Abstract:

Pd nano particles (NPs) supported on mesoporous N-doped carbon, Pd@CN$_{0.132}$ is reported, which has shown to be highly active in promoting biomass refining. The use of task-specific ionic liquid (3-methyl-1-butylpyridine dicynamide) as a precursor and silica NPs as a hard template afforded a high nitrogen content (12 wt%) mesoporous carbon material that showed high activity in stabilizing Pd NPs. The resulting Pd@CN$_{0.132}$ catalyst showed very high catalytic activity in hydrodeoxygenation of vanillin (a typical model compound of lignin) at low H$_2$ pressure under mild conditions in aqueous media. Excellent catalytic results (100% conversion of vanillin and 100% selectivity for 2-methoxy-4-methylphenol) were achieved, and no loss of catalytic activity was observed after six recycles.

Reference:

Xuan Xu, Yi Li, Yutong Gong, Pengfei Zhang, Haoran Li, and Yong Wang, J. Am. Chem. Soc. 2012, 134, 16987–1699.