

Metal-catalyzed Activation of Inert Chemical Bonds

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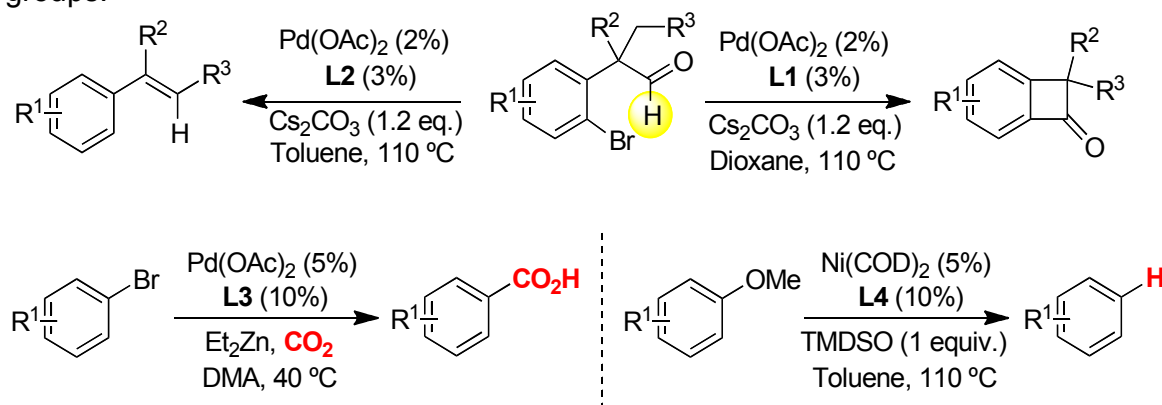
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In the last years, transition metal-catalyzed reactions have become arguably one of the most powerful synthetic tools in organic chemistry.^[1] Despite the advances realized, the true potential of these methodologies relies on the activation of inert chemical entities^[2] perhaps the most widespread and fundamental linkages in organic chemistry. In line with the same notion, some of the new challenges for organic chemists include the discovery and development of new synthetic pathways using renewable sources, such as CO₂.^[3]

Herein, we describe a new Pd-catalyzed functionalization of C-H bonds for the synthesis of highly valuable benzocyclobutenones^[4a] or α -aryl styrenes^[4] the preparation of benzoic acids via direct carboxylation of aryl halides with CO₂^[5] and the development of a novel Ni-catalyzed reductive protocol for the cleavage of inert C-O bonds (Scheme 1).^[6] These methods are characterized by their wide scope, including challenging substrate combinations with particularly sensitive functional groups.



Scheme 1. Metal-catalyzed activation of inert chemical bonds

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