

## **Cationic ruthenium hydride catalysed and chelate assisted C-O bond cleavage of 2-acetyl-aryl ethers: A model compound for lignin de-polymerization**

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2-Acetyl containing a neighbouring aromatic ether group regioselectively reacts with the cyclopentene in the presence of cationic Ru-H catalyst  $[(C_6H_6)(PCy_3)(CO)RuH]^+BF_4^-$  in aromatic hydrocarbon solvents. The alkyl moiety of ether can be any of cyclic, methyl, butyl, benzyl, phenyl and allyl groups. Chelation plays a key role in regioselectivity directing the C-O bond cleavage reaction. The reactions of 2-acetyl derivatives of aryl-ethers under these conditions affect the corresponding products having only phenol -OH group at the aromatic ring. Cleavage of the  $sp^3$  C-O bond occurs selectively rather than  $sp^2$  C-O bond. The method has successfully extended to C-O bond cleavage of flavanone biomolecule and strongly possible to extend regioselectively depolymerize lignin biomolecules.

**Keywords:** C-O bond cleavage, Lignin depolymerization, Ru-H catalyst, regioselectivity

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