

Supporting Information

Facile synthesis of anatase TiO₂ mesocrystal sheets with dominant {001} facets based on topochemical conversion

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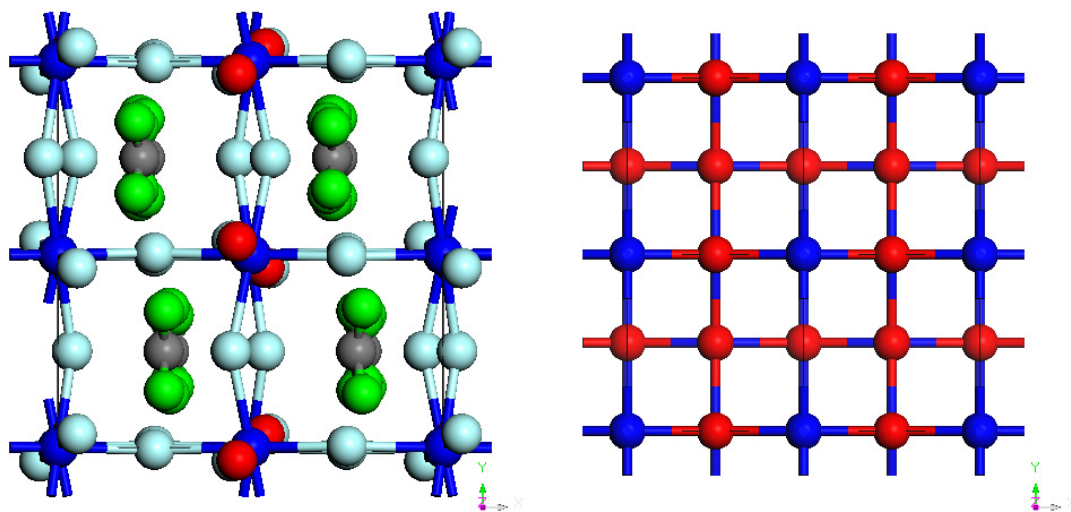
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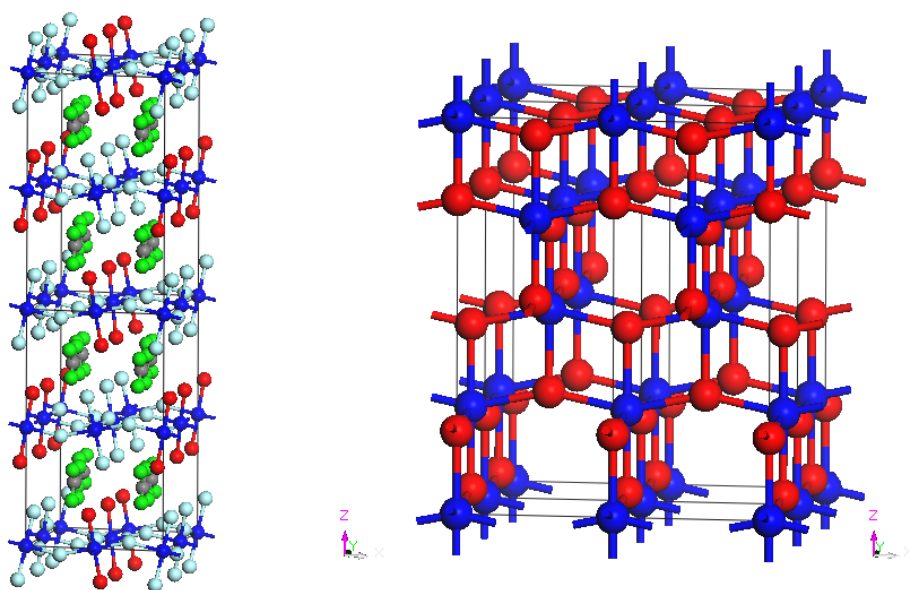
A



Cell=7.552×7.584×12.754<90×90×90>

Cell=3.785×3.785×9.514<90×90×90>

B



Supercell 7.552×7.584×25.508<90×90×90>

Supercell 7.570×7.570×9.514<90×90×90>

Cell=7.552×7.584×12.754<90×90×90>

Cell=3.785×3.785×9.514<90×90×90>

Figure S1 Structures of NH_4TiOF_3 and anatase TiO_2 constructed from reference 1. Picture **A** shows the ab plane of both NH_4TiOF_3 and anatase TiO_2 . Picture **B** shows the detailed differences in the Z-axis between NH_4TiOF_3 and anatase TiO_2 .

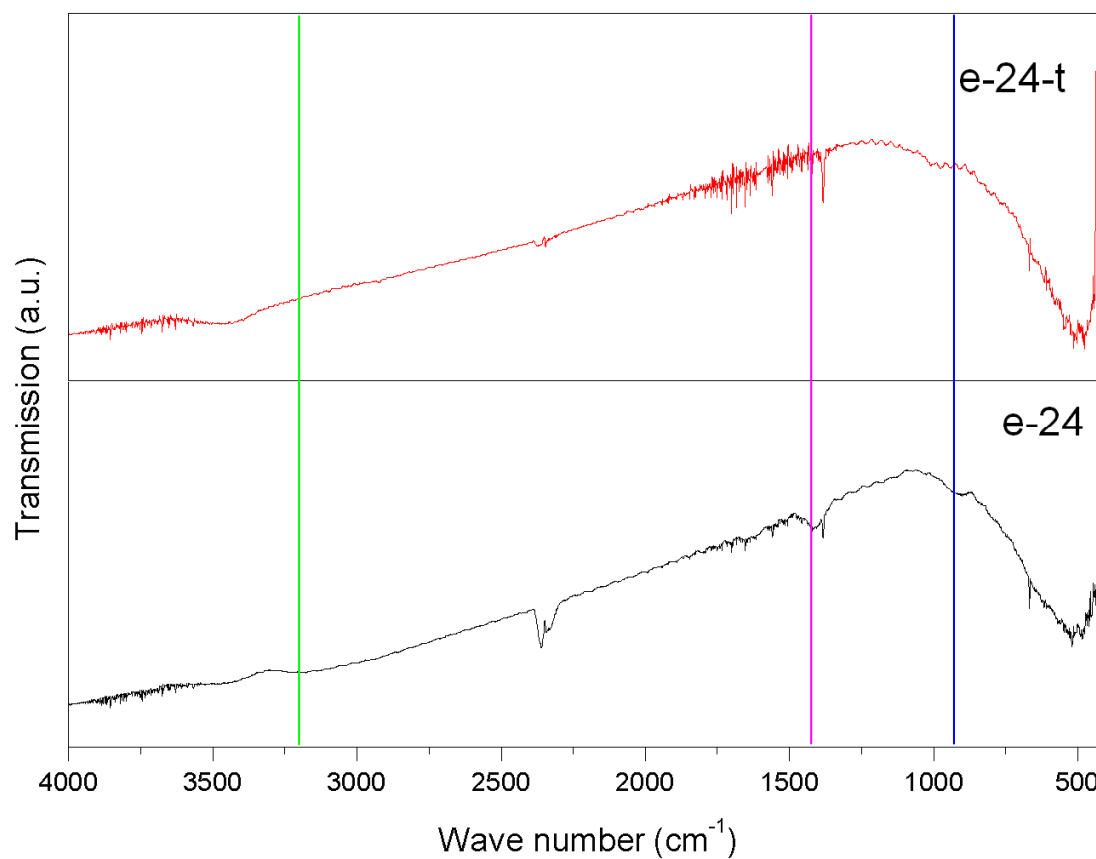


Figure S2 FT-IR spectra of the sample e-24 and e-24-t

FT-IR spectra shown above provide evidences for the existence of NH_4^+ and Ti-F bond in sample e-24 and disappearance in sample e-24-t. Peak assignments are taken from reference 2. In detail, 910 cm^{-1} attributed to the Ti-F vibration mode in e-24 vanishes in e-24-t; 1410 cm^{-1} corresponding to the bending vibration of NH_4^+ also decays in e-24-t; 3428 cm^{-1} assigning to the stretch vibration of N-H disappears in e-24-t.

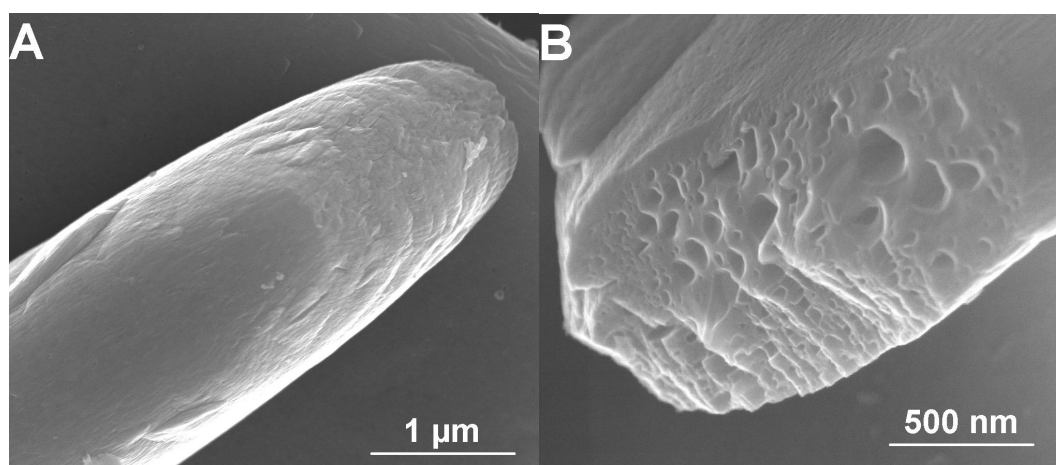


Figure S3 Images obtained from the cross-section views of a normal sheet and a broken sheet of e-24-t.

Reference

1. N. M. Laptash, I. G. Maslennikova and T. A. Kaidalova, *J. Fluor. Chem.*, 1999, **99**, 133-137.
2. X. Du, J. H. He and Y. Q. Zhao, *J. Phys. Chem. C*, 2009, **113**, 14151–14158.