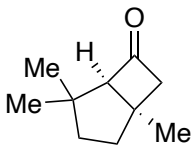
University of Zurich[UZH]

Total Synthesis of Phomopsene

Gademann Group
Till Steiner
03.10.2023



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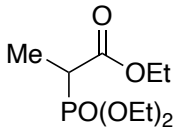

1) NaH, THF, *then* NaOH, EtOH, H_2O, reflux

2) CDI, THF; $MgCl_2$, $MeOCOCH_2CO_2K$, reflux
3) cyclobutanone, $TiCl_4$, pyridine, THF, RT
67% over 3 steps
***E/Z* 2:1**

A

4) $InCl_3$, DCM, 80 °C
92% from (*Z*)-**A**, r.r. 15:1

4)' $InCl_3$, *hv* (365 nm), DCM, 80 °C
67% from (*E*)-**A,** r.r. 15:1

B

5) LiCl, H_2O, DMSO, 180 °C
65%
6) NaHMDS, TBSOTf, THF, 0 °C
then $NaHCO_3$, *m*-CPBA, DCM, 0 °C
87%, d.r. > 20:1

C

7) MOMCl, DIPEA, DCM, RT
92%
8) $NaBH_4$, MeOH, RT
96%

9) $HONH_2 \cdot HCl$, pyridine, 120 °C
86%

D

10) $SOCl_2$, DCM, -40 °C
then DIBAL-H, -40 °C to RT
then neutral alumina

46%

E

11) DMP, DCM, *then* DBU, 40 °C
88%
12) LiHMDS, HMPA, MeI, THF, -78 °C to RT
then 6 M HCl, MeOH, 60 °C
87%

F

13) PtO_2, H_2 (1 atm), AcOH/EtOAc, *then* DMP, $NaHCO_3$, DCM, RT
69%

14) $(TMSOCH_2)_2$, TMSOTf, DCM, -40 °C to 0 °C
88%

G

15) PhSeCl, LiHMDS, THF, -78 °C to -20 °C, *then* aq. H_2O_2 (30%), pyridine, DCM, 0 °C

72%

H

J.-J. Yin, Y.-P. Weng, J. Xue, F.-F. Zhou, X.-Q. Shan, R. Zhu, K. Fang, L. Shi, S.-Y. Zhang, S.-H. Hou, W. Xia, Y.-Q- Tu, *J. Am. Chem. Soc.* **2023**, DOI: 10.1021/jacs.3c07044.

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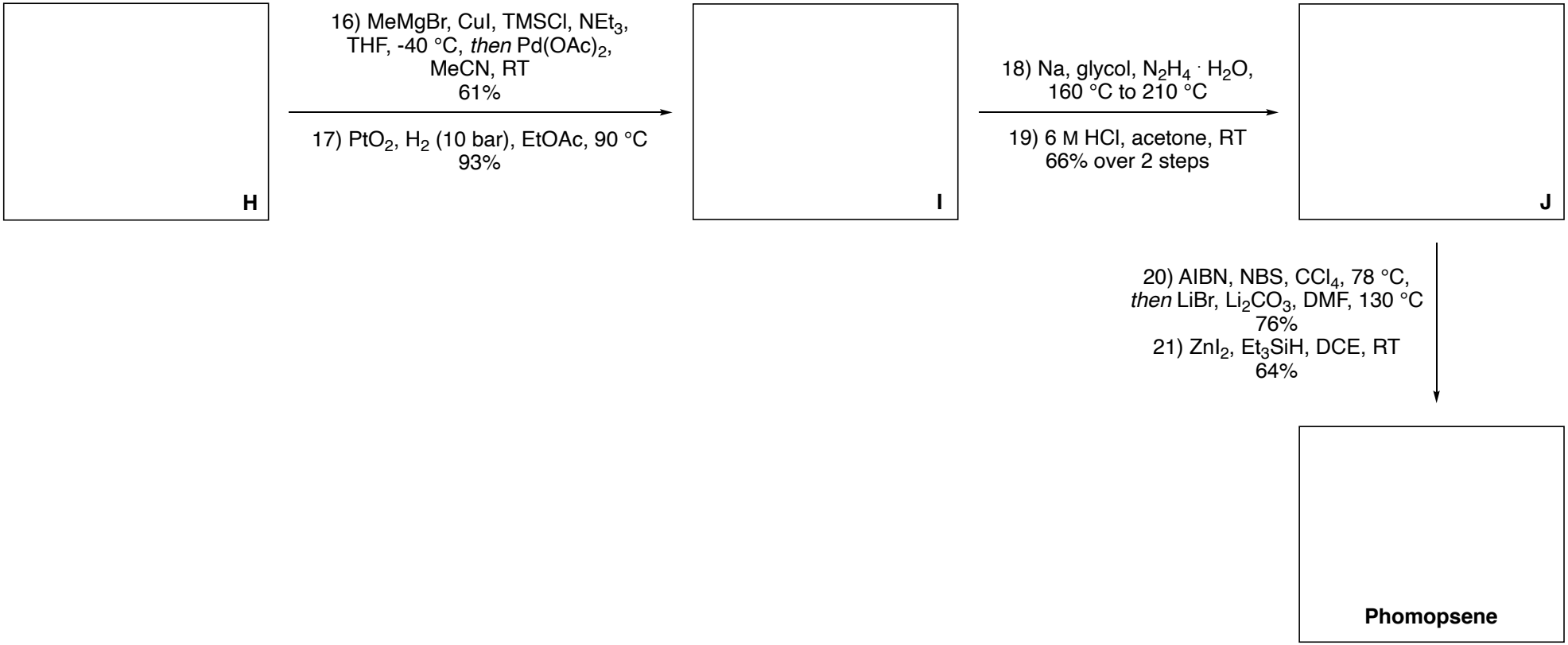

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