Supplementary Material

Ru-catalyzed oxidative cleavage of guaiacyl glycerol-β-guaiacyl ether - a representative β-O-4 lignin model compound

M. Melián-Rodríguez,[a] S. Saravanamurugan,[ab] S. Meier,[a] S. Kegnæs[a] and A. Riisager[a]*

[a] Centre for Catalysis and Sustainable Chemistry, Department of Chemistry, Building 207, Technical University of Denmark, DK-2800 Kgs. Lyngby, Denmark.

[b] Laboratory of Bioproduct Chemistry, Center of Innovative and Applied Bioprocessing (CIAB), Sector-81 (Knowledge City), Mohali- 140 306, Punjab, India.

*Corresponding author: Tel.: (+45) 4525 2233, E-mail: ar@kemi.dtu.dk

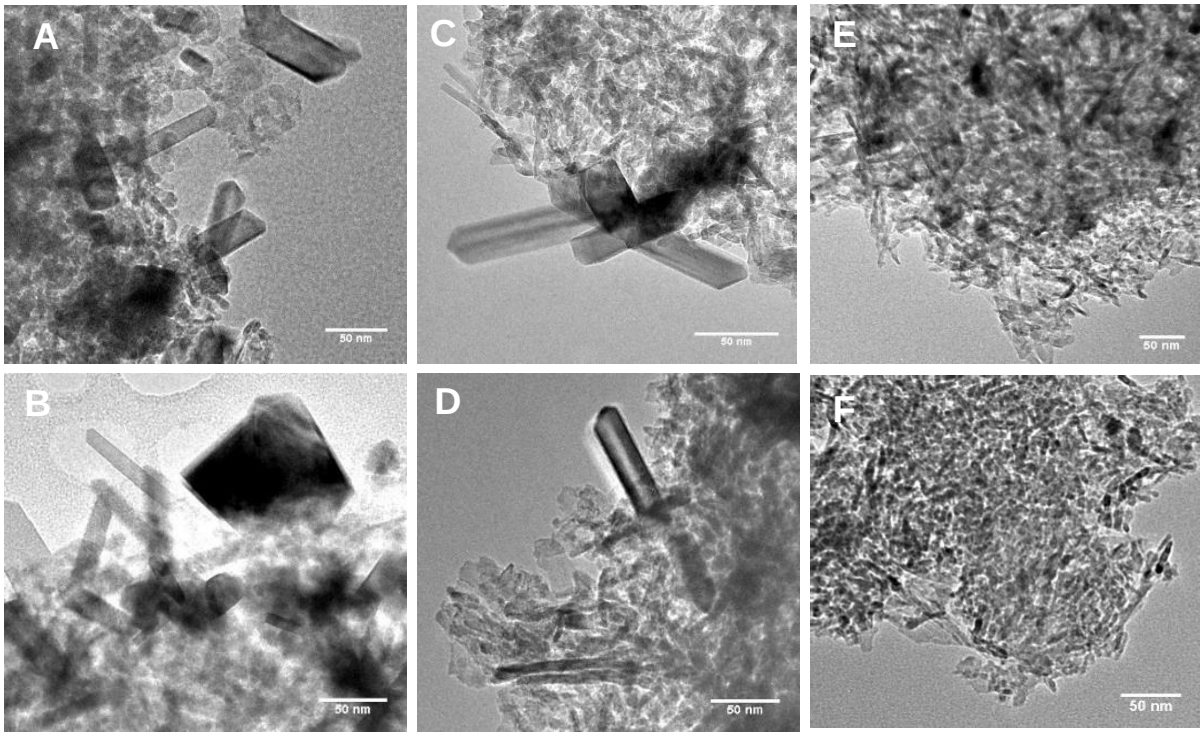

Figure S1. High-resolution TEM images of (A) fresh 1 wt.% Ru/Al_2O_3 (1) catalyst, (B) used 1 wt.% Ru/Al_2O_3 (1) catalyst, (C) fresh 3 wt.% Ru/Al_2O_3 (1) catalyst, (D) used 3 wt.% Ru/Al_2O_3 (1) catalyst, (E) fresh 5 wt.% Ru/Al_2O_3 (1) catalyst and (F) used 5 wt.% Ru/Al_2O_3 (1) catalyst.

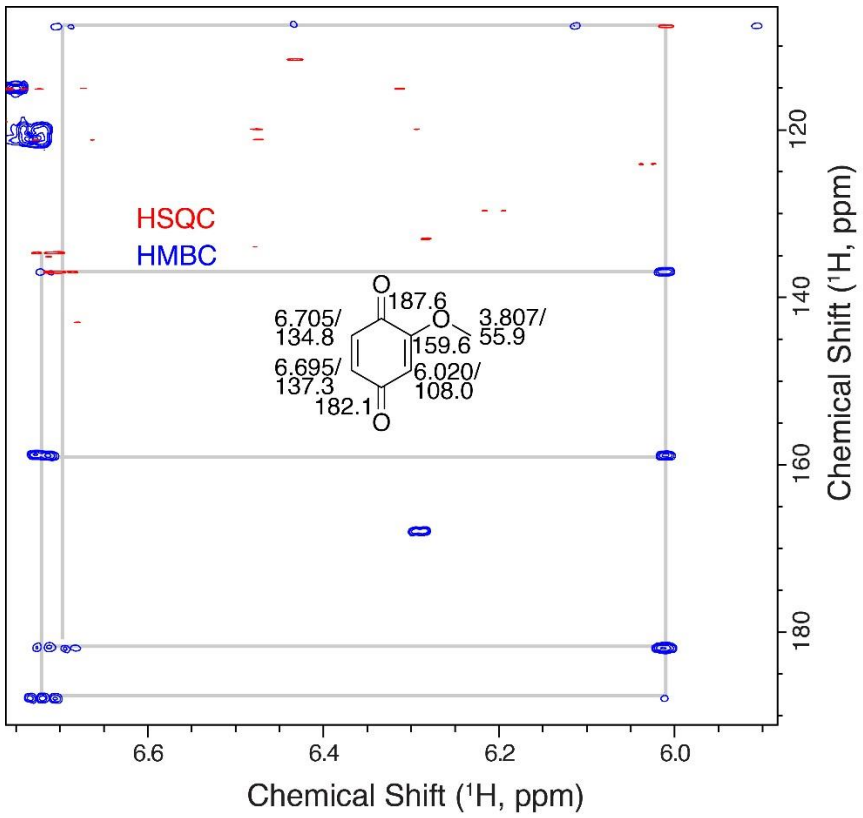

Figure S2. Overlay of ^{1}H-^{13}C HSQC and ^{1}H-^{13}C HMBC NMR spectra of post-reaction material displayed as contour plots, showing the single and multiple-bond correlations in 2-methoxy-1,4-benzoquinone, with the inset displaying the full chemical shift assignment of the compound. NMR data for 2-methoxy-1,4-benzoquinone (acetonitrile-d3, 800 MHz, 25 °C): δ ^{1}H/ppm: 6.705 (H6), 6.695 (H5), 6.020 (H3), 3.807 (OMe); δ ^{13}C/ppm: 187.6 (C1), 182.1 (C4), 159.6 (C2), 137.3 (C5), 134.8 (C6), 108.0 (C3), 55.9 (OMe).

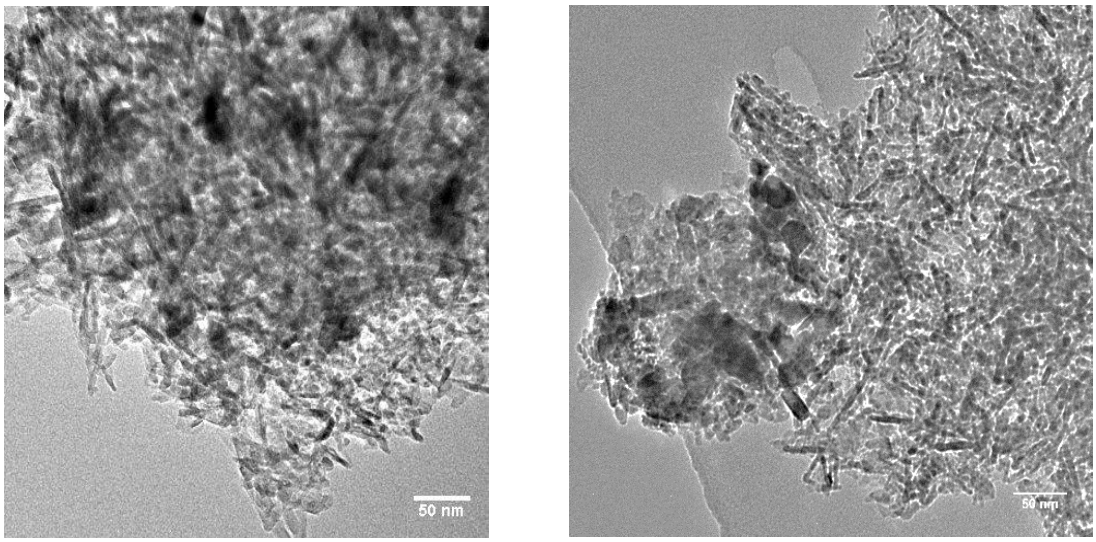

Figure S3. High-resolution TEM catalysts images of (left) fresh 5 wt.% Ru/Al_2O_3 (3) catalyst, and (right) 5 wt.% Ru/Al_2O_3 (3) catalyst after five reaction runs.