

One-pot cleavage and functionalization of β -1 lignin model compounds and lignin extracts with V-complexes

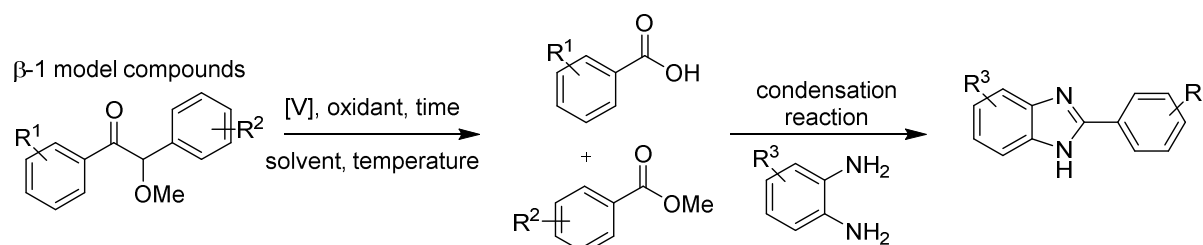
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Valorization of lignocellulosic biomass has gained more and more importance for the production of specialized materials, biofuels, bulk and fine chemicals.^[1,2] This lignocellulosic biomass consists of three main components – cellulose, hemicellulose, and lignin. Lignin is a complex macromolecule with high oxygen to carbon ratios, thus making it interesting for the synthesis of highly oxygenated aromatic chemicals.^[3] With the problem of this complex polymer structure in hand, recent studies have focused on the cleavage of lignin model compounds that mimic the binding motifs of the lignin polymer.^[4] However, one problem during oxidative lignin cleavage is the rapid repolymerisation of reactive intermediates and products. Based on that, recent studies have attempted direct capping or functionalization of these reactive functional groups.^[5] Here, we present a two-step, one-pot approach for the cleavage and direct functionalization of lignin β -1 model compounds and lignin extracts towards benzimidazole derivatives using V-catalysis.



Scheme 1: Overview on the one-pot V-catalyzed reaction towards benzimidazole type products.

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