

Synthesis of 1,6-hexanediol from HMF over double-layered catalysts of Pd/SiO₂+Ir-ReO_x/SiO₂ in a fixed-bed reactor

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Experimental

Sub angstrom resolution HAADF STEM images were obtained on a JEOL JEM-ARM200F STEM/TEM, equipped with a CEOS probe corrector, with an attainable resolution of 0.08 nm. Before measurement, the sample was reduced at 573 K in flowing hydrogen for 2 h and passivated with 1% O₂/N₂ at room temperature for 4 h. Afterward, the catalysts were ground to fine powders, ultrasonically dispersed in ethanol, and dripped on a holey C/Cu TEM grid.

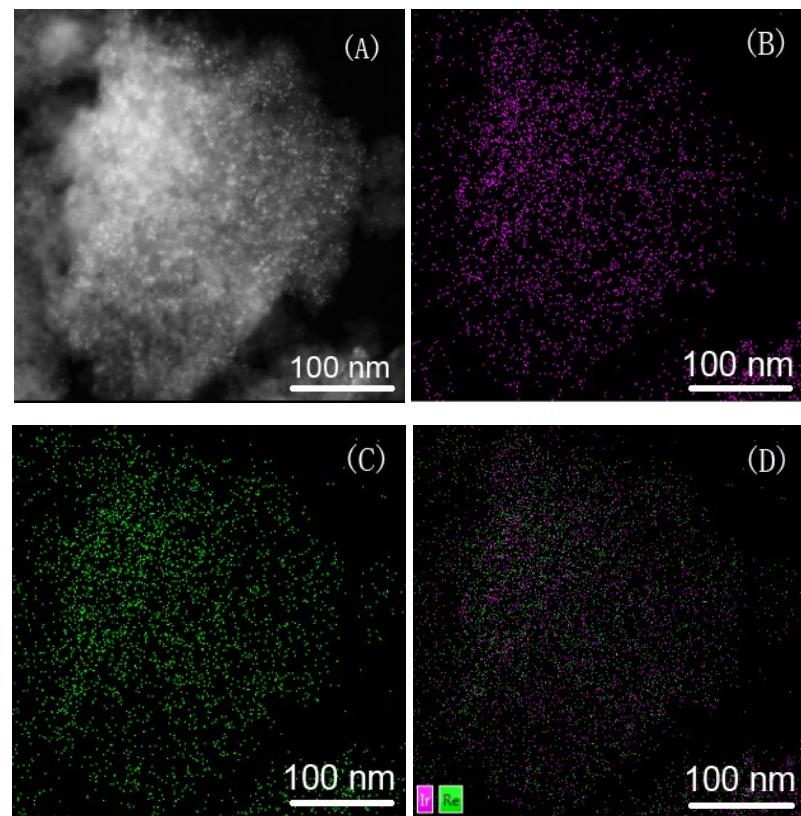


Figure S1. STEM and EDX images of Ir-ReO_x/SiO₂(5%-5%) catalyst. STEM image (A), EDX mappings of Ir (B), Re (C), and overlapped EDX mappings of Ir and Re (D).

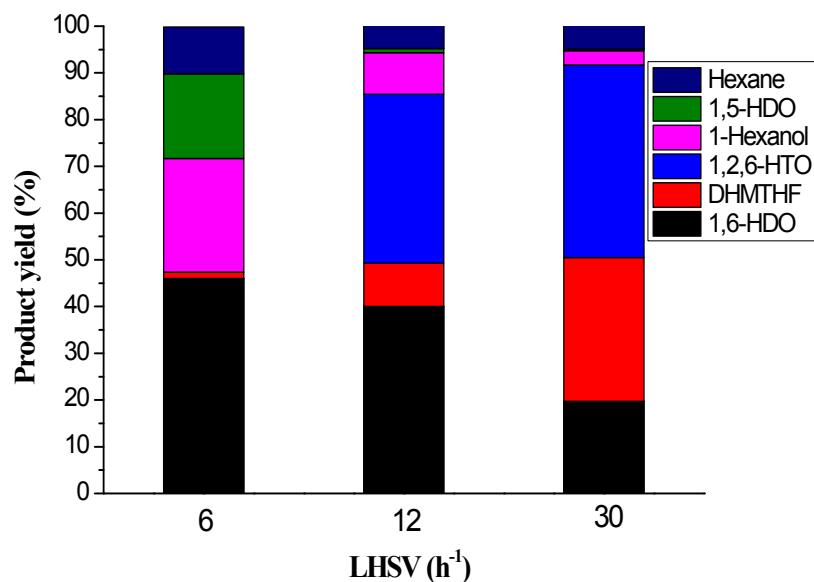


Figure S2. Results of HMF conversion over $\text{Pd/SiO}_2(0.6\%) + \text{Ir-ReO}_x/\text{SiO}_2(5\%-5\%)$ catalysts under different LHSV. The carbon balance under three conditions is $100\% \pm 5\%$. The yield of each product was normalized in the figure. (HMF conversions were 100% in all experiments; Reaction condition: 5 MPa H_2 , mixed solvents of water and THF at volume ratio of 2:3, 1 wt% HMF).