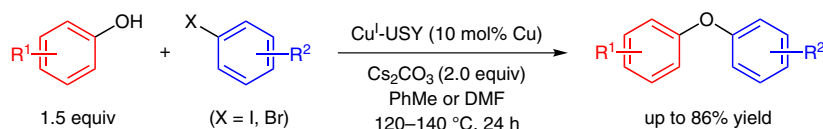
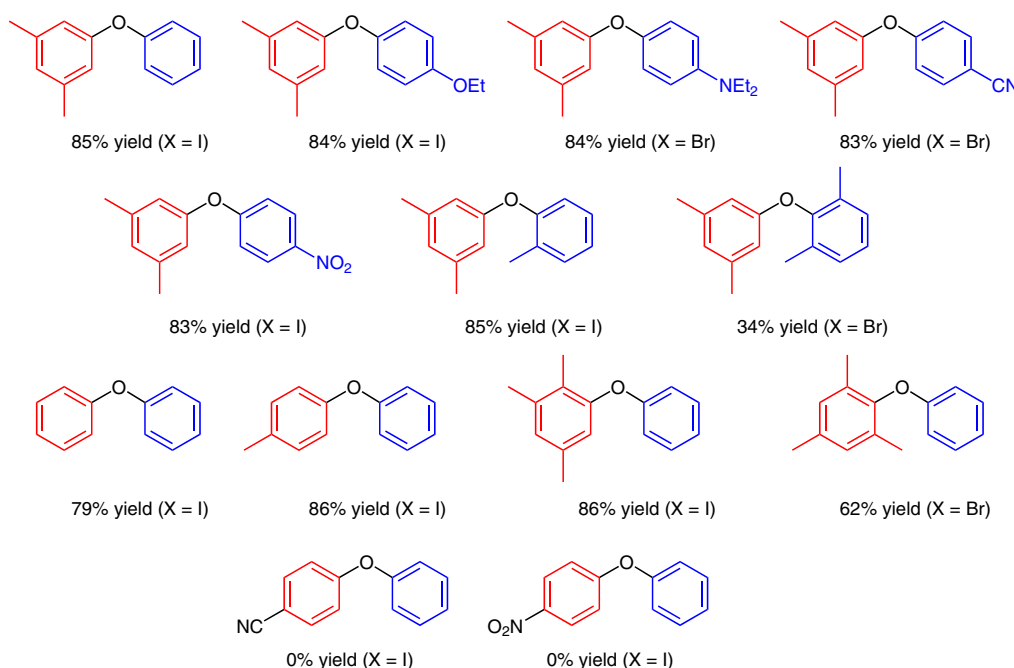


Ullmann-Type Coupling of Phenols with Aryl Halides on Cuprian Zeolite USY



Typical results:



Significance: Copper(I)-exchanged zeolite USY (Cu^I-USY) catalyzed the Ullmann-type coupling of phenols with aryl iodides or bromides in the presence of cesium carbonate to give the corresponding diaryl ethers in up to 86% yield. In the reaction of 3,5-dimethylphenol with iodobenzene, the catalyst was recovered by simple filtration and reused four times without loss of catalytic activity.

Comment: The authors have previously reported a Huisgen cycloaddition and a Glaser coupling with Cu^I-USY (*Org. Lett.* **2007**, *9*, 883; *Eur. J. Org. Chem.* **2009**, 423). The catalytic activity of Cu^I-USY for the Ullmann-type coupling was superior to that of the other Cu(I) zeolites, such as Cu^I-MOR, Cu^I-β, or Cu^I-ZSM5. Cu^I-USY was ineffective for the reactions of 4-cyano- or 4-nitrophenols with phenyl halides. ICP-AES analysis revealed that no copper leached from the catalyst during the reaction.