

Polymer templated nanocrystalline titania network for solid state dye sensitized solar cells

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Electronic Supplementary Information (ESI)

High resolution transmission electron microscopy

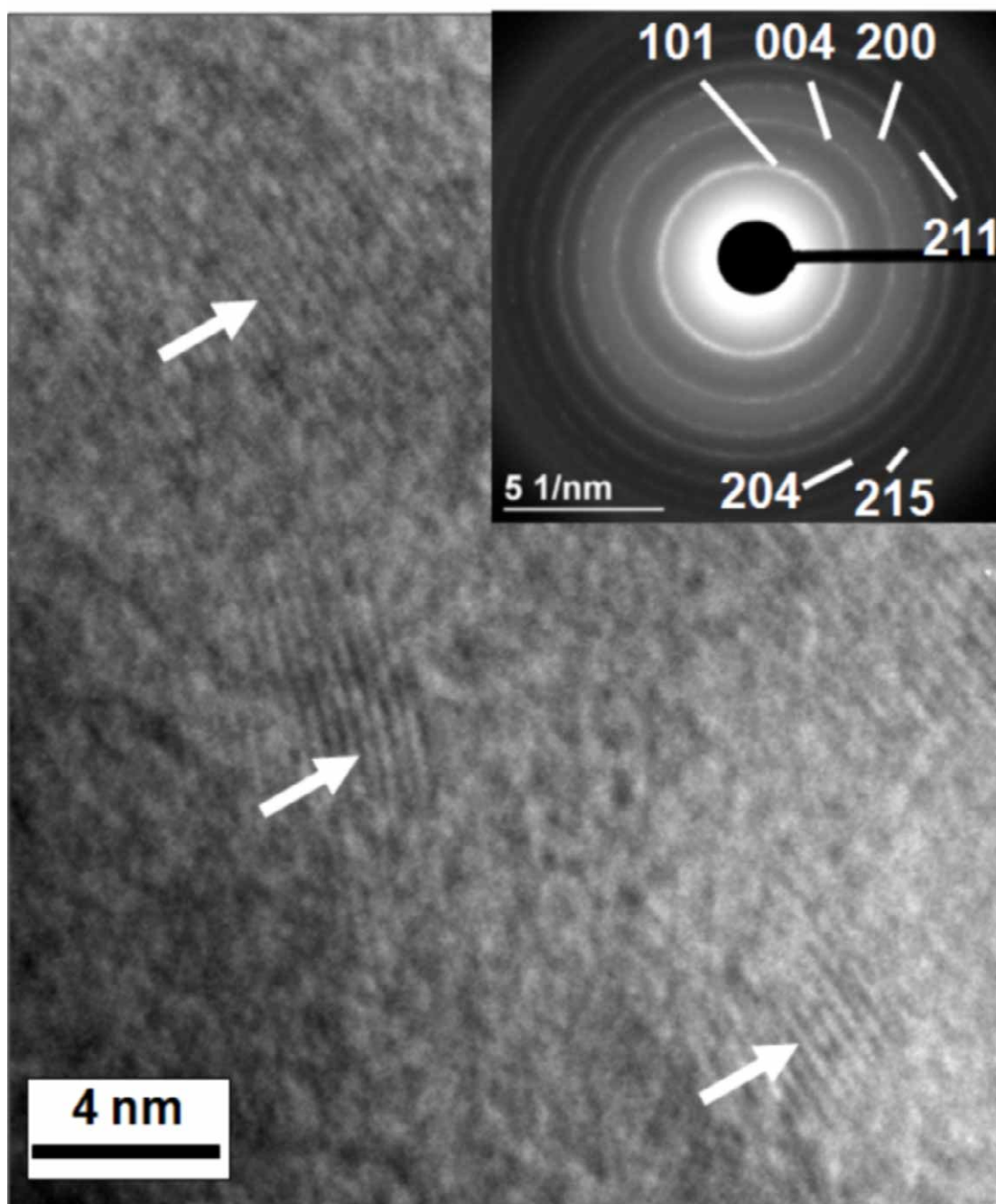


Fig. S1 HR-TEM image of sample SPB-TiO₂-1 (SPB/TEOT/water ratio of 1/4/4) and the selected area

electron diffraction (SAED) patterns of a single crystal immobilized within the brush. The diffraction rings consist with the anatase phase of TiO_2 .

EDX spectra of calcinated samples

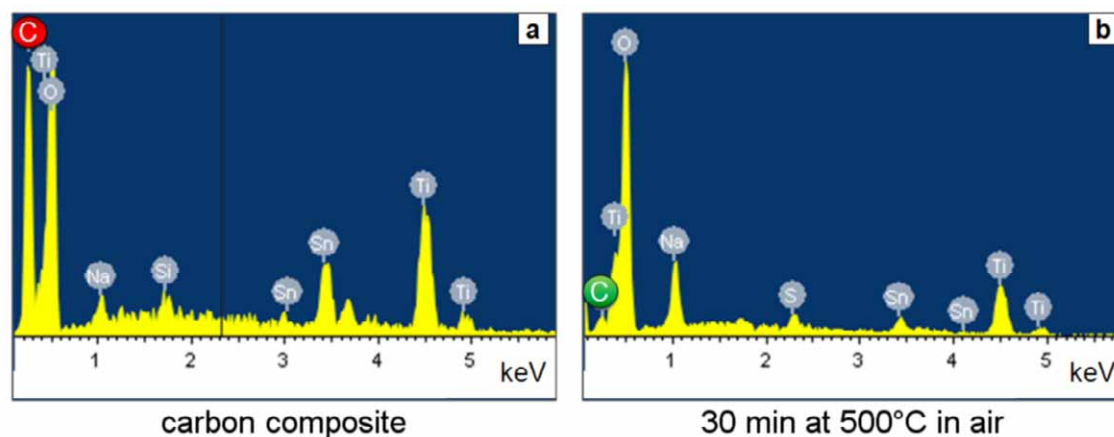


Fig. S2 EDX spectra of the SPB- TiO_2 films were recorded after calcination under argon and after the final removal of the carbon composite in air. A high carbon peak at 0.2 keV was obtained after heating under Argon for 5 h at 500 °C (left). The right spectrum indicates the complete removal of the carbon after 30 min at 500 °C under air.

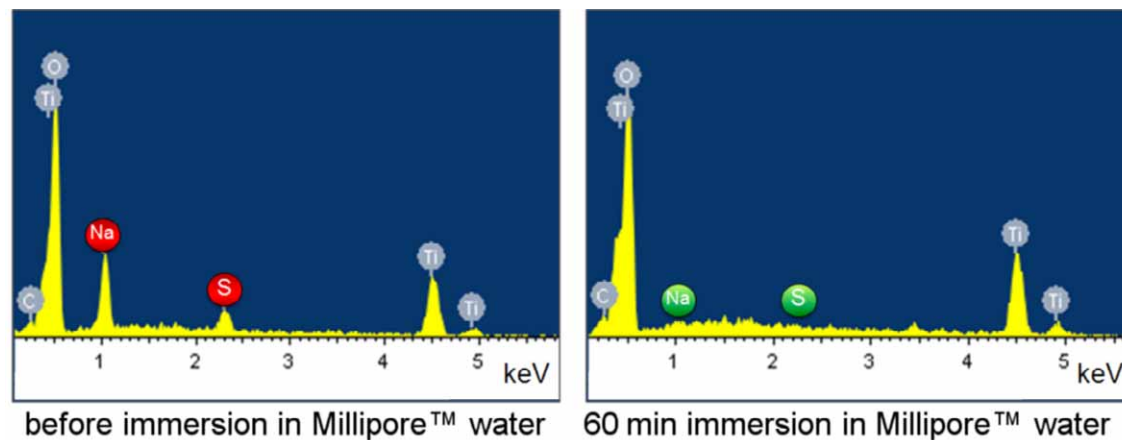


Fig. S3 Further inorganic impurities as sodium and sulphur were detected via EDX analysis. These rests of the sulfonate groups were removed by immersing the samples in Millipore® water for

1 h. The respective EDX spectra display the complete removal of those impurities.

TGA measurements

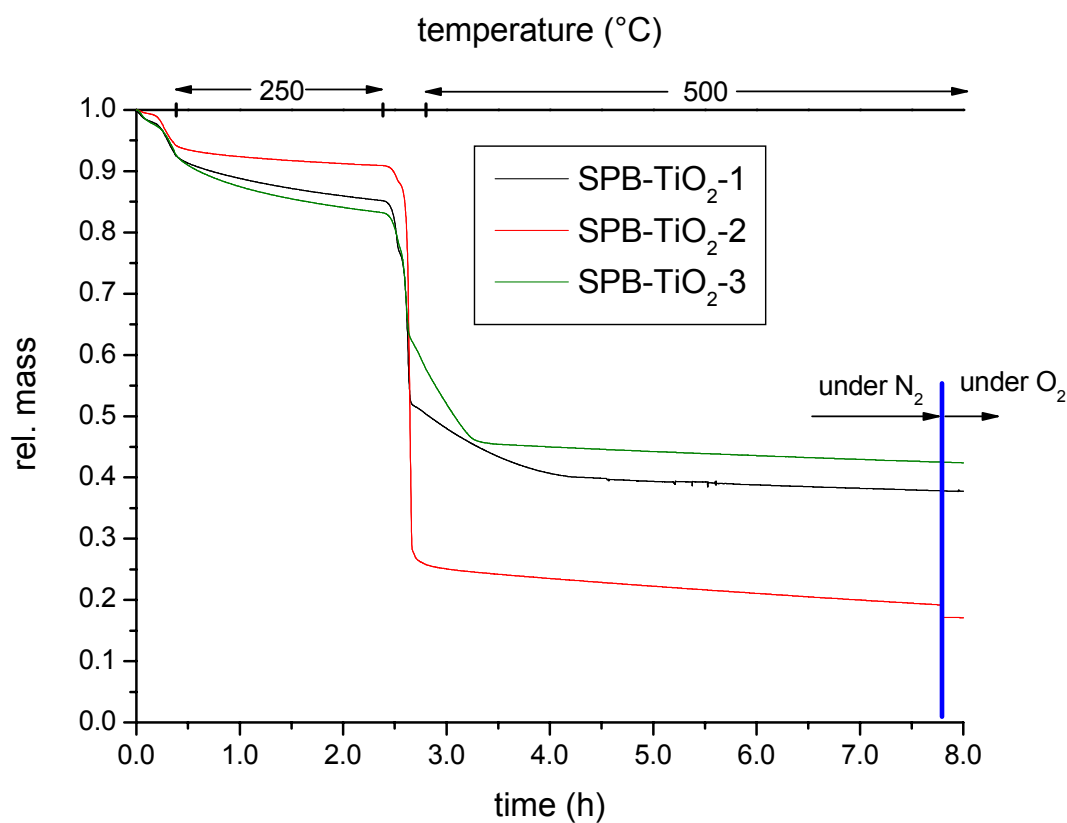


Fig. S4 TGA measurements of the samples SPB-TiO₂-1, SPB-TiO₂-2 and SPB-TiO₂-3. The program for the TGA measurement was adjusted to the two-step calcination program (under N₂: heating to 250 °C at a ramp of 10 K/min, keeping at 250 °C for 2 h, further heating to 500 °C at a ramp of 10 K/min, keeping at 500 °C for 5 h, flush with O₂ and keep for another 30 min at 500 °C). The residual relative masses of the individual samples are summarized in table S1.

Table S1 Relative residual masses determined by TGA measurements.

Sample	TiO ₂ content in SPB-TiO ₂ composite
SPB-TiO ₂ -1d	37.68%
SPB-TiO ₂ -2	17.01%
SPB-TiO ₂ -3	42.23%