

### Catalytic conversion of lignin model compounds

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Lignin is a promising source of biofuels and biochemicals; however, it has been difficult to produce lignin-based petroleum-grade fuels and chemicals because of complex structures of lignin containing various ether linkages, such as  $\alpha$ -O-4,  $\beta$ -O-4, 5-5,  $\beta$ -5, and 4-O-5 between 3 kinds of monomers, i.e., p-coumaryl alcohol, coniferyl alcohol, and synapyl alcohol. We studied the decomposition of lignin structures using eugenol, monomeric lignin model compound, and benzyl phenyl ether, dimeric lignin model compound, using a high-pressure reactor. Solid acid catalysts were used in order to produce aromatic or saturated compounds from benzyl phenyl ethers and eugenol. The products were analyzed using GC equipped with FID and GC-MS. The prepared catalysts were characterized by ICP-AES,  $N_2$ -physisorption, XPS,  $NH_3$ -TPD, and XRD to elucidate the relations between catalytic activities and catalyst structures.