

Pd-Catalyzed Deoxygenative Coupling of Aromatic Compounds

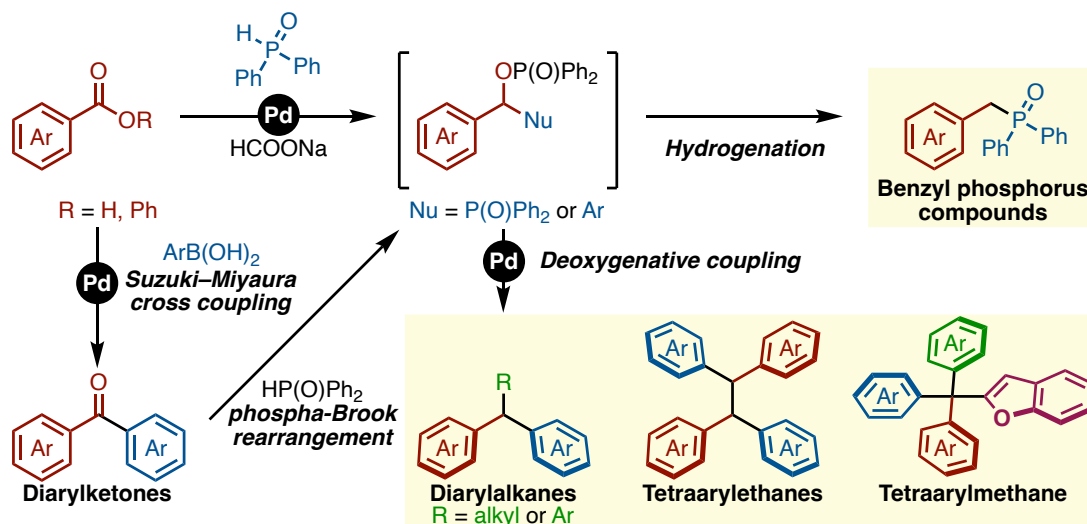
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Aromatic compounds such as carboxylic acids and esters are frequently used as abundant, inexpensive chemical feedstock in organic synthesis and can be derived into various aromatics. For example, nucleophilic acyl substitutions have been used as classical transformation of aromatic esters. Recently, transition-metal-catalyzed decarbonyl transformation of aromatic esters with various carbon/hetero-nucleophiles has received attention as an emerging method in synthetic organic chemistry.¹

Herein, we have developed a palladium-catalyzed deoxygenative couplings as a new type transformation reaction between aromatic carboxylic acids and esters.¹ Aromatic esters can be function as benzylating agents to give the corresponding benzyl phosphorus compounds. Mechanistic studies of this reaction revealed that the deoxygenative reaction proceed through the phospha-Brook rearrangement. As an application to this coupling we also developed unified synthesis of multi-arylated alkanes by catalytic deoxygenative transformation of diarylketones. Diarylketones, which are readily prepared by aromatic carboxylic acids could be converted to diarylmethanes, diarylethane, triarylmethanes, triarylethane, tetraarylmethane and tetraarylethanes via diarylmethylphosphinates generated by the phospha-Brook rearrangement.



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