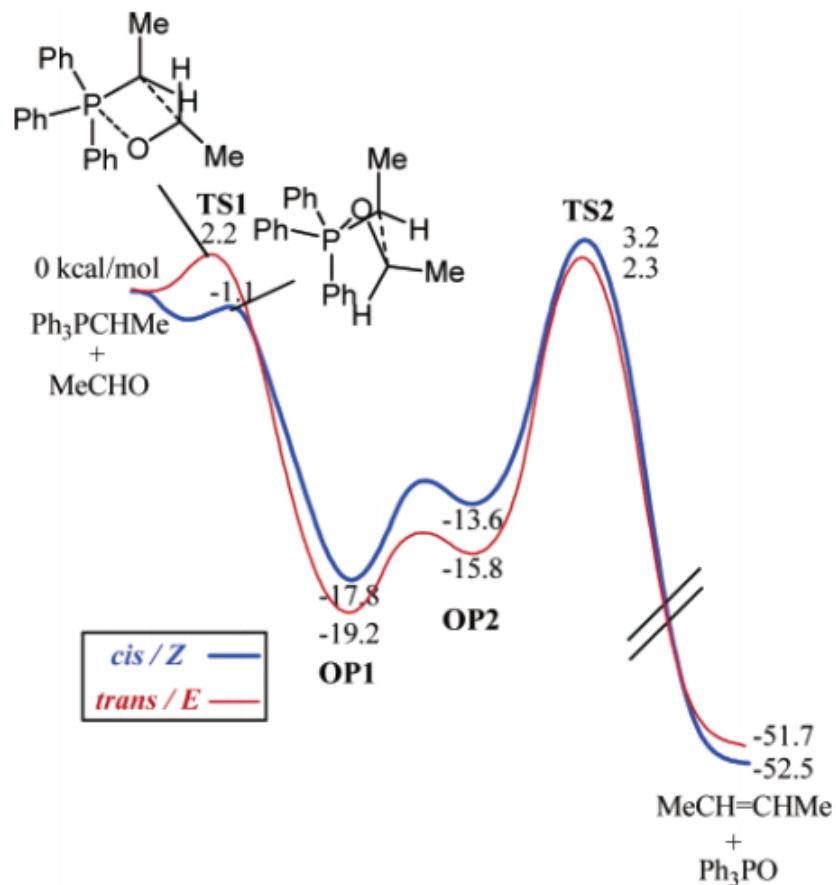


Figure 4. Calculated potential energy surface (kcal/mol) for reaction 2, $\text{Ph}_3\text{PCHMe} + \text{MeCHO}$, at the B3LYP/6-31G*(THF)//B3LYP/6-31G* level of theory.

"nonstabilized" ylide

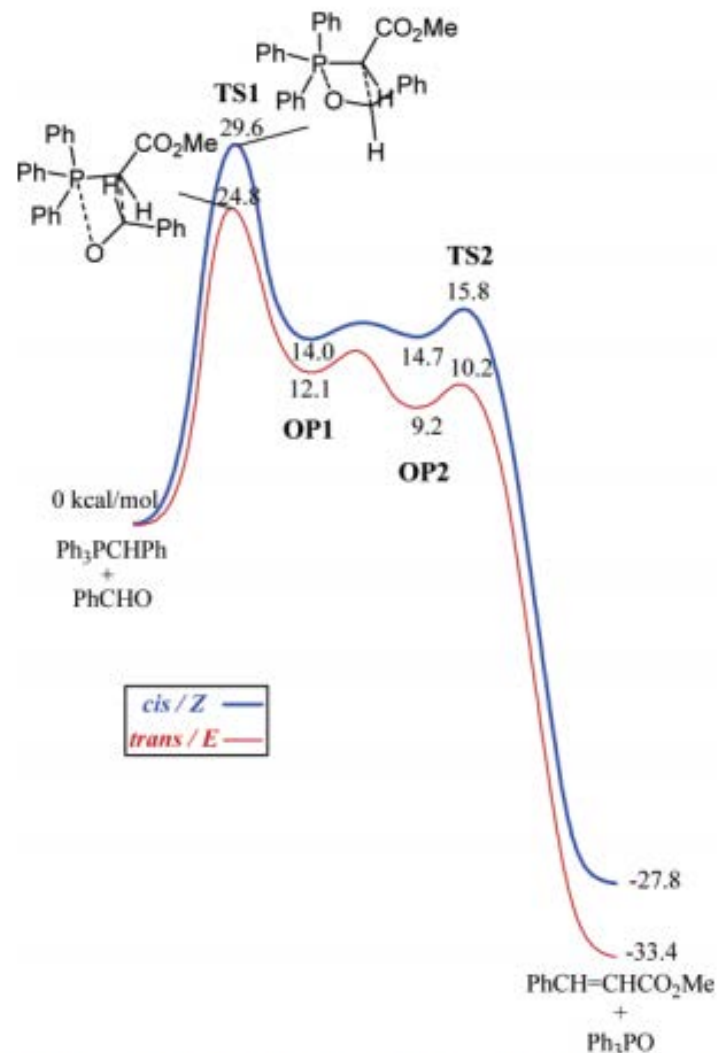
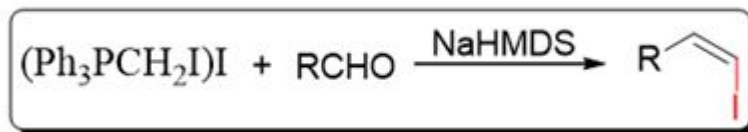


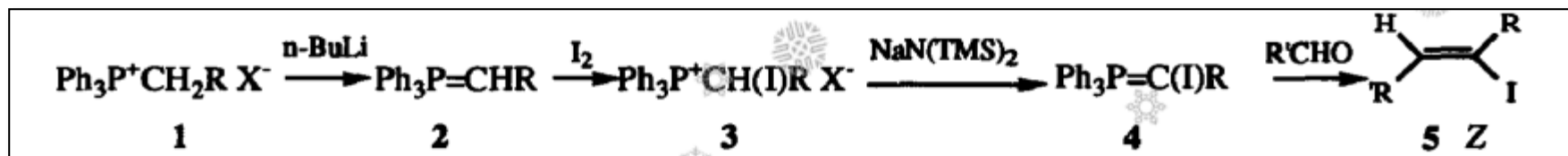
Figure 8. Calculated potential energy surface (kcal/mol) for reaction 7, $\text{Ph}_3\text{PCHCO}_2\text{Me} + \text{PhCHO}$, at the B3LYP/6-31G*(THF)//B3LYP/6-31G* level of theory.

Stork-Zhao olefination



Tetrahedron Lett. **1989**, 30, 2173

Zhao-Wittig olefination



Tetrahedron Lett. **1994**, 35, 2827

Remembering
Gilbert Stork
1921-2017



Synthetic organic chemistry pioneer Gilbert Stork is dead at the age of 95. Stork was the former Eugene Higgins Professor of Chemistry Emeritus at Columbia University. He is known for his work in the total synthesis of natural products and his contributions to enamine chemistry.

Gilbert Stork was the author of more than 160 papers in ACS journals over 70 years. He published his final paper in *Organic Letters* last month. That paper, "[Synthetic Study toward Total Synthesis of \(±\)-Germine: Synthesis of \(±\)-4-Methylenegermine](#)," contains a footnote that shows a glimmer of the personality that endeared him to so many in the chemistry community. "At this point, we realized that we did not have enough material (a few milligrams) to go through the several steps for this conversion" he writes. "One would have to restart the whole synthesis. But I (G.S.) am now 95 years old."



赵康

职务：Professor

性别：男

职称：教授

[More>](#)

教育经历

- 1982.9 - 1986.6
Shandong University - 学士
- 1988.9 - 1993.6
Columbia University, NY, USA - 博士
- 1988.9 - 1991.6
Columbia University, NY, USA - 博士

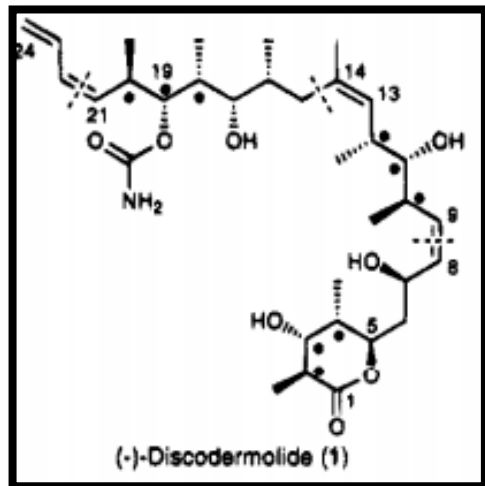
工作经历

- 1990.9 - 1992.6
Columbia Univ → Fellow
- 1995.9 - 1999.6
W. M. Keck Foundation
Early → Professor
- 2001.9 - 2003.6
TEDA, Tianjin → Director
- 2001.9 - 2003.6
Tianjin University → Dean
- 2001.9 - 2015.6
Tianjin University → Professor

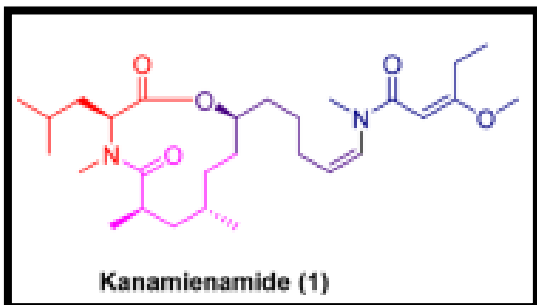
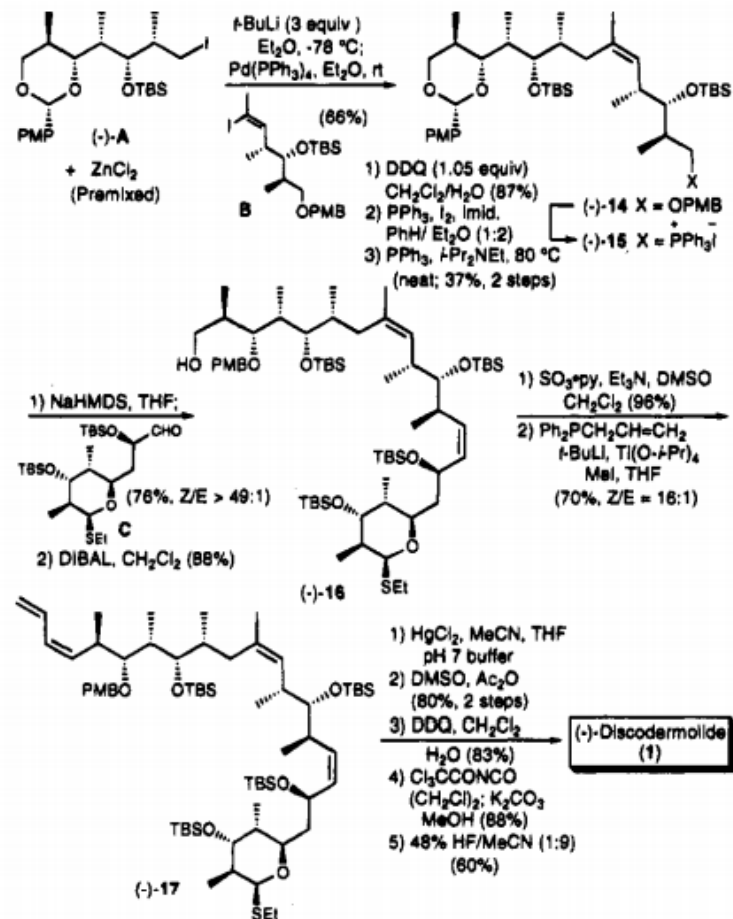
研究方向

- 4) Total Synthesis of Complex Molecules: design and synthesis of natural products.
- 3) Organic Synthetic Methodology: Hypervalent iodine chemistry and heterocyclic chemistry,
- 2) Biological Organic Chemistry: Investigation of anti-cocaine, monoclonal antibodies, and anti-viruses,
- 1) Medicinal Chemistry: Design and synthesis of drug molecules, and development of synthetic route to drug intermediates,

Application



J. Am. Chem. Soc. **1995**, *117*, 12011



J. Org. Chem. **2017**, *82*, 11262

