Supporting Information

Anatomy of Screw Dislocations in Nanoporous SAPO-18 as revealed by Atomic Force Microscopy

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Figure S1. X-ray diffraction data of as-synthesised SAPO-18 (top) and reference AEI (bottom).

Figure S2. Scanning electron microscopy image of SAPO-18 showing the square platelet morphology.
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Figure S6. a) Q3 sites on the corner in the first configuration of A and B layers; b) Q3 sites on the corner in the second configuration of A and B layers. Only visible Q3 sites are labelled as some Q3 sites are hidden from view due to the shape of the AEI-cage.
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Experimental Details

SAPO-18 was synthesised according to the synthesis route reported by Mertens et al.\(^1\) The molar ratio of the final gel was 0.01 SiO\(_2\) : 1 Al\(_2\)O\(_3\) : 1 P\(_2\)O\(_5\) : 1 TEAOH : 35 H\(_2\)O. A mixture of phosphoric acid, (85%, Merck), tetraethyl ammonium hydroxide (TEAOH, 35%, Sigma Aldrich) and deionised water was heated to 30°C and Ludox-AS-40 (40% SiO\(_2\), DuPont) and Pural SB (76% Al\(_2\)O\(_3\), SASOL) were added under continuous stirring before aging at 30°C for 2 h with stirring. The aged gel was transferred to Teflon-lined autoclaves and heated to 165 °C (heating rate 5 °C/h) and maintained for 72 h with rotation. The reaction was quenched in water and the product separated by centrifugation. The product was washed with deionised water and dried at 95 °C overnight.

AFM was performed in contact mode in air on a JPK Nanowizard II Bio-AFM mounted on an inverted Axiovert 200 MAT optical microscope. Silicon nitride tips (Bruker probes NP-10, spring constant 0.58 Nm\(^{-1}\)) were used with a scan rate of 1-2 Hz. In-situ dissolution was carried out in the JPK BioCell in static phosphoric acid solution (pH 5) using a scan rate of 4.5 Hz. Images were processed using the JPK Data Processing software. Graphics have been produced by in-house software using Mathematica 8.0.1.

\(^1\) M. M. Mertens. World Patent 2009/117186, February 6, 2009