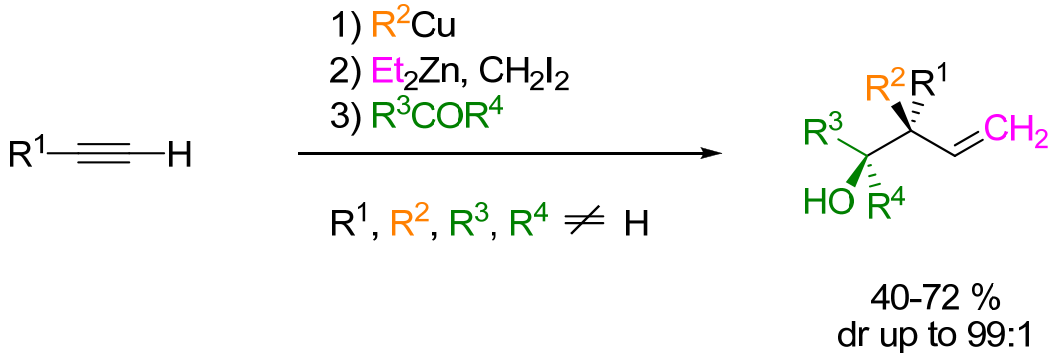
# Highly Diastereoselective Preparation of Homoallylic Alcohols Containing Two Contiguous Quaternary Stereocenters in Acyclic Systems from Simple Terminal Alkynes

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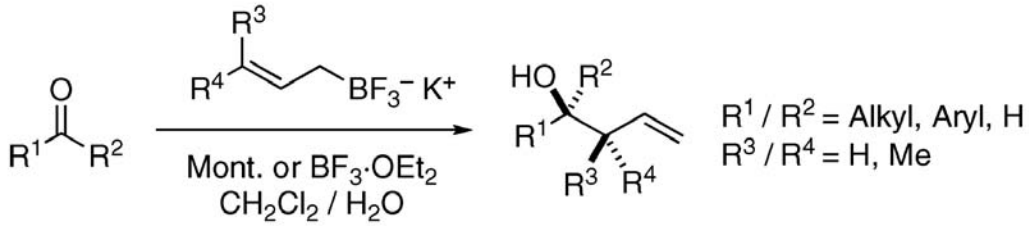
JACS, Asap

# Bibliography

Preparation of homoallylic alcohols from different organometallic species :

. Bore

Batey et al., *Org. Lett.*, **2009**, *11*, 2631




. Titanium

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. Tin

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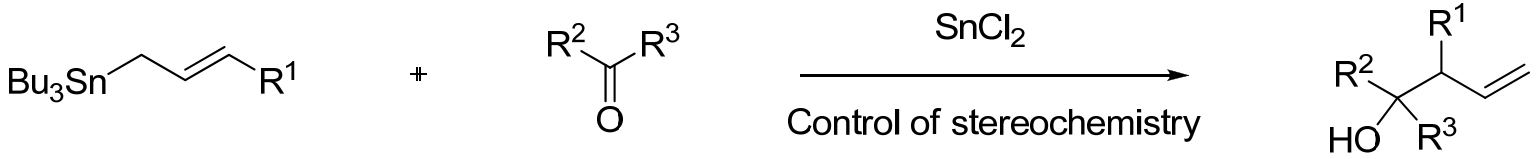


. Silicium

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. Zinc

Knochel. et al., *Org. Lett.,* **2008**, *10*, 117

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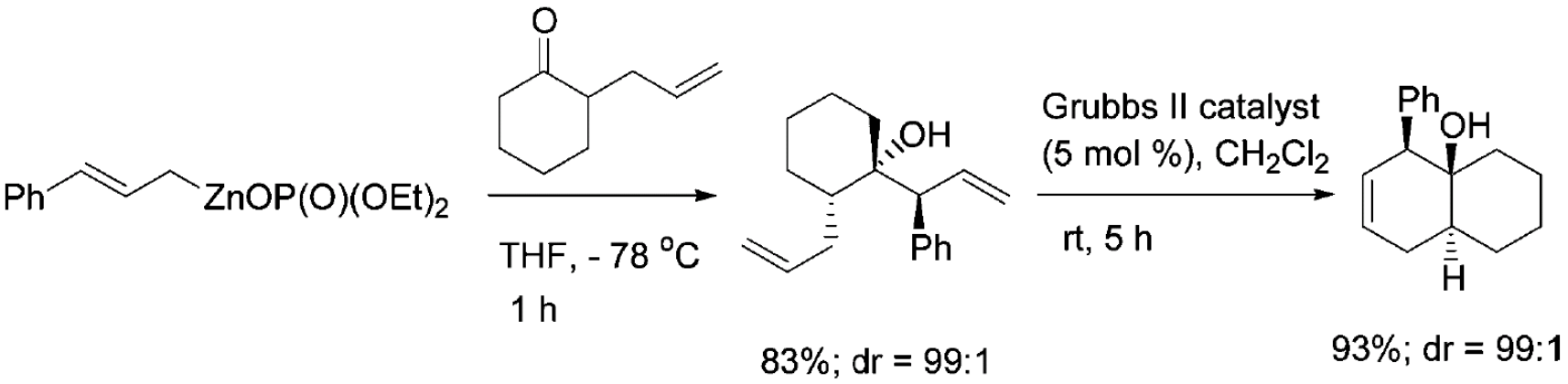
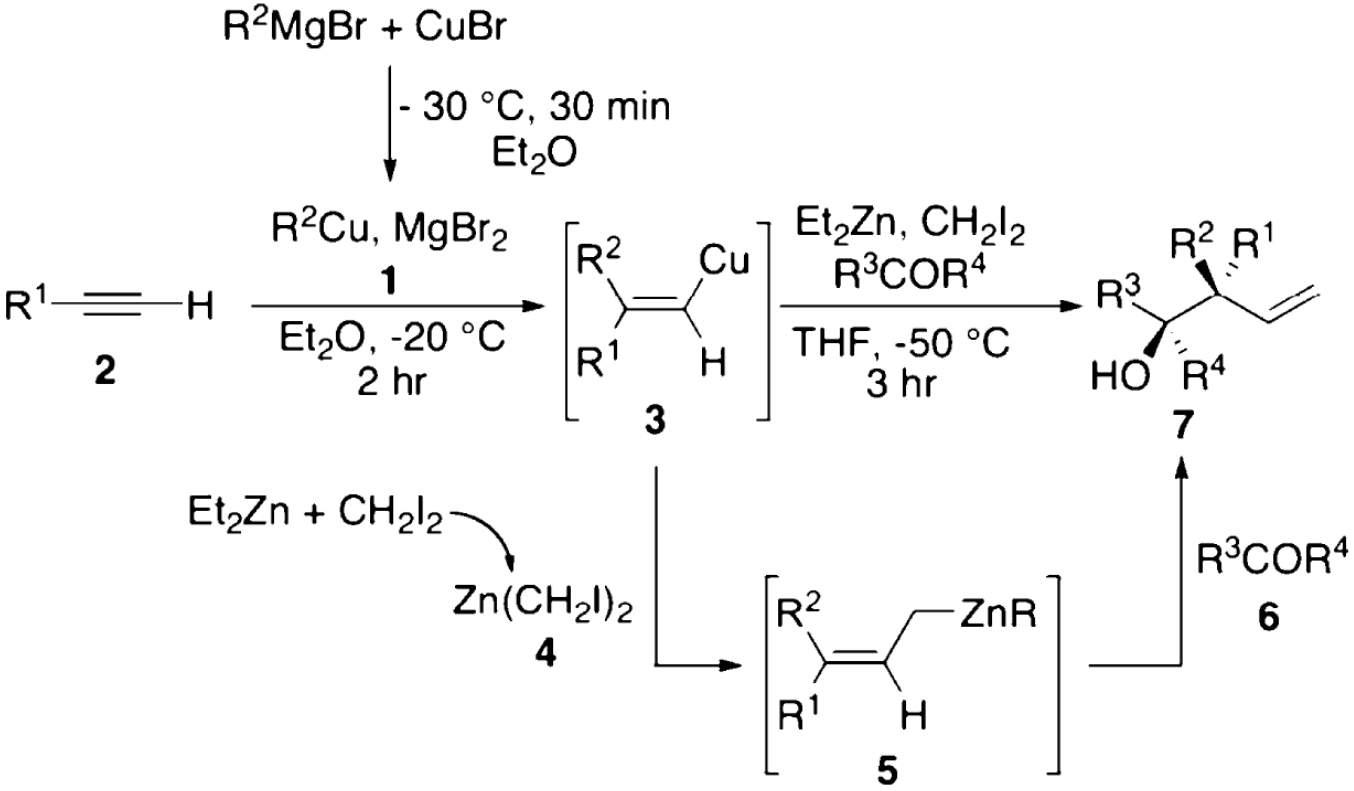


# Scope of the reaction


| entry | $R^1$ | $R^2$ | $R^3$ | $R^4$ | pdts | Yield[a] % | dr[b] |
|---|---|---|---|---|---|---|---|
| 1 | $C_4H_9$ (**2a**) | $C_2H_5$ (**1a**) | $C_6H_5$ | $CH_3$ | **7a** | 70 | 98/2 |
| 2 | $C_2H_5$ (**2b**) | $C_4H_9$ (**1b**) | $C_6H_5$ | $CH_3$ | **7b** | 72 | 97/3 |
| 3 | $C_2H_5$ (**2b**) | $C_4H_9$ (**1b**) | $C_6H_5$ | $C_2H_5$ | **7c** | 60 | 91/9 |
| 4 | $CH_3$ (**2c**) | $C_2H_5$ (**1a**) | $C_6H_5$ | $CH_3$ | **7d** | 60 | 99/1 |
| 5 | $CH_3$ (**2c**) | $C_2H_5$ (**1a**) | $C_6H_5$ | $C_2H_5$ | **7e** | 50 | 91/9 |
| 6 | $C_4H_9$ (**2a**) | $C_2H_5$ (**1a**) | $pCH_3O_2CC_6H_4$ | $CH_3$ | **7f** | 72 | 99/1 |
| 7 | $C_2H_5$ (**2b**) | $C_4H_9$ (**1a**) | $pCH_3O_2CC_6H_4$ | $CH_3$ | **7g** | 70 | 99/1 |
| 8 | $C_4H_9$ (**2a**) | $C_2H_5$ (**1a**) | $p$-$CH_3C_6H_4$ | $CH_3$ | **7h** | 60 | 98/2 |
| 9 | $CH_3$ (**2c**) | $C_2H_5$ (**1a**) | $p$-$BrC_6H_4$ | $CH_3$ | **7i** | 62 | 98/2 |
| 10 | $C_4H_9$ (**2a**) | $C_2H_5$ (**1a**) | $p$-$BrC_6H_4$ | $CH_3$ | **7j** | 60 | 97/3 |
| 11 | $CH_3$ (**2c**) | $C_2H_5$ (**1a**) | $p$-$MeOC_6H_4$ | $CH_3$ | **7k** | 55 | 97/3 |
| 12 | $CH_3$ (**2c**) | $C_2H_5$ (**1a**) | 2-naphthyl | $CH_3$ | **7l** | 65 | 98/2 |
| 13 | $C_4H_9$ (**2a**) | $C_2H_5$ (**1a**) | PhCH=CH | $CH_3$ | **7m** | 40 | 98/2 |
| 14 | $C_4H_9$ (**2a**) | $C_2H_5$ (**1a**) | 2-thiophenyl | $CH_3$ | **7n** | 55 | 90/10 |
| 15 | $C_2H_5$ (**2b**) | $C_4H_9$ (**1b**) | 2-thiophenyl | $CH_3$ | **7o** | 57 | 90/10 |

[a] Isolated yields. [b] Diastereoisomeric ratios determined by $^1H$, $^{13}C$ NMR and gas chromatography analysis of the crude reaction mixture.

# How does it work ?



# Conclusion

Preparation of homoallylic alcohols containing two contiguous stereocenters

From commercially available terminal alkynes

Construction of three carbon-carbon bonds in a single pot operation

15 examples , 40-72 %

Excellent control of the diastereoselectivity