

Supporting Information for:

## **Aqueous-Phase Hydrodeoxygenation of Highly Oxygenated Aromatics on Platinum**

Jin Yang<sup>a</sup>, C. Luke Williams<sup>a</sup>, Ashwin Ramasubramaniam<sup>\*b</sup>, Paul J. Dauenhauer<sup>\*a</sup>

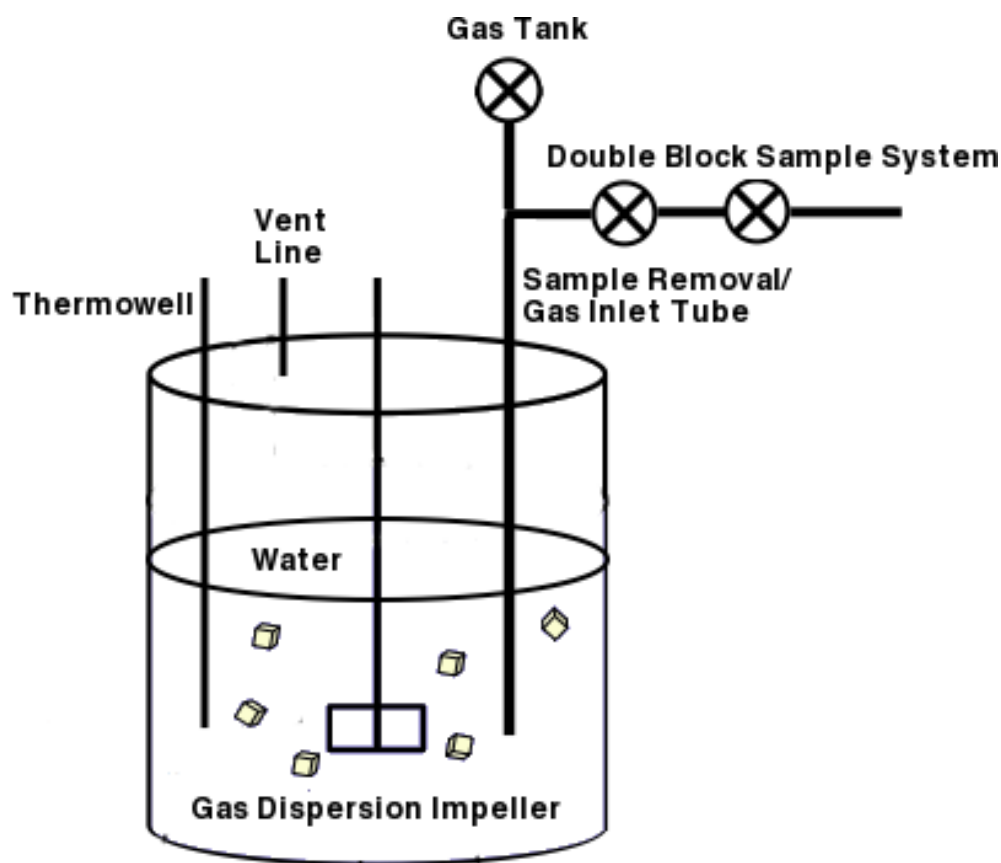
[a] Department of Chemical Engineering, University of Massachusetts Amherst, Amherst, Massachusetts, 01003, United States.

E-mail: [dauenhauer@ecs.umass.edu](mailto:dauenhauer@ecs.umass.edu)

[b] Department of Mechanical and Industrial Engineering, University of Massachusetts Amherst, Amherst, Massachusetts 01003, United States

E-mail: [ashwin@engin.umass.edu](mailto:ashwin@engin.umass.edu)

## Reaction and Sampling System



The reaction vessel was supplied by Parr Instruments and is a 4581HT (high-temperature high-pressure) model. The 5.5in ID and 9.7in deep vessel is equipped with a gas dispersion impeller and a 4848 series controller with temperature and pressure display. A double block sampling system is designed so that a sample not only can be collected at reaction conditions without depressing the vessel, but can ensure proper containment and safety as well. The sampling procedure was also designed to minimize sample cross - contamination inside the sample tube. Before each sample was taken, the gas inlet line was closed. Due to pressure difference, opening the first sample valve, an initial sample was drawn. And then the first valve was closed, dawned sample will be cooled down to room temperature in the tube between two sample valves and then sent to waste. When the reactor was back to operating pressure (about 5 to 10psi is lost during removal of a standard 2ml sample) and the final sample was taken. The gas inlet was left open during the reaction to ensure a constant ethylene supply. Additionally, sample-cooling tube can be cleaned by inlet gas. First, open both inlet gas and first sample valve to fill the sample-cooling tube with inlet gas, and

then close the first sample gas preventing gas leaking. Finally, open the second the valve to disperse gas with the leftover sample. Samples were filtered through a 0.22µm filter prior to clean out any catalyst removed during the sampling process and analyzed on a Agilent 7890 series gas chromatograph followed by high performance liquid chromatograph (UFLC LC-20AD).