Supplementary Material (ESI) for Chemical Communications
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Electronic Supplementary Information

Synthesis of the MFI large Single Crystal

The MFI giant single crystal was synthesized from a reaction mixture, containing hydrogen fluoride (HF, 40 wt %, Aldrich), tetrapropylammonium hydroxide (TPAOH, 1M in water), and distilled water with the molar ratio of 10.5HF:7.0 TPAOH:900 H_2O. A thin piece of polished monocrystalline silicon slice (0.40 g, purity of 99.99wt %) was placed into the Teflon-lined stainless steel autoclave together with the reaction mixture. The crystallization was carried out at 180 °C for 20 days at the autogenous pressure under static conditions.

Calcination of MFI large Single Crystal

The calcinations of MFI giant single crystal was carried out under O_2 atmosphere as the following: the temperature was ramped at 1 °C min-1 to 150 °C, maintained at this temperature for 5 h, then increased to 550 °C at a rate of 0.5 °C min^{-1}, and kept at 550 °C for over 40 h. After the calcination, the only difference was that the color of the MFI crystal was a bit white compared with that as-synthesized, but still smooth and transparent without any observable deterioration of the MFI crystal quality.

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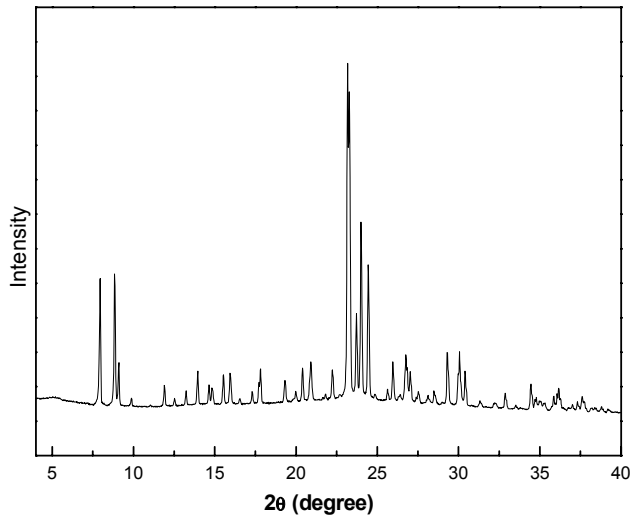

Figure 1. XRD patterns (Cu-Kα) of the ground MFI large single crystals

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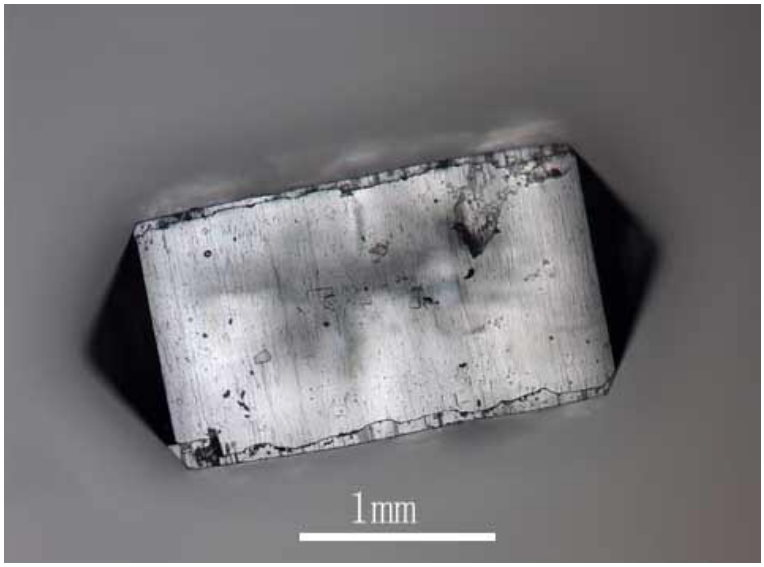

Figure 2. Optical photograph of a large zeolite MFI single crystal

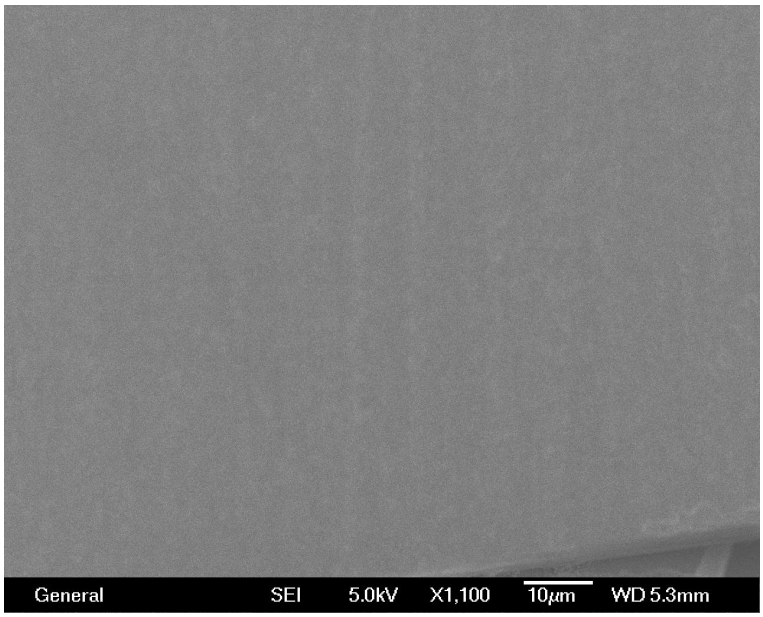

Figure 3. The polished {001} basal face of the large silicalite-1 crystal

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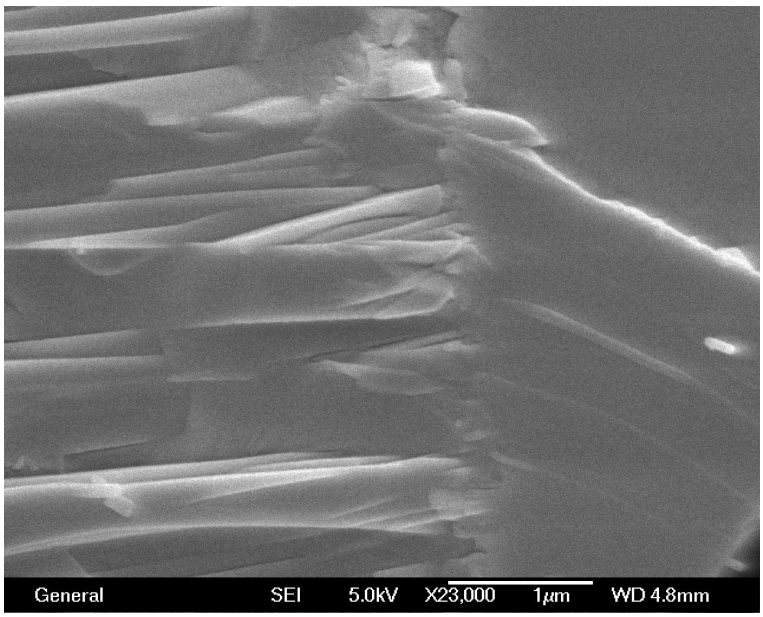

Figure 4. an amplificatory cross-section FE-SEM image of the zeolite film march with the surface of the large crystal.