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Total Syntheses of Polycyclic Diterpenes Phomopsene, Methyl Phomopsenonate, and *iso*-Phomopsene via Reorganization of C–C Single Bonds

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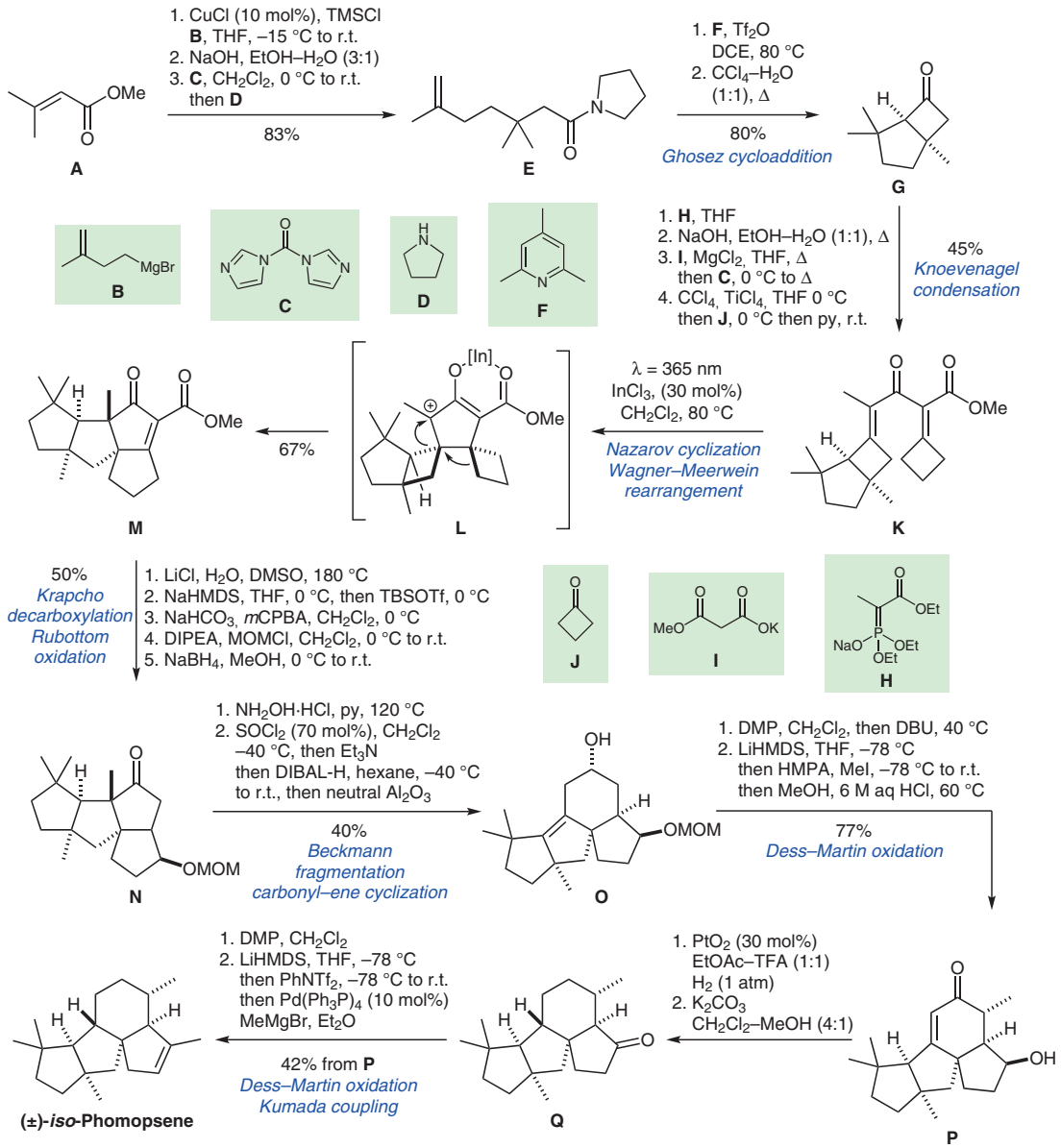
# Total Synthesis of (±)-*iso*-Phomopsene




**Significance:** Shi, Hou, Tu and co-workers report the total synthesis of phomopsene, methyl phomopsenonate, and *iso*-phomopsene. These natural products feature a 5/5/6/5 tetracyclic skeleton. The authors revised the structure of *iso*-phomopsene in this work.

**Comment:** Key to success is an $InCl_3$-catalyzed Nazarov cyclization of dicyclobutane **K** followed by Wagner–Meerwein rearrangements to afford tetracycle **M**. Ring expansion via Beckmann fragmentation completed the carbocyclic framework.

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**Category**

Synthesis of Natural Products

**Key words**

(±)-*iso*-phomopsene
diterpenoid
Ghosez cycloaddition
Knoevenagel condensation
Nazarov cyclization
Wagner–Meerwein rearrangement
Krapcho decarboxylation
Rubottom oxidation
Beckmann fragmentation
carbonyl–ene cyclization
Dess–Martin oxidation
Kumada coupling