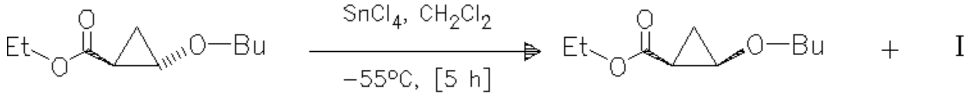
cycloaddition reactions
O 0070
20 - 056

(3 + 2)Cycloaddition of 2-Alkoxycyclopropyl Carbonyl Compounds with Enol Silyl Ethers for Functionalized Cyclopentane Formation. — Epimerization of the trans-ethyl 2-butoxycyclopropanecarboxylate (I) to give the cis-isomer (II) is achieved using tin(IV) chloride in methylene chloride. The cyclopentane derivatives (IV) are generated as a mixture of diastereomers by cycloaddition reaction of (II) with the enol silyl ethers (III) in the presence of tin(IV) chloride. Only catalytic amounts of SnCl4 are required to induce the cycloaddition reaction of 2-methoxycyclopropyl methyl ketone (V) with the enol silyl ethers (VI), forming the cyclopentane derivatives (VII). A mechanism is discussed. — (KOMATSU, M.; SUEHIRO, I.; HORIGUCHI, Y.; KUWAJIMA, I.; Synlett (1991) 11, 771-773; Dep. Chem., Tokyo Inst. Technol., Meguro, Tokyo 152, Japan; EN)



I II

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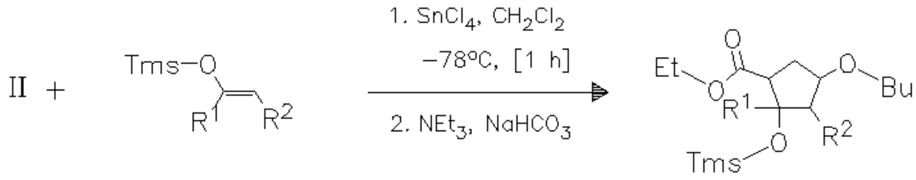
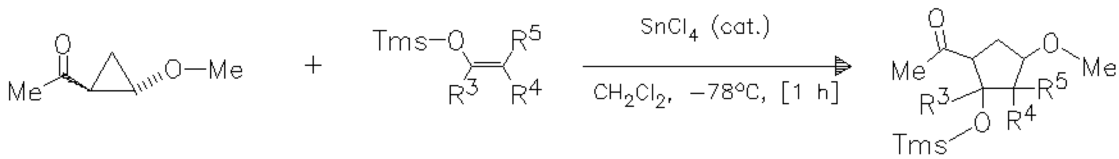


III	IV
a R^1: —Ph ; R^2: —H	66%
b R^1—R^2: —$(CH_2)_3$—	67%
c R^1—R^2: —$(CH_2)_4$—	70%
d R^1—R^2: —$(CH_2)_5$—	69%



V VI VII

VI	VII
a R^3: —CH=CH_2 ; R^4, R^5: —H	34%
b R^3: —Bu ; R^4, R^5: —H	60%
c R^3: —Ph ; R^4, R^5: —H	78%
d R^3—R^4: —$(CH_2)_4$— ; R^5: —H	74%
e R^3: —Et ; R^4: —H ; R^5: —Me	41%