Cellulose conversion to polyols catalyzed by reversibly-formed acids and supported ruthenium clusters in hot water

Chen Luo, Shuai Wang and Haichao Liu*

Beijing National Laboratory for Molecular Sciences, State Key Laboratory for Structural Chemistry of Stable and Unstable Species, College of Chemistry and Molecular Engineering, Green Chemistry Center, Peking University, Beijing 100871, China.

E-mail: hcliu@pku.edu.cn; Tel/Fax: 86-10-6275-4031

Figure S1. XRD patterns for cellulose before (a) and after cellulose reaction for 5 min (b) and 30 min (c) at 518 K, respectively. The labeled peaks correspond to (101), (10-1), (021), (002) and (040) planes, respectively, for typical cellulose I crystal structure.
Figure S2. Cellulose conversions and selectivities on Ru/C (4wt% Ru) for five reaction cycles at 518 K (5 min reaction time of each cycle, 6 MPa H$_2$, 50 mL H$_2$O, 1 g cellulose, 0.04mmol Ru).

Figure S3. TEM image of 1wt% Ru/C and Ru particle size distribution histograms, scale bar: 30 nm.
Figure S4. TEM image of 2wt% Ru/C and Ru particle size distribution histograms, scale bar: 30 nm.

Figure S5. TEM image of 1wt% Ru/C and Ru particle size distribution histograms, scale bar: 30 nm.