

# 螺缩酮的不对称催化合成

报告： 时磊      检查：

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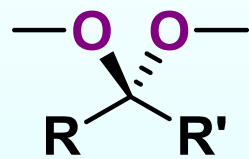
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4

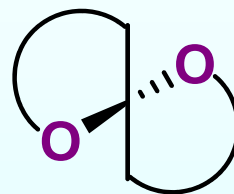
总结与展望

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# 1. 简介



缩酮



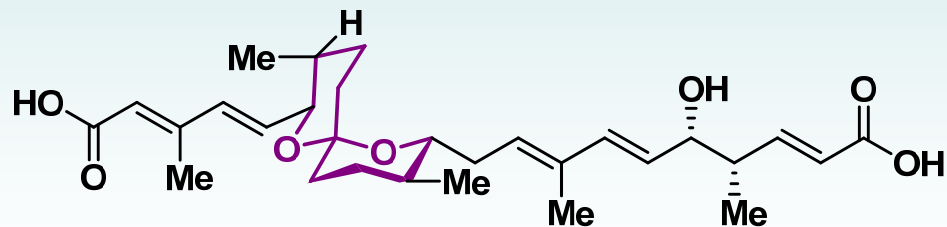
螺缩酮

# 1. 简介

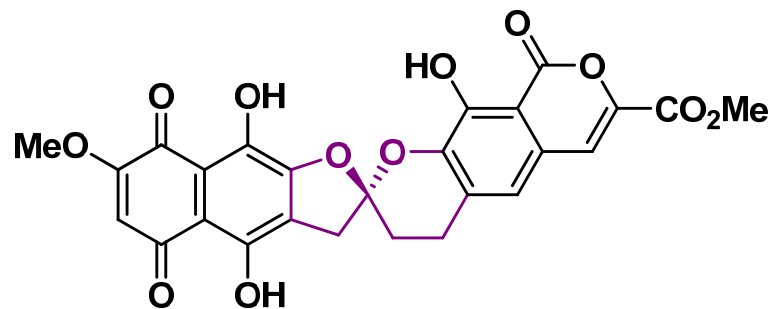


(R)-Olean

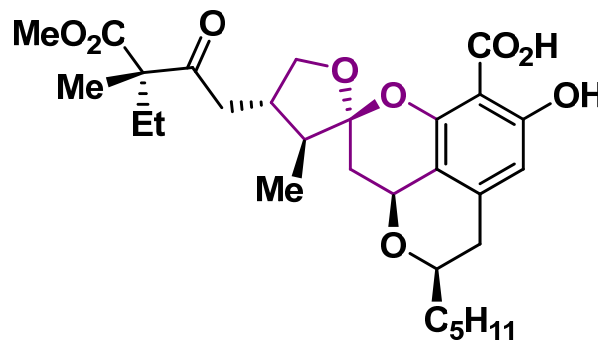
(S)-Olean



Spirfungin B

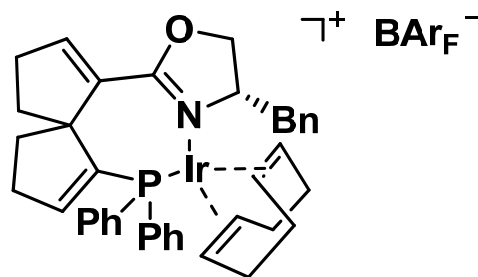
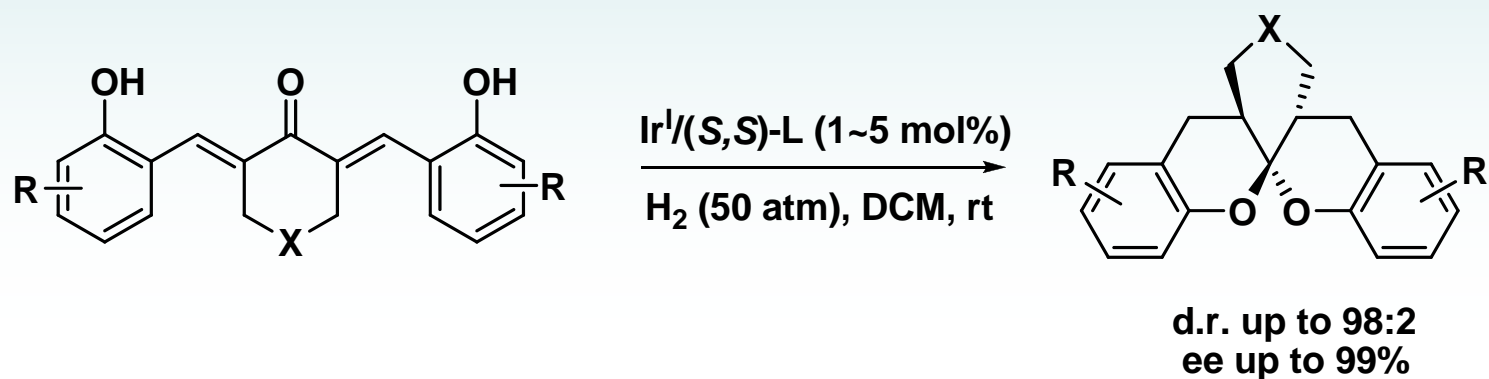


$\gamma$ -Rubromycin 玉红霉素

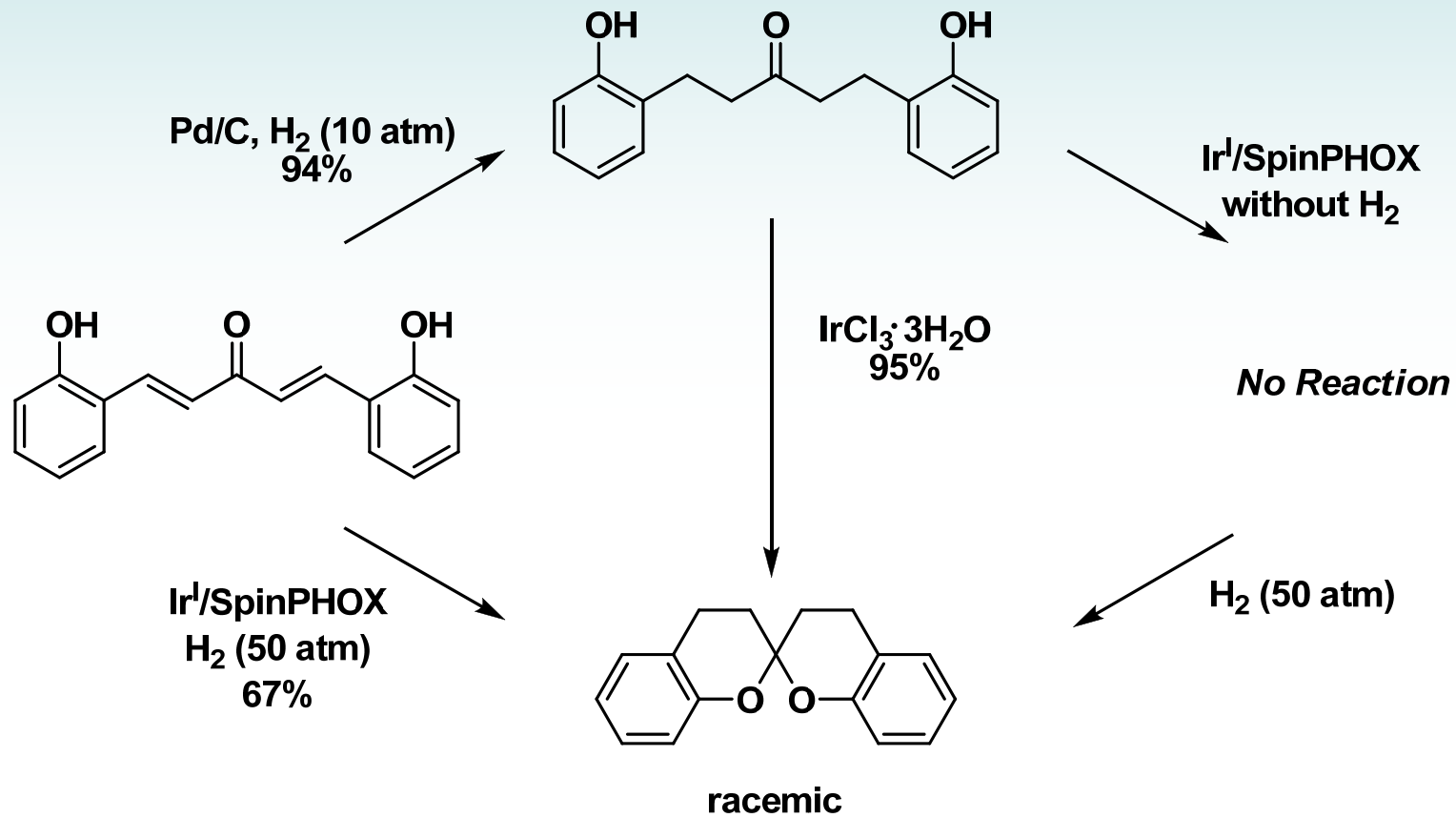


Berkelic acid

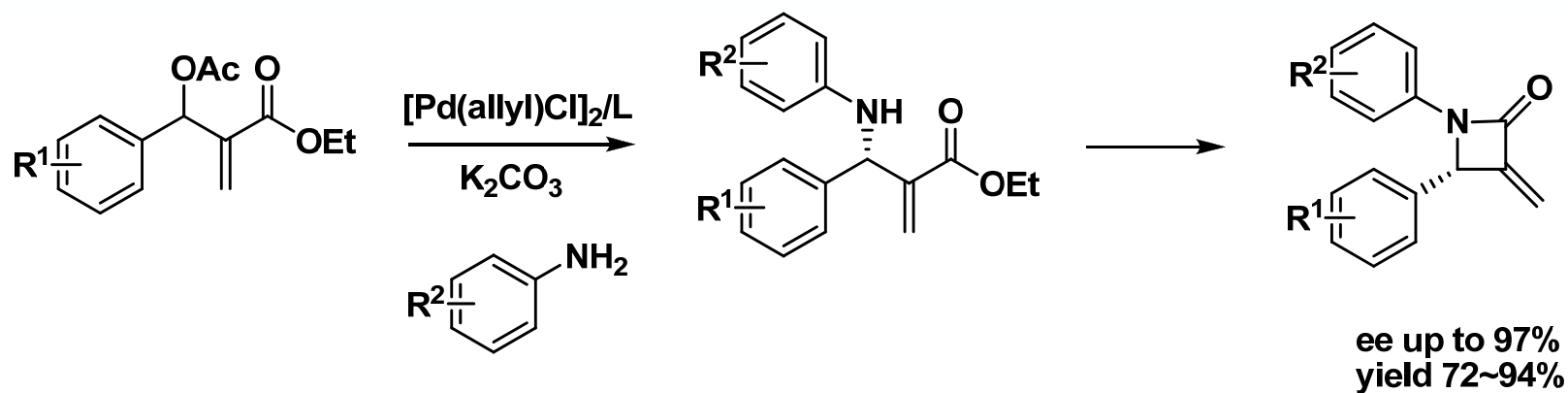
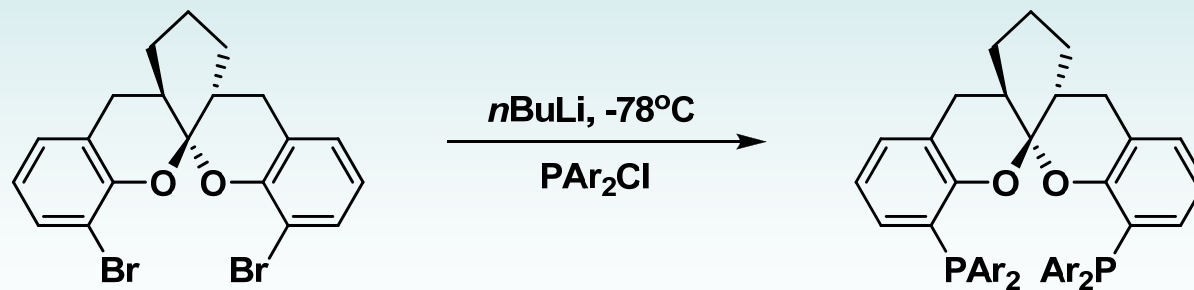
## 2.1 金属催化的不对称螺缩酮化



Ding, K. *Angew. Chem. Int. Ed.* **2012**, *51*, 936.

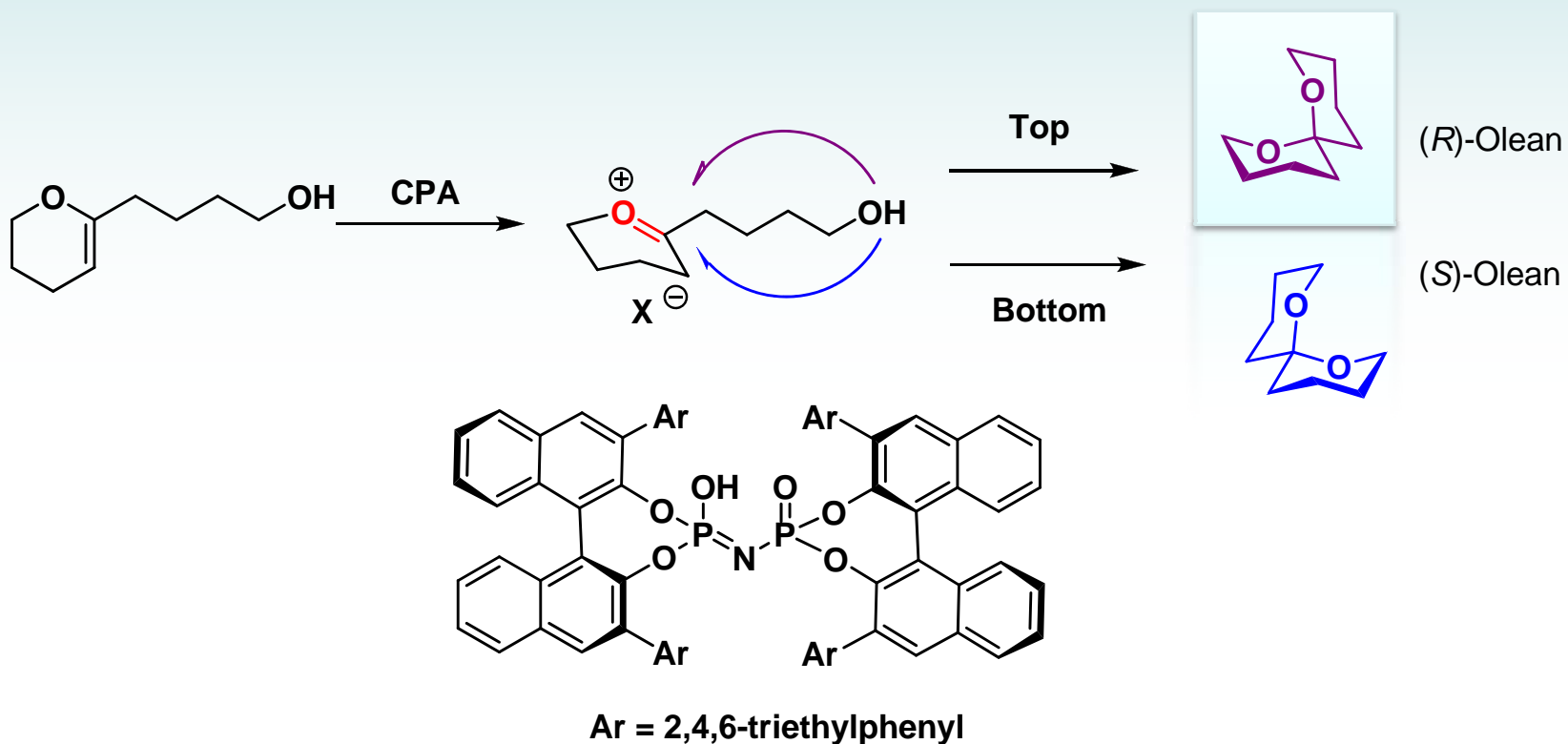


反应的要素：三价铱



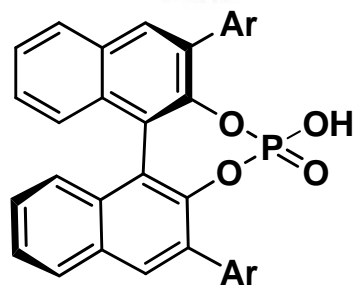
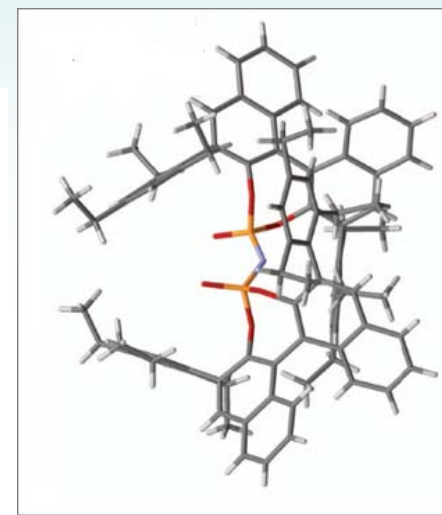
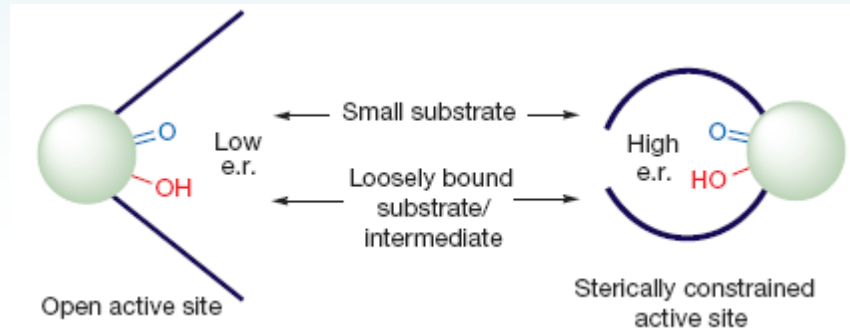
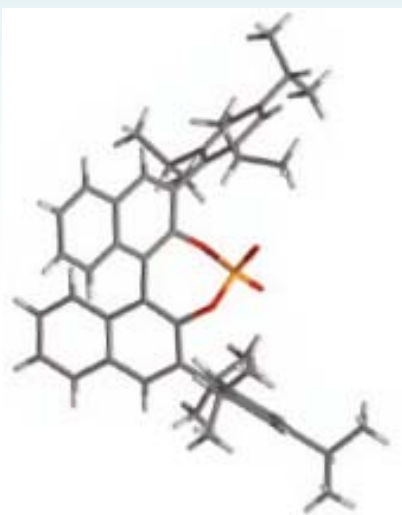
Ding, K. *Angew. Chem. Int. Ed.* **2012**, *51*, 9276.

## 2.2 有机催化的不对称螺缩酮化

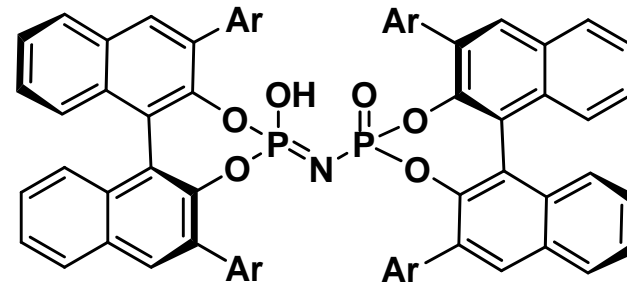


List, B. et al. *Nature* **2012**, 483, 315.

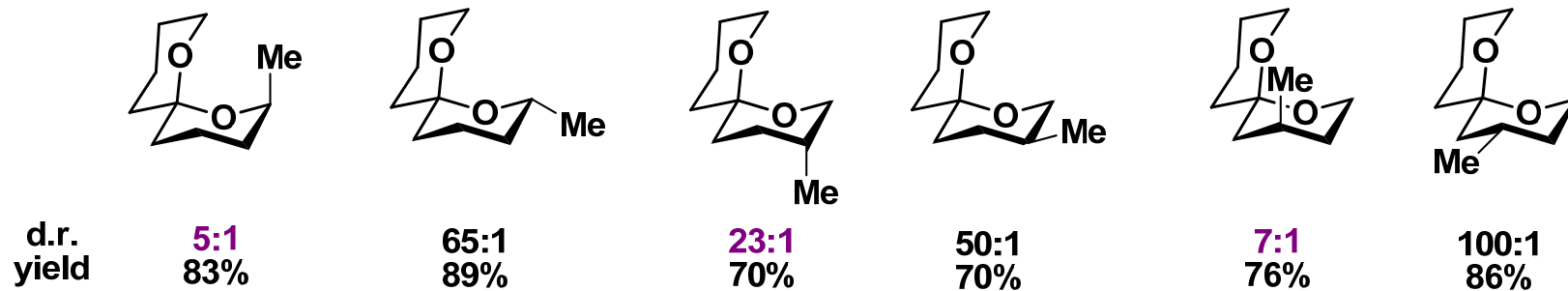
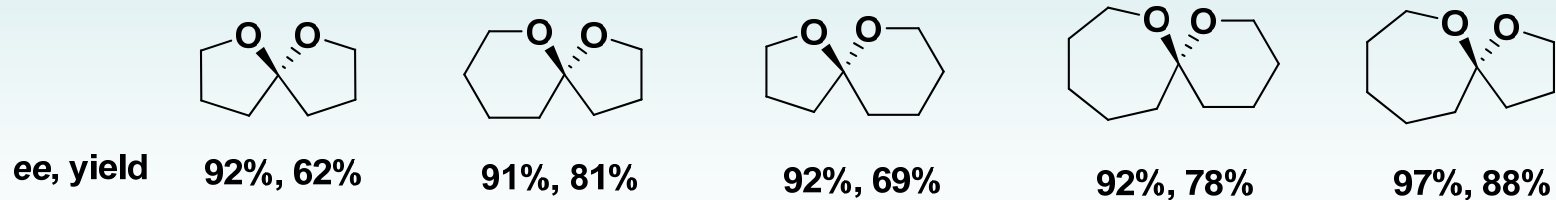


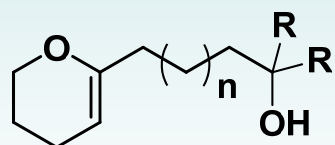


Ar = 2,4,6-triisopropylphenyl

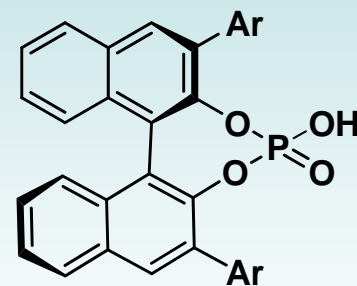
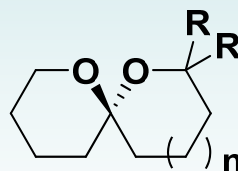


Ar = 2,4,6-triethylphenyl

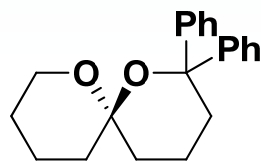




*(R)*-TRIP (5 mol%)

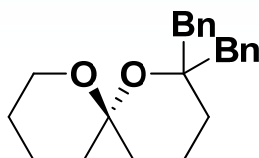


Ar = 2,4,6-triisopropylphenyl

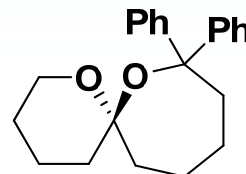


ee, yield

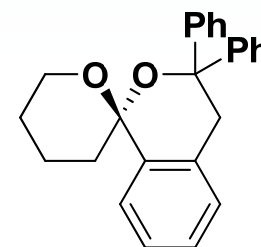
92%, 96%



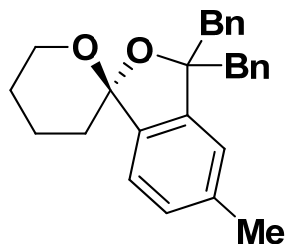
75%, 82%



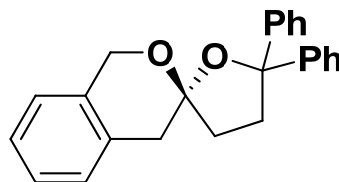
94%, 96%



96%, 93%

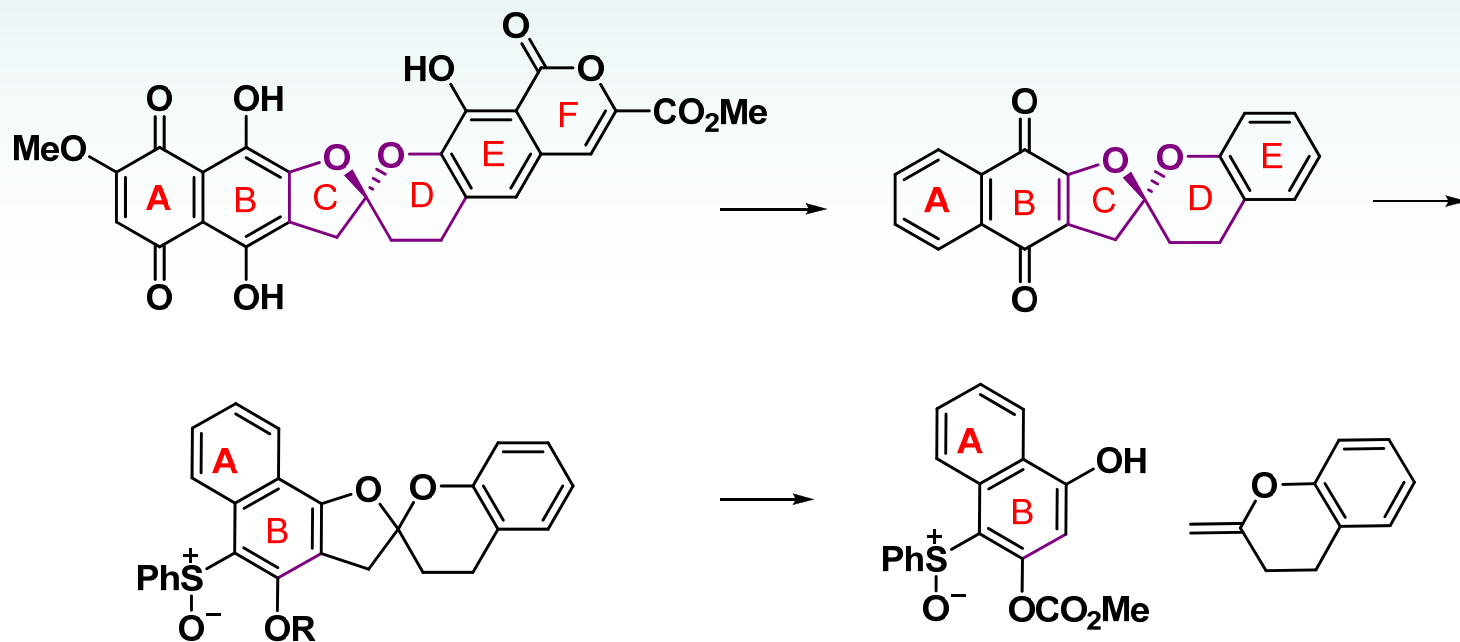


74%, 88%

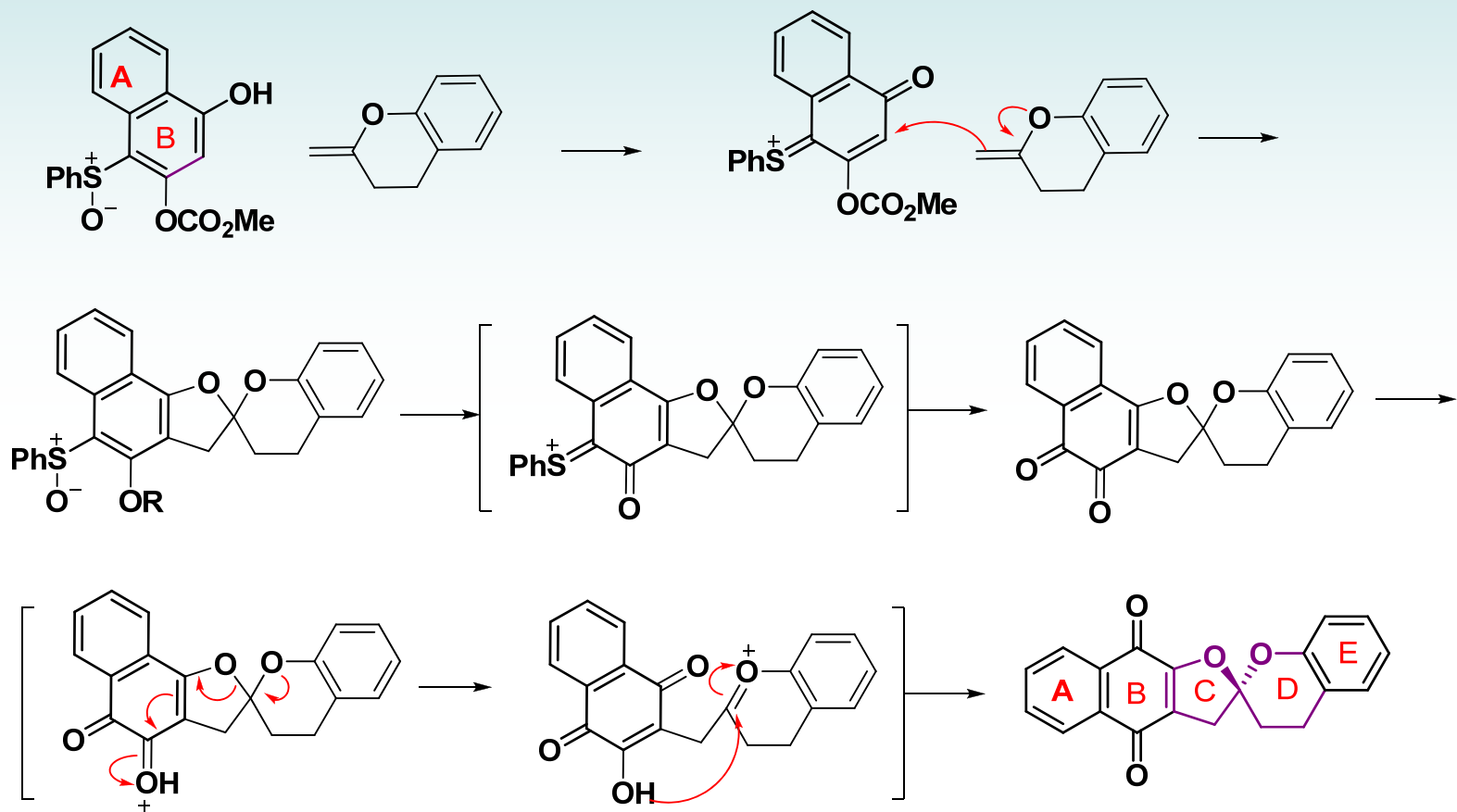


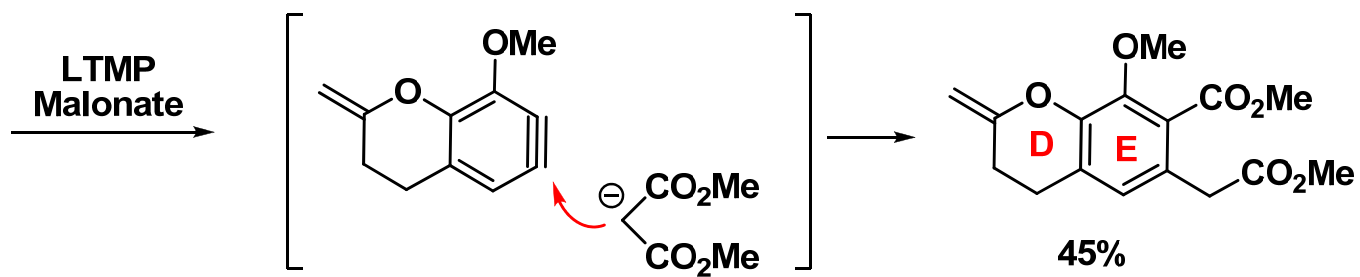
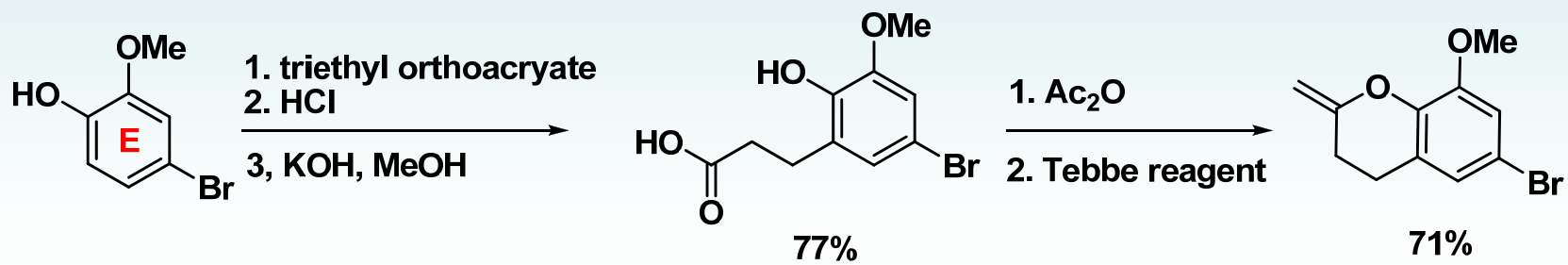
90%, 89%

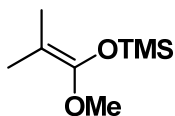
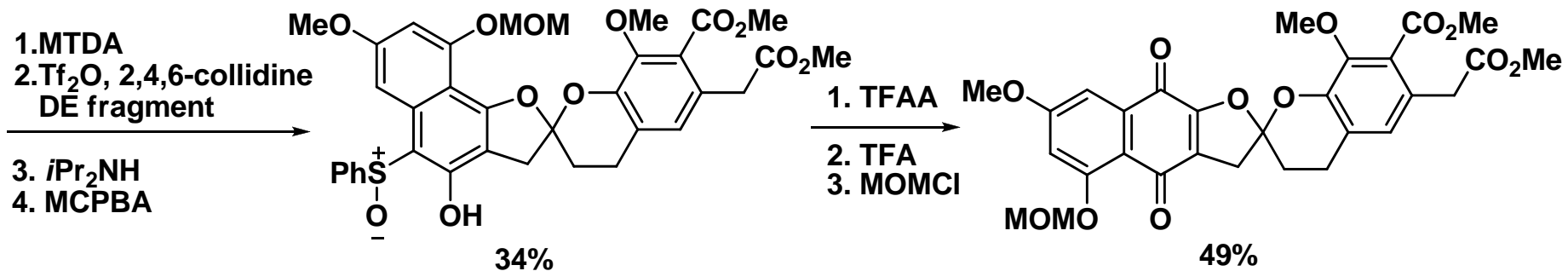
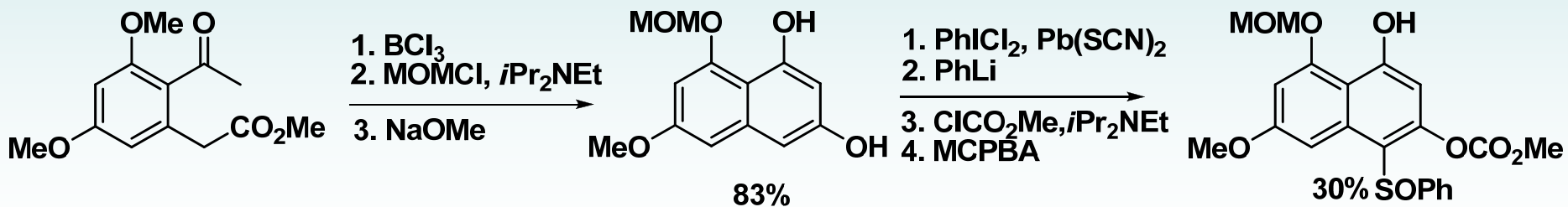
### 3. (+/-)- $\gamma$ -Rubromycin的全合成

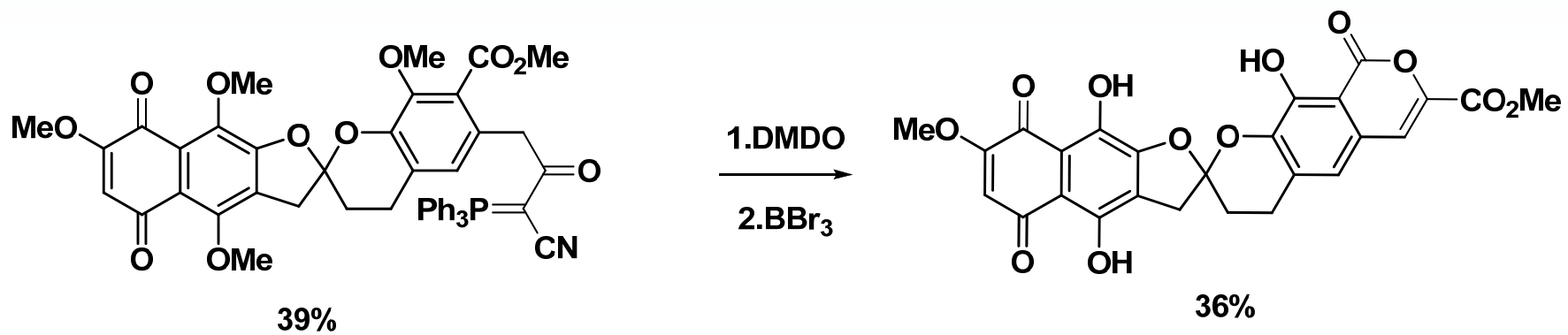
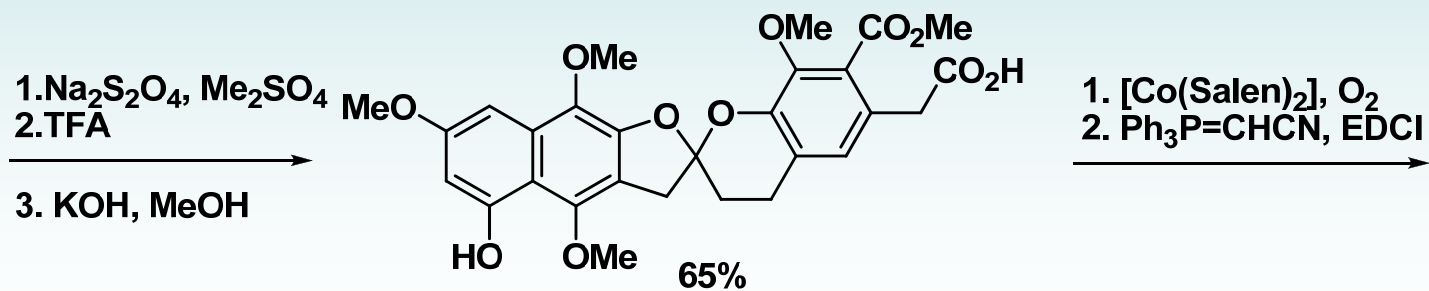


Forsyth, C. J. et al. *Angew. Chem. Int. Ed.* **2007**, *46*, 279.











## 4. 总结与展望

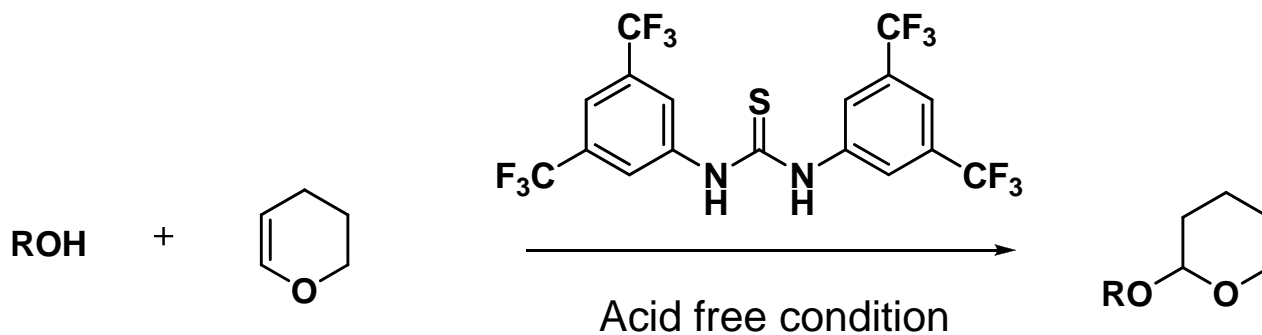
### *Simple, but challenging*

- 酸性条件不稳定，导致消旋化
- 分子体积小，立体化学不易控制

### ■ 新催化剂体系

路易斯酸催化剂：手性Ir<sup>III</sup> ?

中性硫脲催化剂：



Schreiner, P. R. et al. *Synthesis* **2007**, 779

## 参考文献

- 1) Ding, K. *Angew. Chem. Int. Ed.* **2012**, *51*, 936.
- 2) Ding, K. *Angew. Chem. Int. Ed.* **2012**, *51*, 9276.
- 3) List, B. et al. *Nature* **2012**, *483*, 315
- 4) Nagorny, P. et al. *J. Am. Chem. Soc.* **2012**, *134*, 8074.
- 5) Forsyth, C. J. et al. *Angew. Chem. Int. Ed.* **2007**, *46*, 279.



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