Supplementary Material (ESI) for Chemical Communications
This journal is © The Royal Society of Chemistry 2008

Electronic Supplementary Information

Mesoporous silica-catalysed continuous chemical fixation of CO_2 with *N*,*N*'-dimethylethylenediamine in supercritical CO_2: Efficient synthesis of 1,3-dimethyl-2-imidazolidinone

Tsunetake Seki,† Yoshiaki Kokubo, Shinichiro Ichikawa, Tomoyuki Suzuki, Yoshihito Kayaki and Takao Ikariya*

Department of Applied Chemistry, Tokyo Institute of Technology,
Ookayama, Meguro-ku, Tokyo 152-8552, Japan
†Research Fellow of the Japan Society for the Promotion of Science

N_2 adsorption–desorption isotherms of the silica catalysts used

Experimental: The Q-30 (amorphous silica; CARiACT Q-30; Fuji Silysia) and A-P (amorphous silica; Kanto Chemical) samples were analysed as-received, while the HMS (mesoporous silica with wormhole framework; Aldrich) and MCM-41 (mesoporous silica with hexagonal framework; Aldrich) samples were those converted to larger particles (500–800 μm) by pressurization at 20 MPa and subsequent sieving for the use in the reaction. The sample was activated at 500 ºC for 2 h in a stream of dry air (dew point − 40 ºC) prior to analysis, which were the same pretreatment conditions employed for the reaction. N_2 adsorption–desorption measurement was performed at − 196 ºC with a BELSORP-mini (Bel Japan) using static adsorption procedures.

Note: Both MCM-41 and HMS exhibited the adsorption step centered in the relative pressure (P/P_0) region from 0.3 to 0.6 indicating the presence of framework-confined mesopores. There is, however, a striking difference in the higher relative pressure region of 0.6 to 1.0. A steep increase in the isotherm of HMS in this region indicates that the fraction of "textural" mesoporosity is much greater for HMS than for MCM-41, which is a well-known difference between the two mesoporous silicas: see, P. T. Tanev and T. J. Pinnavaia, *Chem*. *Mater*., 1996, **8**, 2068.

This journal is © The Royal Society of Chemistry 2008

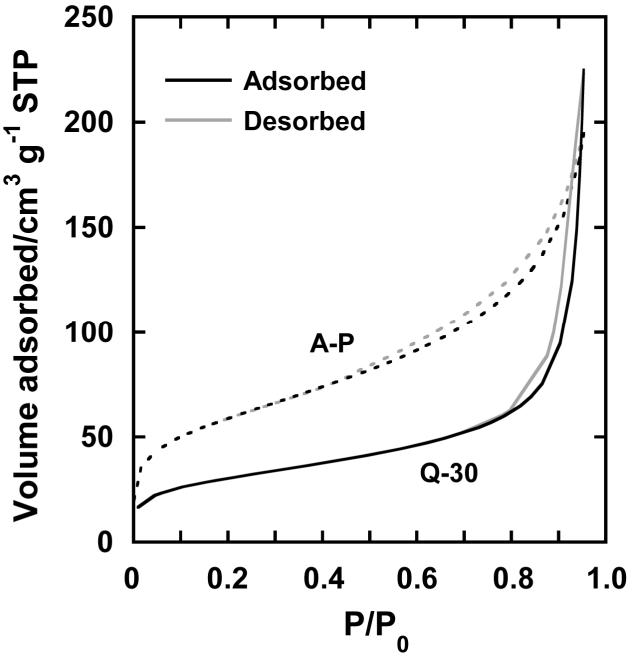

Fig. S1 N_2 adsorption–desorption isotherm of Q-30 and A-P.

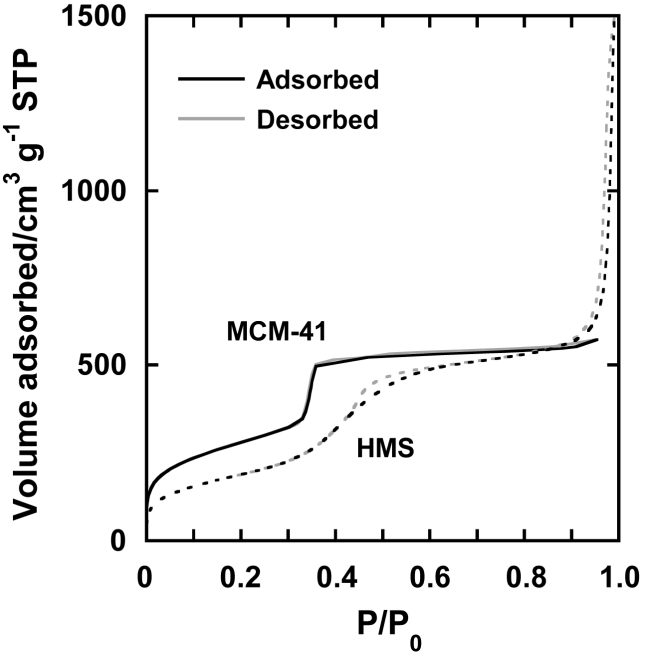

Fig. S2 N_2 adsorption–desorption isotherm of MCM-41 and HMS.