

Hexafluorotitanate salts containing organic cations: use as a reaction medium and precursor to the synthesis of titanium dioxide

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Electronic Supplementary Information

Experimental Details

Electron diffraction patterns and Transmission Electron Microscopy (TEM) images were recorded in a JEOL 2011 microscope operating at 200 kV. Attenuated Total Reflectance Fourier Transform Infrared (ATR-FTIR) spectra were performed with a Bruker apparatus (Tensor model equipped with MKII Golden Gate). The elemental analyses (C, H, N) were carried out by the staff of the Chemical Analyses Service of the Universitat de Barcelona on a Carlo Erba CHNS EA-1108 instrument. X-Ray Diffraction (XRD) spectra of powder samples were registered on a Rigaku Rotaflex RU-200B diffractometer with Cu K α radiation.

Textural characterisation of the samples was performed in a Micromeritics ASAP 2000 instrument. The Brunauer-Emmett-Teller (BET) surface area and pore size distribution of the titania samples were obtained from nitrogen adsorption/desorption isotherms at 77 K. A sample (0.1–0.3 g) was outgassed under vacuum for 8 h at 393 K prior to each measurement. In the calculation of the pore size distribution for TiO₂ samples, cumulative surface areas calculated from the pore volume and the pore diameter were consistent with the specific surface areas obtained by the BET method.^{s1} The mesopore size distributions were calculated by applying the Barret-Joyner-Hallenda (BJH)^{s2} method to the adsorption branch of the isotherms.

(s1) Sing, K.S.W.; Everett, D.H.; Haul, R.A.W.; Moscou, L.; Pierotti, R.A.; Rouquérol, J.; Siemieniowska, T. *Pure Appl. Chem.* 1985, **57**, 603.

(s2) Barret, E.P.; Joyner, L.G.; Halenda, P.P. *J. Am. Chem. Soc.* 1951, **73**, 373.

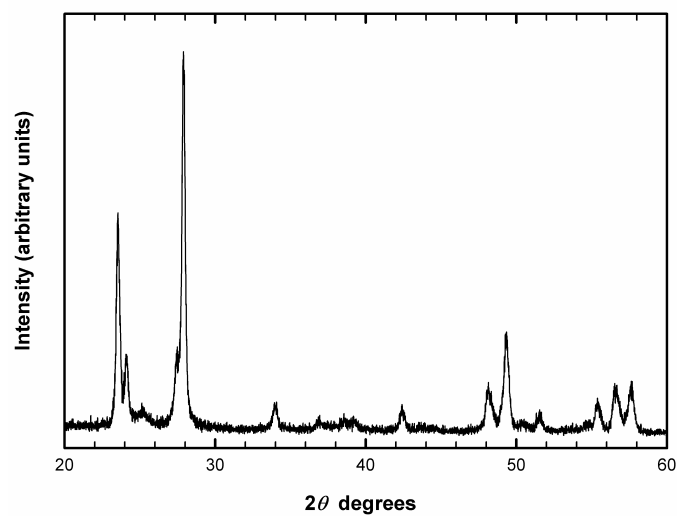


Figure S1. XRD pattern of a sample obtained from direct reaction between concentrated H_2TiF_6 and boric acid.

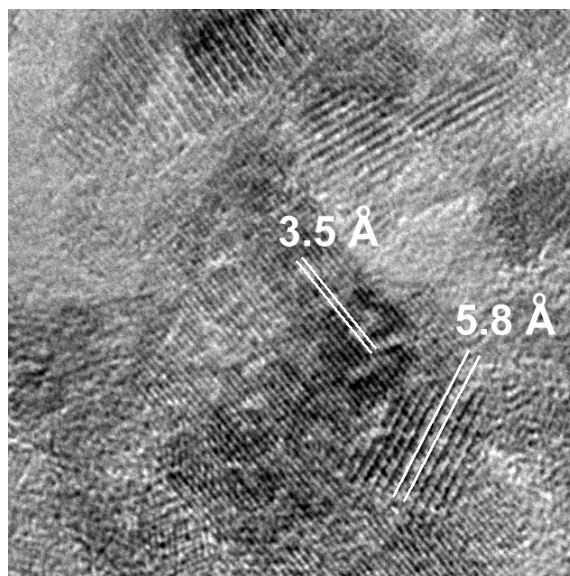


Figure S2. Representative HR-TEM image of a sample obtained from $(\text{Cho})_2\text{TiF}_6$ after reacting with boric acid at 85°C for 18 h, showing the coexistence of anatase and $\text{TiO}_2\text{-B}$.