

Supplementary information file

Validity of the *t*-plot method to assess microporosity in hierarchical micro/mesoporous materials

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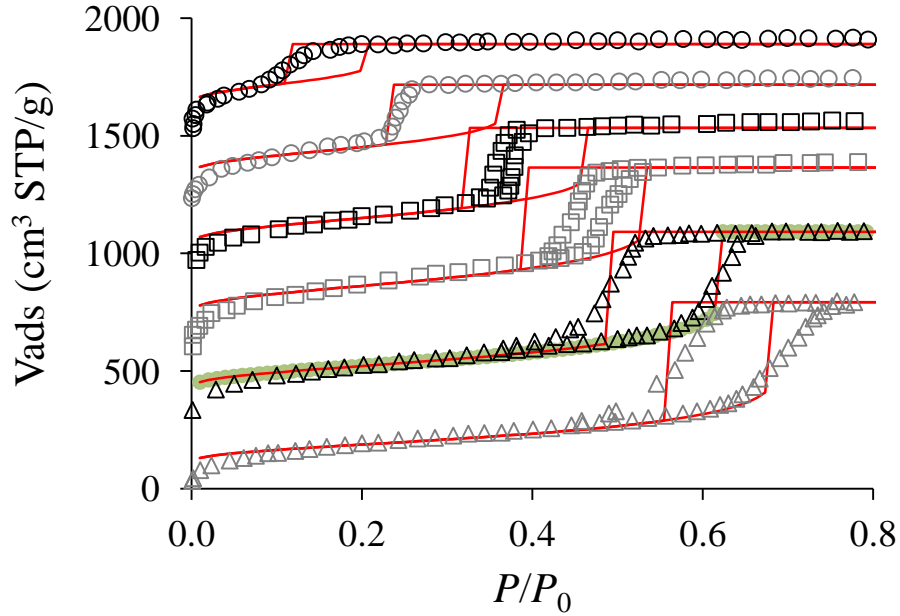


Fig S1. Ar adsorption isotherms for MCM-41 samples with different diameters: 2.4 nm (black circles), 3.2 nm (grey circles), 3.9 nm (black squares), 4.5 nm (grey squares), 5.5 nm (black triangles), and 6.5 nm (grey triangles). The adsorption isotherms are taken from the work by Kruk and Jaroniec.²⁸ The adsorption isotherms for the samples with pore diameters from 2.4 nm to 5.5 nm are offset vertically by 300, 600, 900, 1200, and 1500 cm³ STP/g, respectively. The red lines are the adsorption isotherms predicted using Derjaguin's model (*see text*).

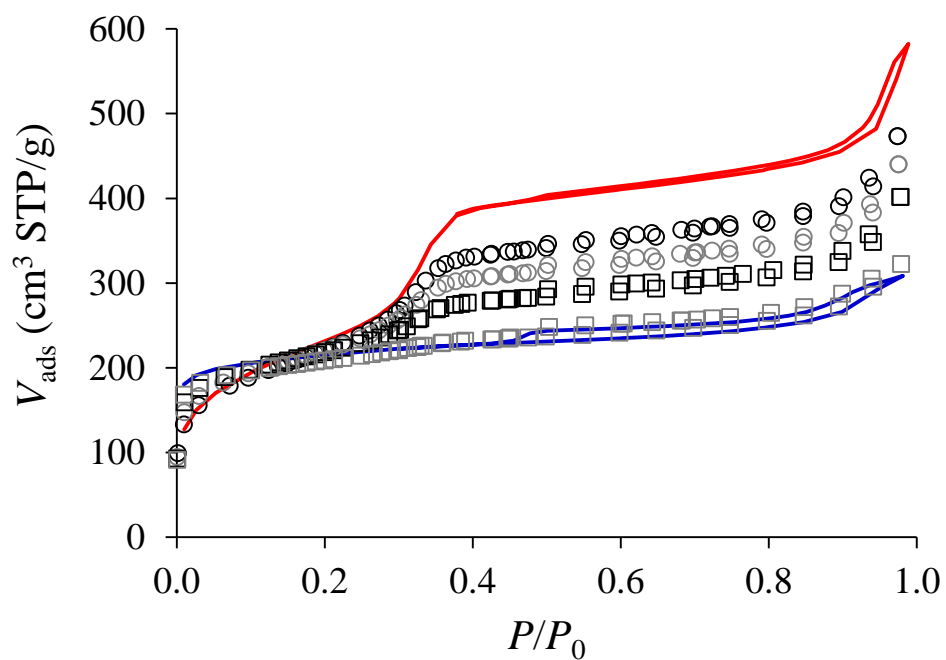


Fig S2. Nitrogen adsorption isotherms at 77 K of different mechanical mixtures of FAU (CBV720) and Al-MCM-41(C16) powders: (black open circles) FAU wt = 20%, (grey open circles) FAU wt = 40%, (black open squares) FAU wt = 60%, (grey open squares) FAU wt = 90%. Nitrogen adsorption isotherms for parent FAU (CBV720, blue line) and Al-MCM-41(C16, red line) are given for comparison.

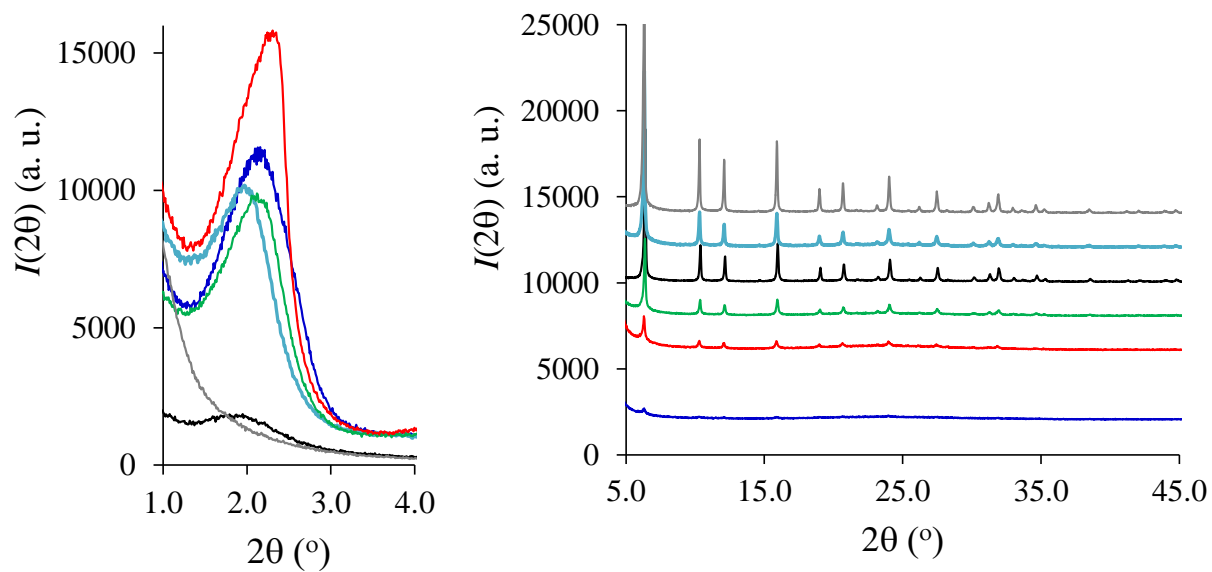


Fig. S3. XRD pattern at (left) low and (right) large angles of hierarchical micro/mesoporous materials prepared from FAU crystals and C16TAB at different amount of NaOH: (grey) pure FAU, (black) NaOH/Si = 0.05, (light blue) NaOH/Si = 0.10, (green) NaOH/Si = 0.15, (red) NaOH/Si = 0.20, (dark blue) NaOH/Si = 0.25.

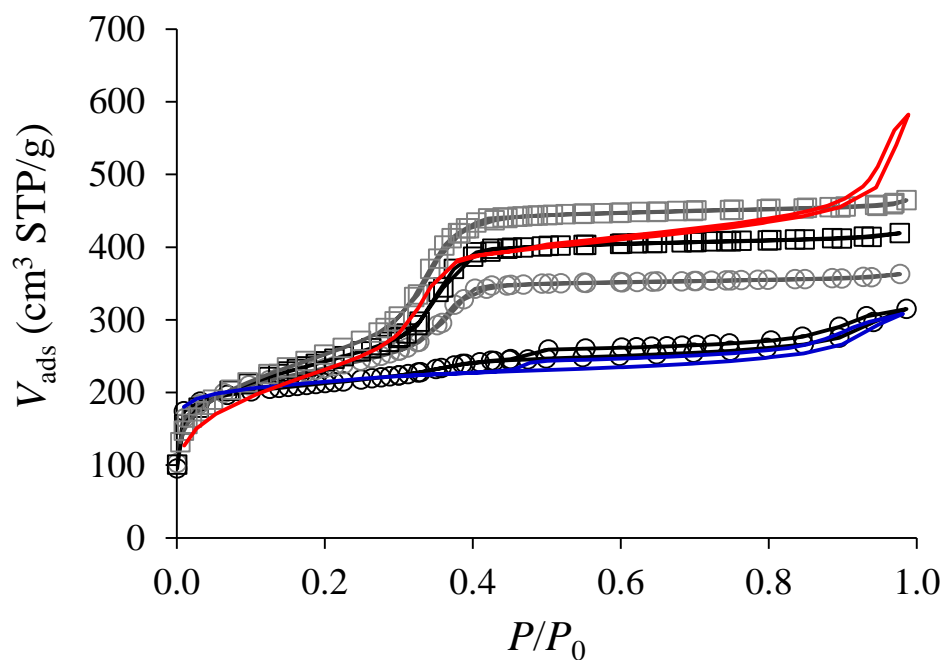


Fig. S4. Nitrogen adsorption isotherms at 77 K for hierarchical micro/mesoporous materials prepared by pseudomorphic synthesis of FAU with C16TAB at different NaOH/Si ratios for 24 h: (black open circles) NaOH/Si = 0.05, (grey open circles) NaOH/Si = 0.10, (black open squares) NaOH/Si = 0.15, (grey open squares) NaOH/Si = 0.20. Nitrogen adsorption isotherms for parent FAU (CBV720, blue line) and Al-MCM-41(C16) (red line) are given for comparison.

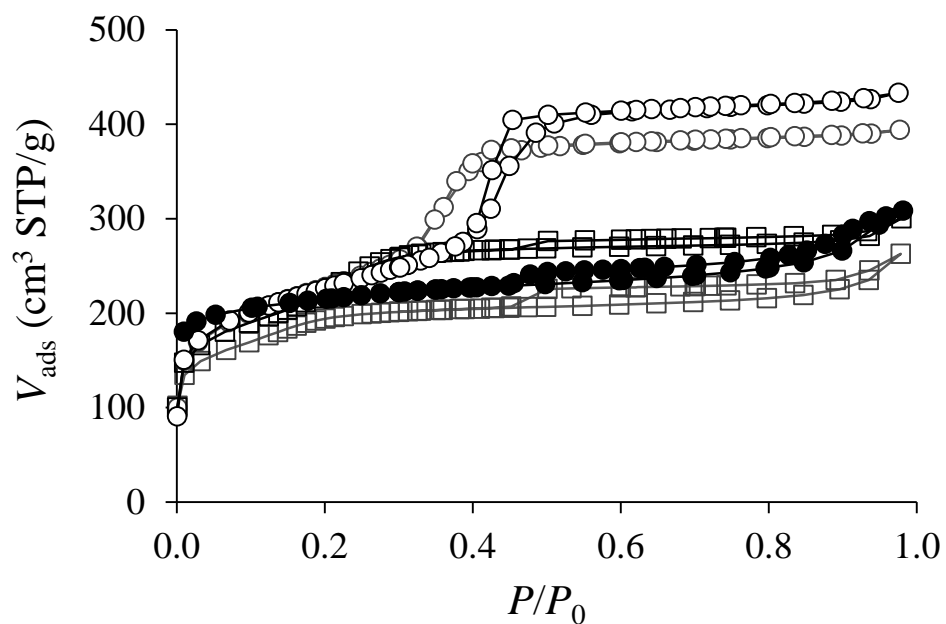


Fig. S5. Nitrogen adsorption isotherms at 77 K for hierarchical micro/mesoporous materials prepared by pseudomorphic synthesis of FAU with different surfactant chain lengths C_n TAB ($n = 12-18$) and $\text{NaOH/Si} = 0.125$: (black open circles) C18TAB, (grey open circles) C16TAB, (black open squares) C12TAB, (grey open squares) C10TAB. The black closed circles are the reference data for pure FAU.

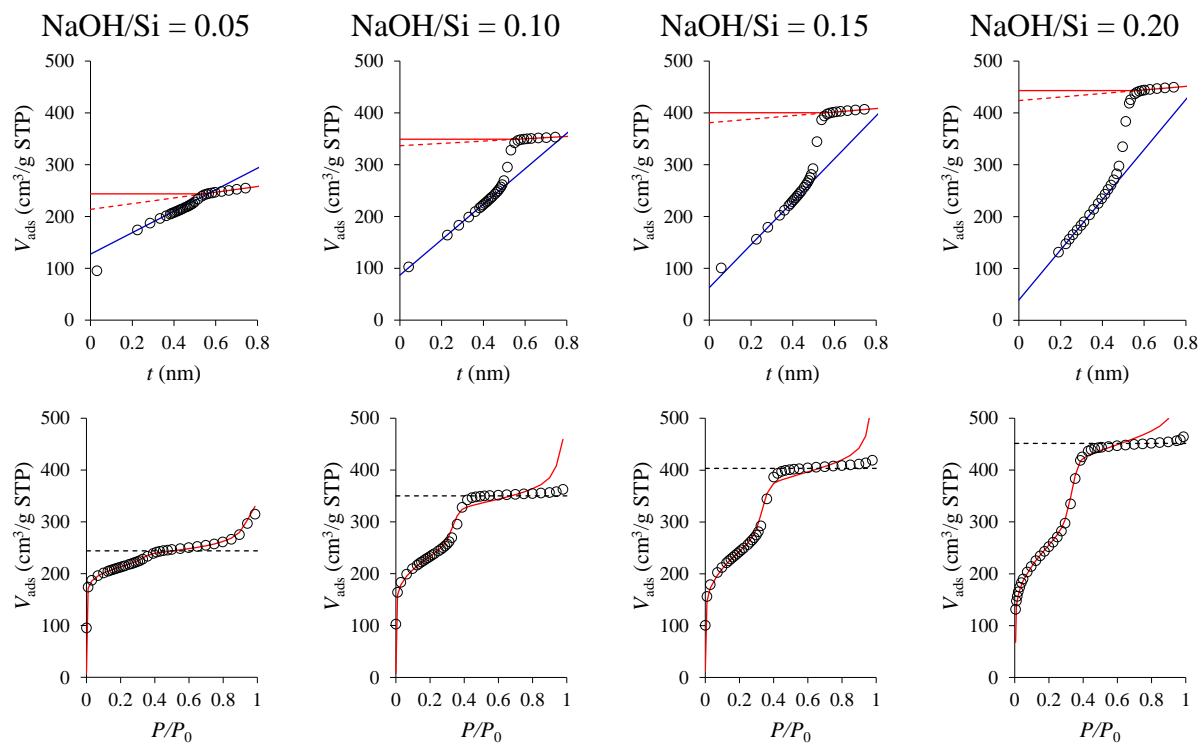


Fig. S6. Examples of (top) t -plot analysis and (bottom) linear combination performed on hierarchical micro/mesoporous materials prepared by pseudomorphic synthesis of FAU with C16TAB at different NaOH/Si ratios from 0.05 to 0.20.

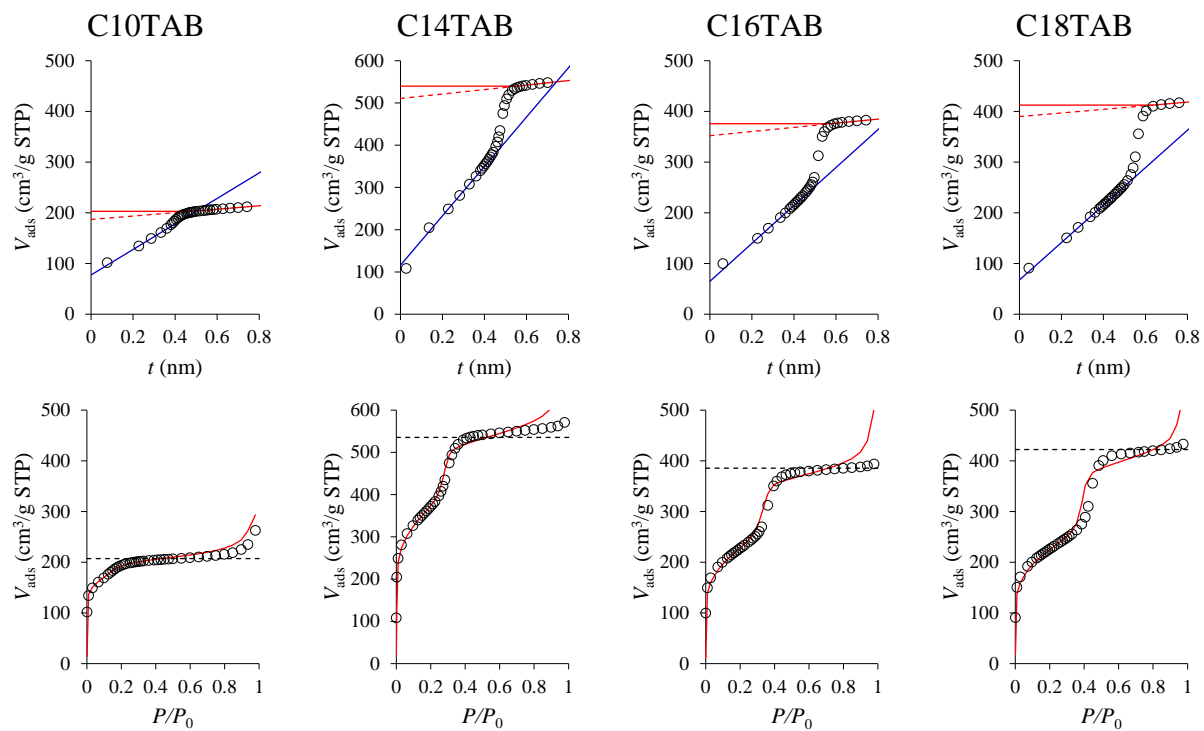


Fig. S7. Examples of (top) t -plot analysis and (bottom) linear combination performed on hierarchical micro/mesoporous materials prepared by pseudomorphic synthesis of FAU with CnTAB, $n = 10-18$, and NaOH/Si = 0.125.