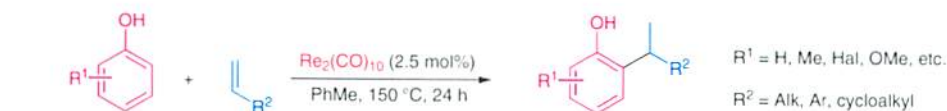


Y. KUNINOBU,\* T. MATSUKI, K. TAKAI\* (OKAYAMA UNIVERSITY, JAPAN)

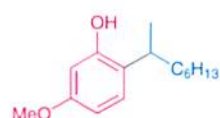
Rhenium-Catalyzed Regioselective Alkylation of Phenols

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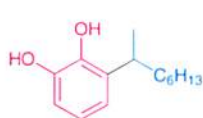
## Rhenium-Catalyzed Regioselective Alkylation of Phenols



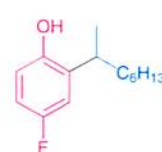
Examples:



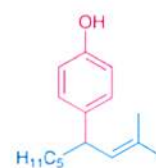
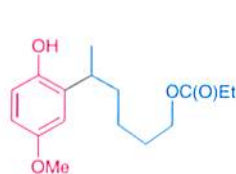
83% yield (6-/2-isomer = 71:29)



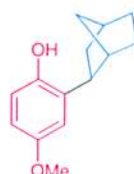
50% yield (mono/bis = 81:19)



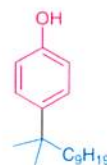
96% yield

87% yield  
from  $\text{C}_5\text{H}_{11}\text{CH}=\text{CHCMe}=\text{CH}_2$ 

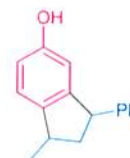
83% yield



91% yield (mono/bis = 82:18)



89% yield

58% yield (trans/cis = 58:42)  
from  $\text{PhCH}=\text{CHCH}=\text{CH}_2$ 

**Significance:** Monoalkylation of phenols with alkenes proceeds only in *ortho*- and *para*-positions to the hydroxyl group in the presence of  $\text{Re}_2(\text{CO})_{10}$  as a catalyst. In most cases, the monoalkylation product can be obtained selectively in good to excellent yields. This reaction has many advantages over the classical Friedel–Crafts alkylation.

**Comment:** The reaction requires the presence of a free phenolic hydroxyl group and proceeds neither with anilines nor with polyalkoxybenzenes. Usual Friedel–Crafts catalysts like  $\text{AlCl}_3$  leads to product mixtures under these conditions. Functional groups like esters or ethers and halogens are well tolerated.

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