

### Supporting information

Figure S1: Pressure dependent solubility of DPE in high-pressure CO<sub>2</sub>: (a) initial, (b) 7 MPa, (c) 10 MPa and (d) 16 MPa

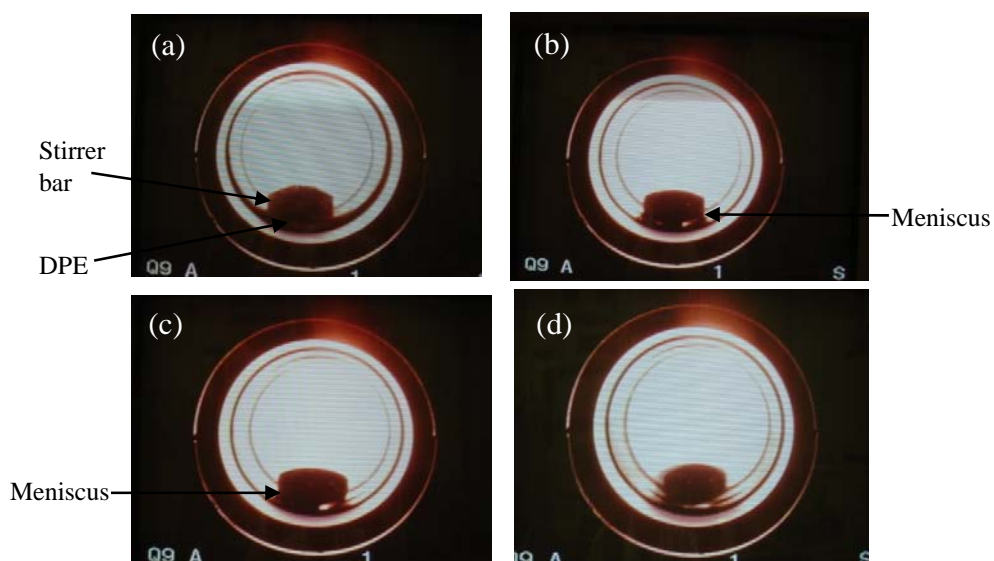


Figure S2: *In-situ* UV-vis spectra of diphenyl ether (DPE), phenol (PhOH) and conversion of DPE at 10 MPa

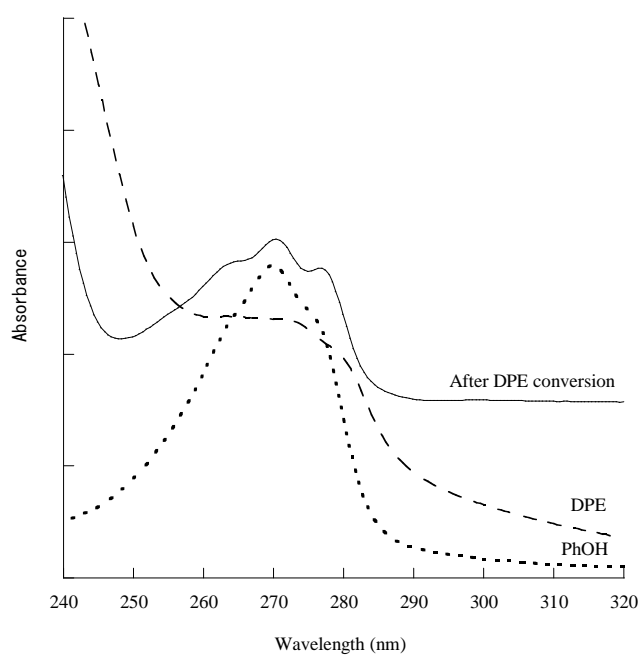


Figure S3: Catalyst recycling

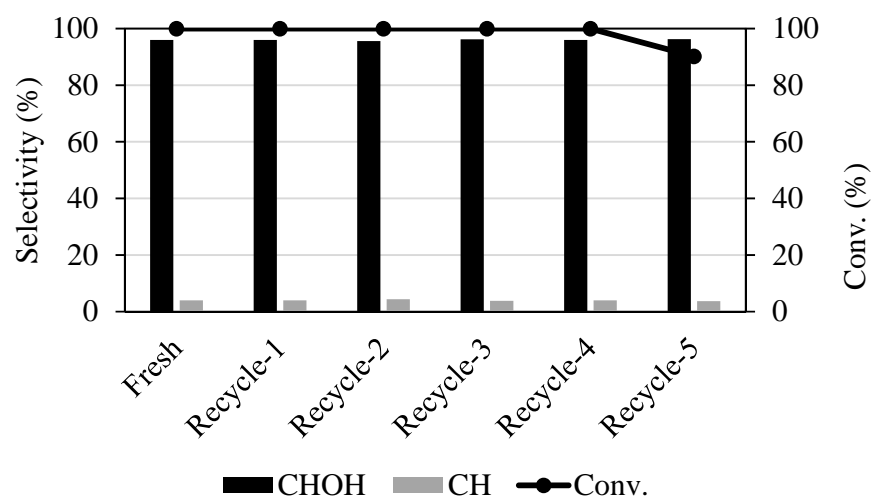


Figure S4: TEM images of catalyst (a) before and (b) after reaction

