

Supplementary Information for

“Effect of carbon support on RhRe bifunctional catalysts for selective hydrogenolysis of tetrahydropyran-2-methanol”

Pranav U. Karanjkar,^a Samuel P. Burt,^a Xiaoli Chen,^b Kevin J. Barnett,^a Madelyn R. Ball,^a Mrunmayi D. Kumbhalkar,^a Xiaohong Wang,^b James B. Miller,^a Ive Hermans,^{a,c} James A. Dumesic,^a George W. Huber^{a,*}

a. Department of Chemical and Biological Engineering, University of Wisconsin-Madison

b. Department of Chemistry, Key Lab of Polyoxometalate Science of Ministry of Education, Northeast Normal University

c. Department of Chemistry, University of Wisconsin-Madison

* Correspondence concerning this article should be addressed to George W. Huber at

gwhuber@wisc.edu

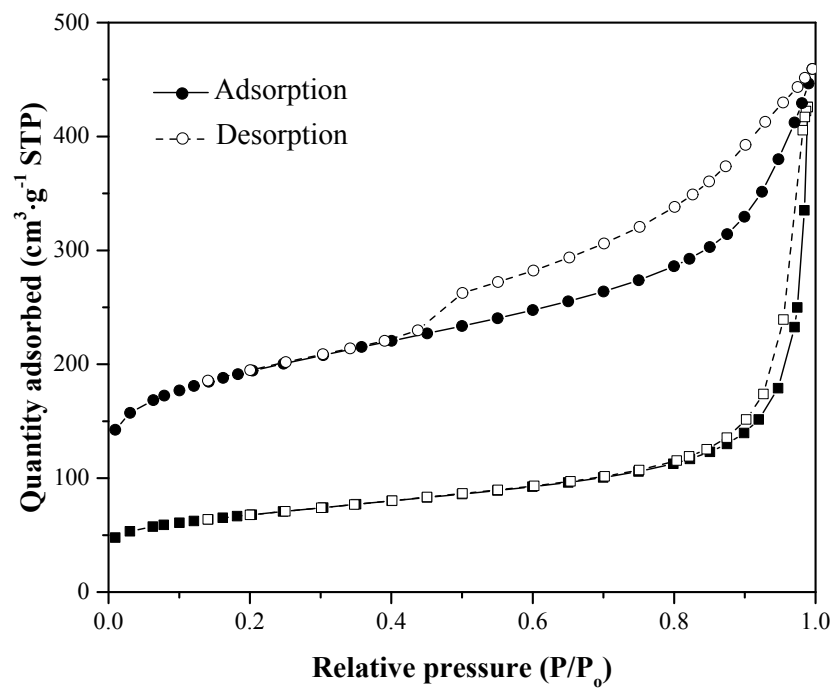


Figure S1. Nitrogen adsorption isotherms for (●) NDC and (■) VXC supports

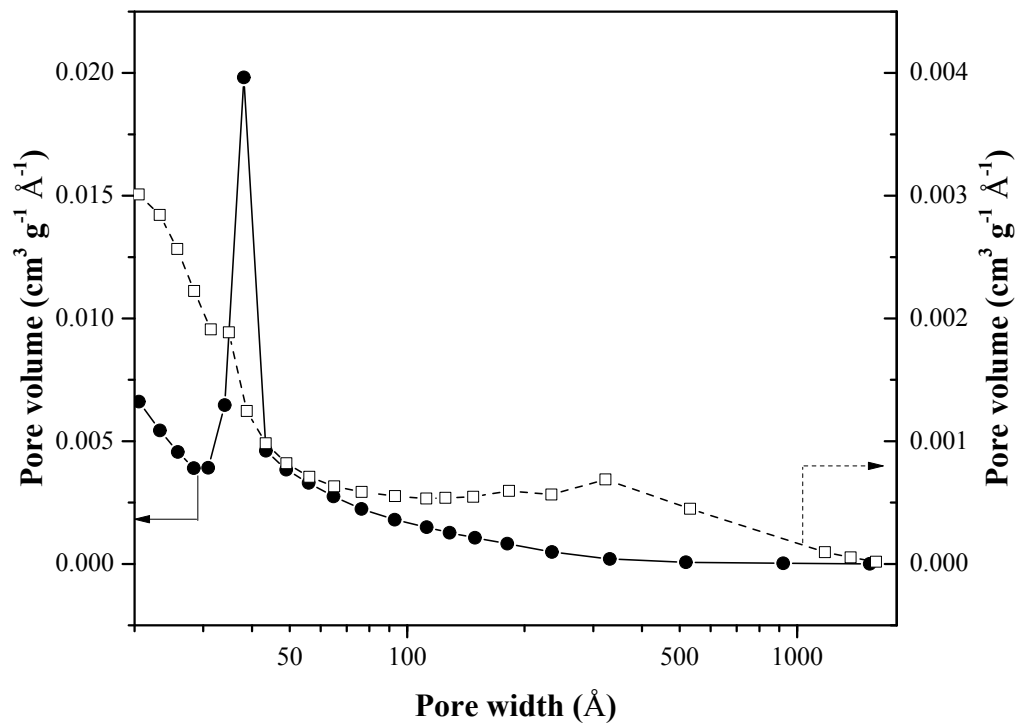


Figure S2. Pore size distribution (BJH desorption) for (●) NDC and (□) VXC supports

Experimental Details for Raman Spectroscopy: Raman experiments were carried out with a high performance Renishaw inVia Raman Spectrometer equipped with a 514 nm (excitation) Modu-Laser Stellar-REN laser with an output of 50 mW and an approximate power of 15-20 mW at the sample. All measurements used a 2400 l·mm⁻¹ grating with an efficiency of approximately 30 % at 514 nm. The instrument uses an Olympus MPlan N objective with 20x magnification and a working distance of 1.3 mm. Scattered light was filtered into a UV enhanced (lumogen coated) deep depleted array detector (Renishaw). The laser line was calibrated with a Ne calibration lamp under the Full Calibration technique to match the calibration wavenumbers and intensities to the collected values. In addition to calibrating the laser, the Raman spectrograph was calibrated to an internal Si standard at 520.7 cm⁻¹. Raman measurements were taken with a range of 100-2000 cm⁻¹ and a dispersion of 1.36565 cm⁻¹·pixel⁻¹. Spectra were acquired with a fully open aperture and a 10 s exposure time under ambient conditions.

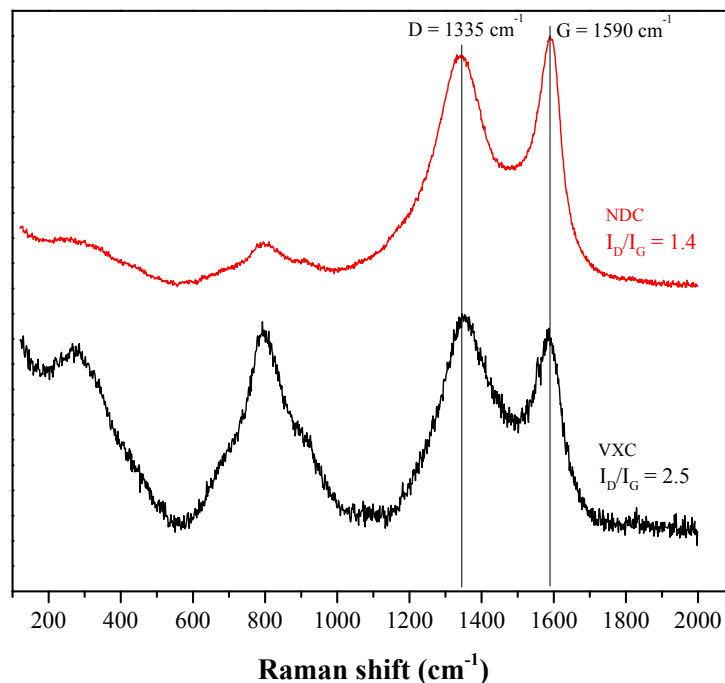


Figure S3. Raman spectra of the two carbon supports depicting the diamond (D) and graphitic (G) band in the carbon supports

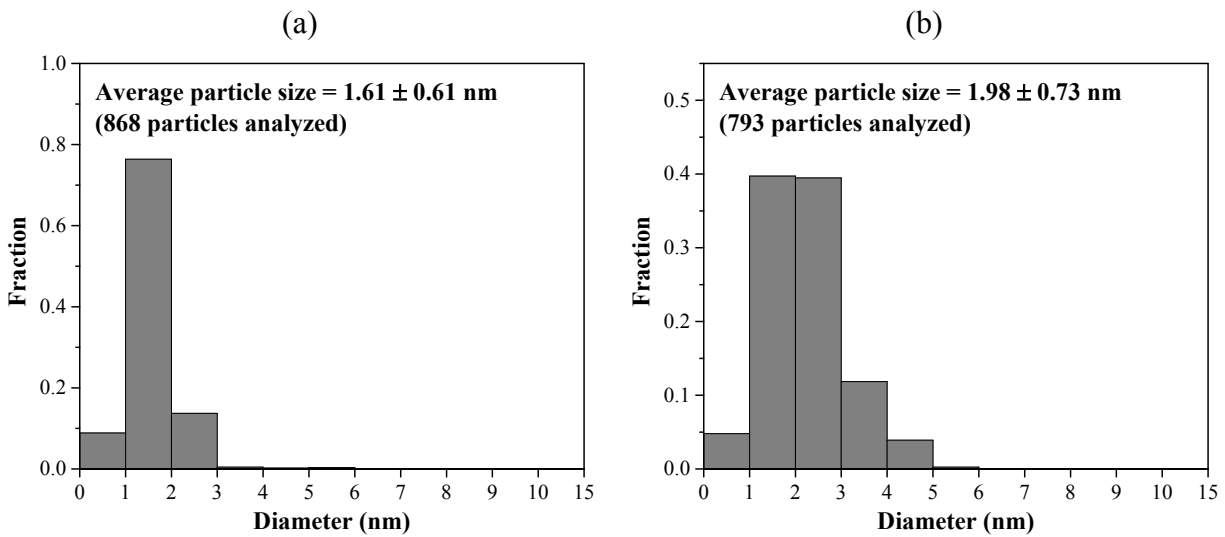


Figure S4. Particle size distribution for (a) RhRe/NDC (b) RhRe/VXC from STEM