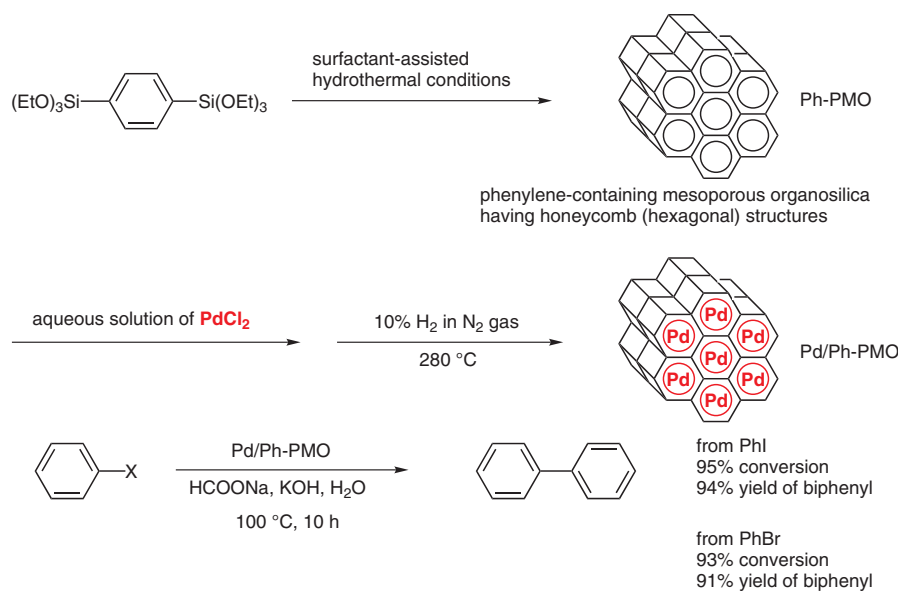


## Palladium on Mesoporous Organosilica



**Significance:** Phenylene-containing mesoporous organosilica, Ph-PMO, prepared from 1,4-bis(triethoxysilyl)benzene is known as an organic-inorganic hybridized composite bearing highly ordered periodic honeycomb (hexagonal) structures. A palladium species was impregnated inside Ph-PMO and the resulting Pd/Ph-PMO was used as a catalyst for the Ullmann-type homocoupling of halobenzenes in water. The coupling reactions of PhI and PhBr were promoted by Pd/Ph-PMO in water at 100 °C in the presence of HCOONa with excellent selectivity to give 94% and 91% yields of biphenyl, respectively.

**Comment:** Pd-impregnated mesoporous composites were also prepared from MCM-41 and Ph-MCM-41 (phenylene groups were anchored onto the silanol of the pore walls). Pd/MCM-41 and Pd/Ph-MCM-41 catalyzed the coupling reactions of PhI (PhBr) in water to give 34% (0%) and 74% (19%) of biphenyl, respectively (the yields from PhBr in parentheses). The hydrophobic/hydrophilic nature of Ph-PMO was characterized via water/toluene vapor adsorption studies to reveal a relatively high hydrophobicity of Ph-PMO. The high catalytic activity of Pd/Ph-PMO can be explained by the high affinity of hydrophobic halobenzene substrates to the hydrophobic mesopores of Ph-PMO.