

Supplementary Information

Role of Tungsten Modifiers in Bimetallic Catalysts for Enhanced Hydrodeoxygenation Activity and Selectivity

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Table S1: Pt and W weight loadings from ICP-MS

Sample	W Loading (%)	Pt Loading (%)
5Pt/Al ₂ O ₃	0%	4.50%
3W-5Pt/Al ₂ O ₃	2.79%	4.38%
6W-5Pt/Al ₂ O ₃	5.49%	4.48%
12W-5Pt/Al ₂ O ₃	9.90%	4.37%

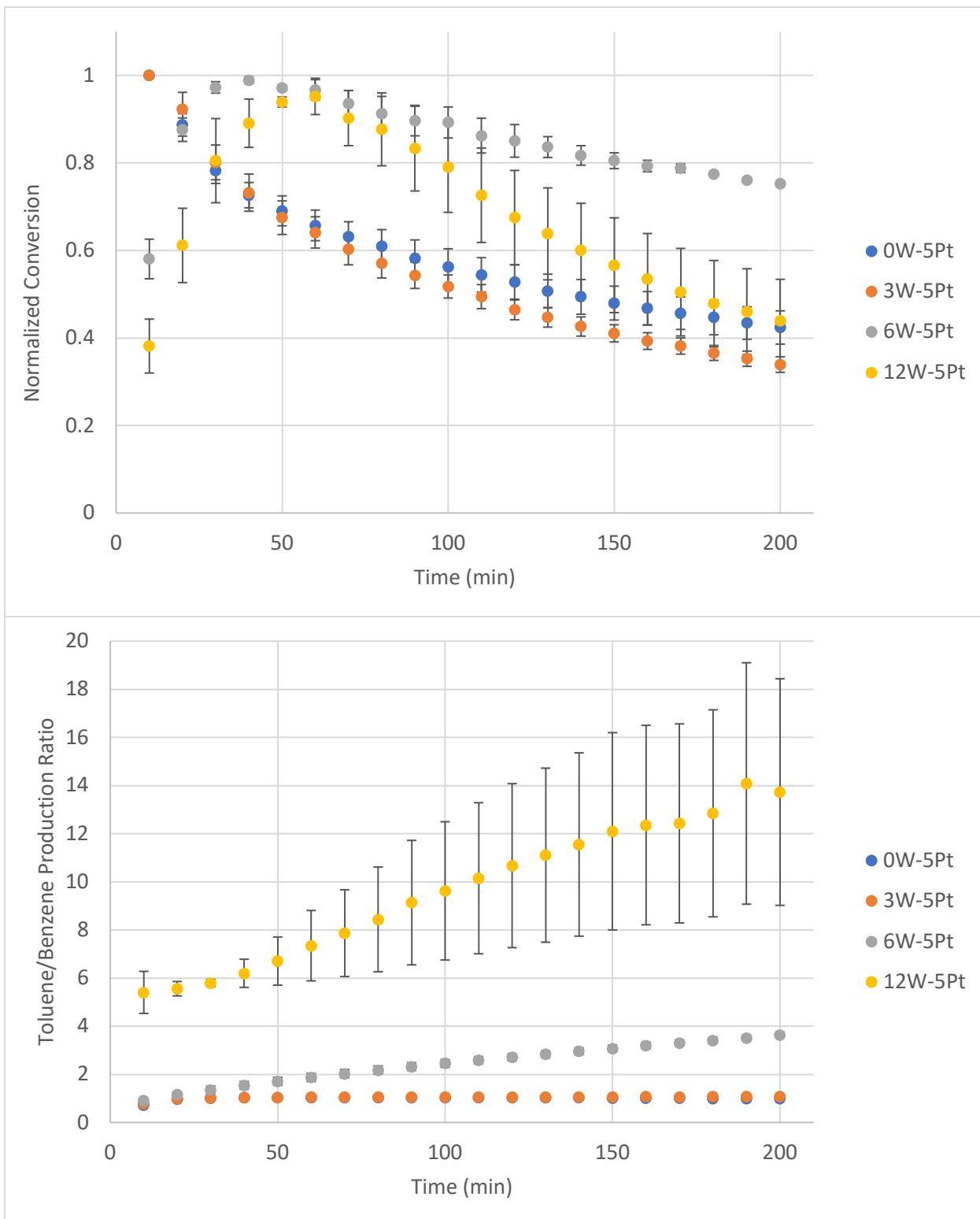


Figure S1: Time on stream data for bimetallic catalysts at WHSV ~ 1.75 (hr $^{-1}$). Normalized conversion (a) and toluene/benzene production ratio (b) are plotted against time

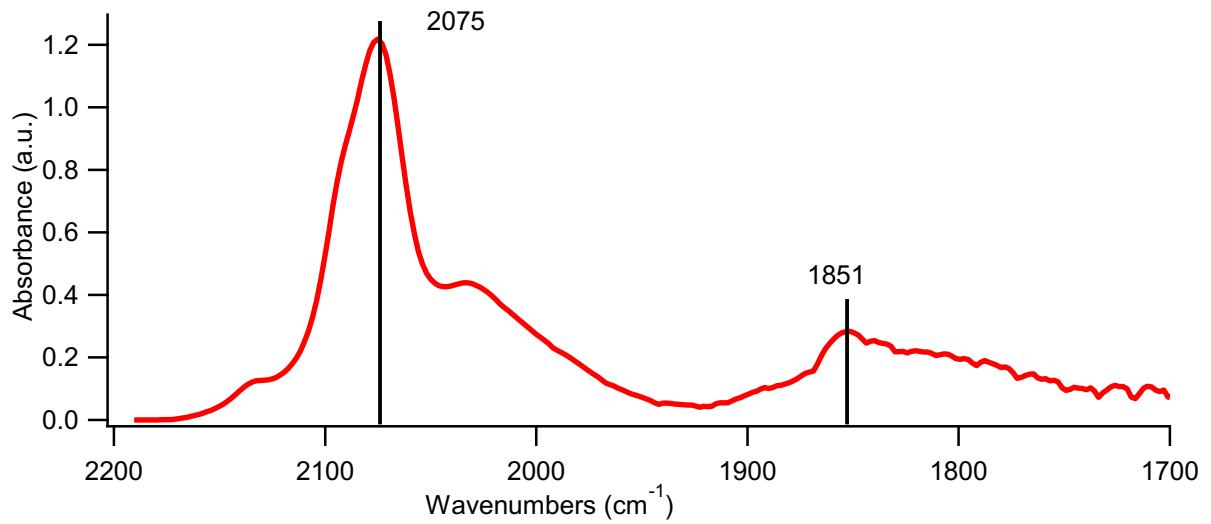


Figure S2: DRIFT spectra of CO on 5Pt/Al₂O₃. Linear CO stretch seen at higher wavenumber (2075cm⁻¹), and multidentate stretch seen at lower wavenumber (1851cm⁻¹)

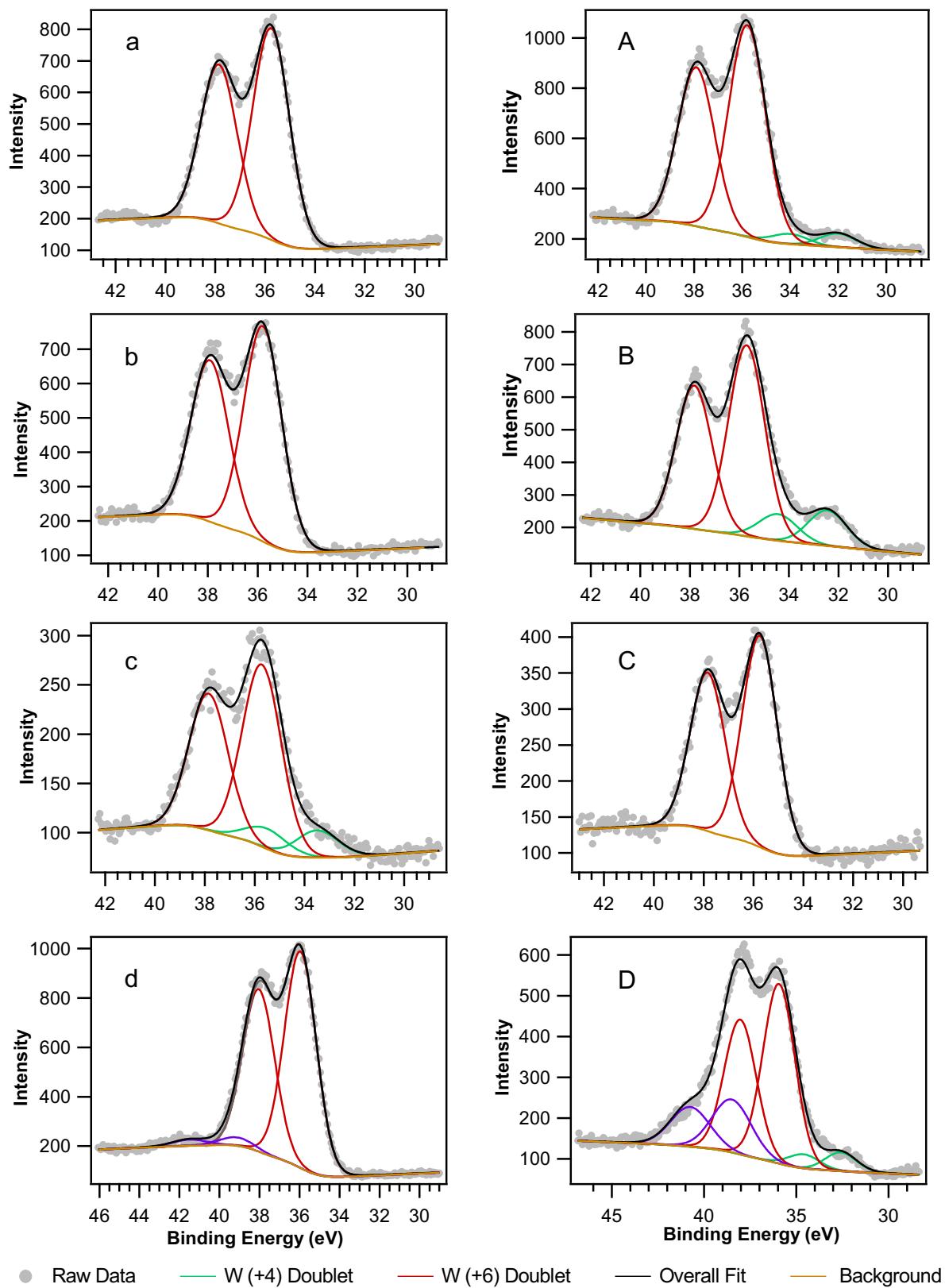


Figure S3: Raw XPS data and peak fits of W 4f peak before (*lowercase*) and after (*capital*) H_2 reduction for 6W/Al₂O₃ (a), 0W-5Pt/Al₂O₃ (b), 3W-5Pt/Al₂O₃ (c), and 12W-5Pt/Al₂O₃ (d).

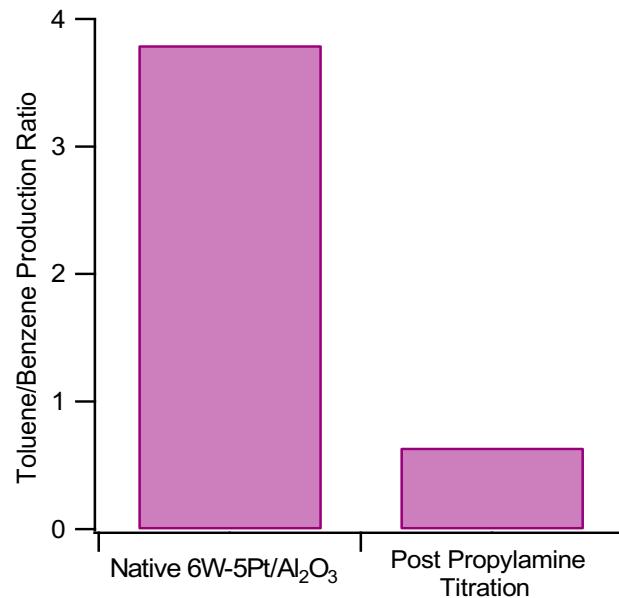


Figure S4: Ratio of toluene to benzene production for a 6W-5Pt/Al₂O₃ catalyst before and after dosing with propylamine. Standard deviation was found to be $\pm 13\%$ on the native bimetallic sample

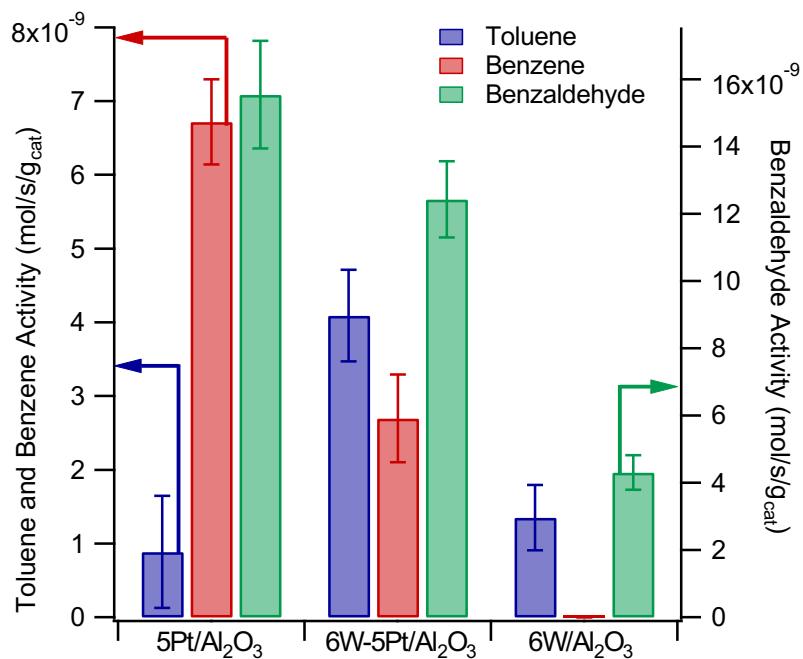


Figure S5: Rates of product formation from benzyl alcohol HDO at WHSV ~ 1.75 (hr⁻¹) and 150°C for Pt, W, and Pt-W catalysts. Baseline Al₂O₃ activity has been subtracted from each sample.