

## Supporting Information

### Atomic Scale Surface Modification of TiO<sub>2</sub> 3D Nano-Arrays: Plasma Enhanced Atomic Layer Deposition of NiO for Photocatalysis

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Figure S1: A 20 nm NiO film grown onto an 8" Si wafer with a 100 nm thermal oxide layer wafer at 250 °C using the 2 s/5 s/2 s/5 s optimised pulse sequence

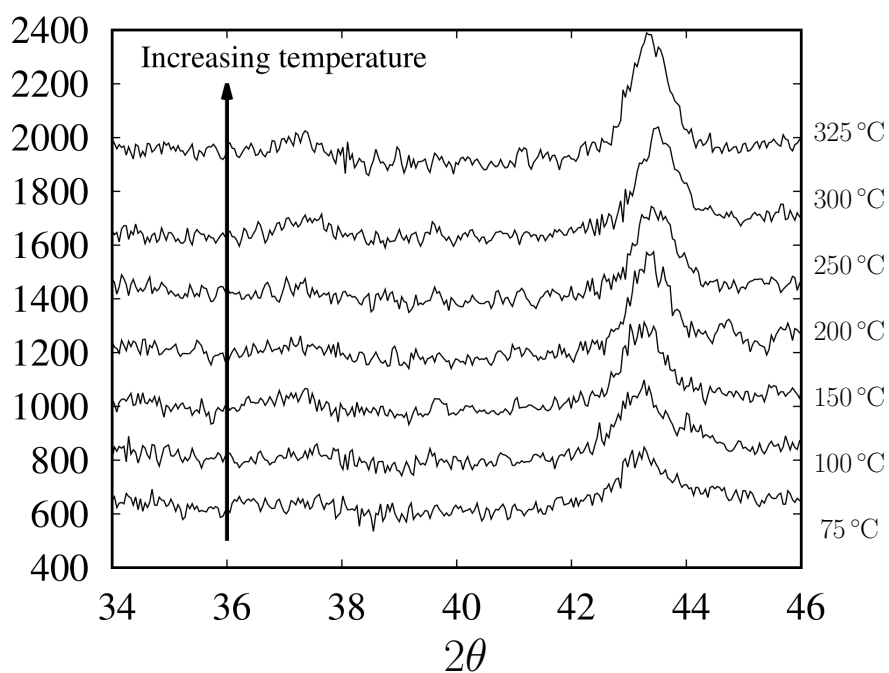


Figure S2: XRD patterns of NiO PEALD samples grown between 100-300 °C onto SiO<sub>2</sub> using the 2s/5s/2s/5s optimised pulse sequence

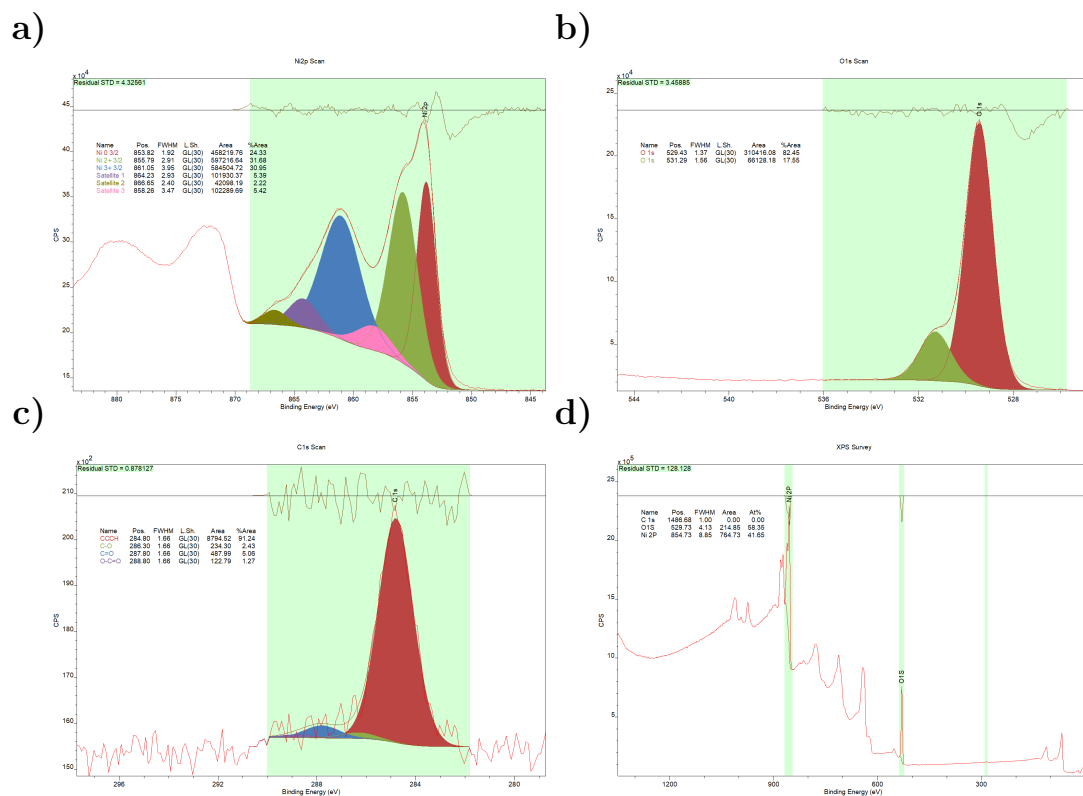


Figure S3: XPS measurements and analysis of a 100 nm NiO sample deposited at 250 °C onto SiO<sub>2</sub> using the 2s/5s/2s/5s optimised pulse sequence

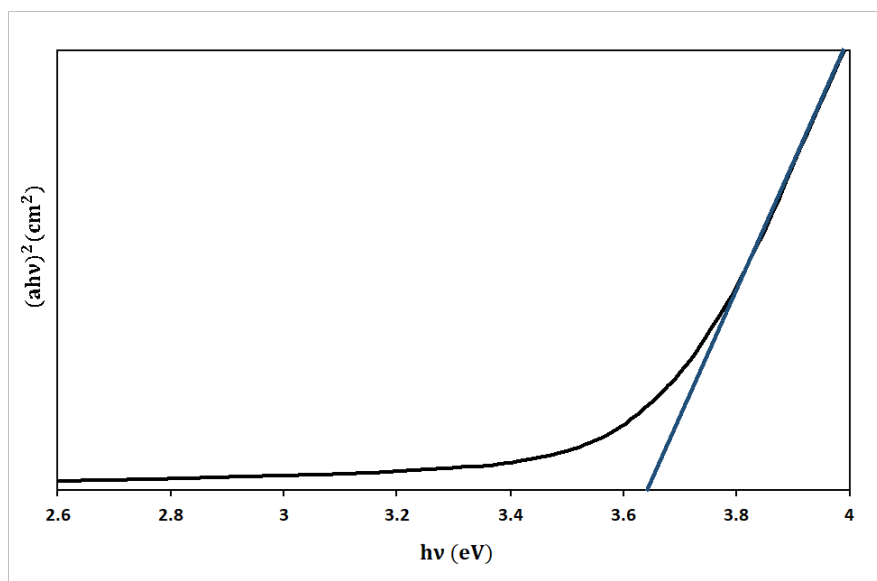


Figure S4: Tauc plot calculated from reflection and refraction data of a 20 nm NiO sample grown onto borosilicate glass, with an estimated bandgap of 3.62 eV.

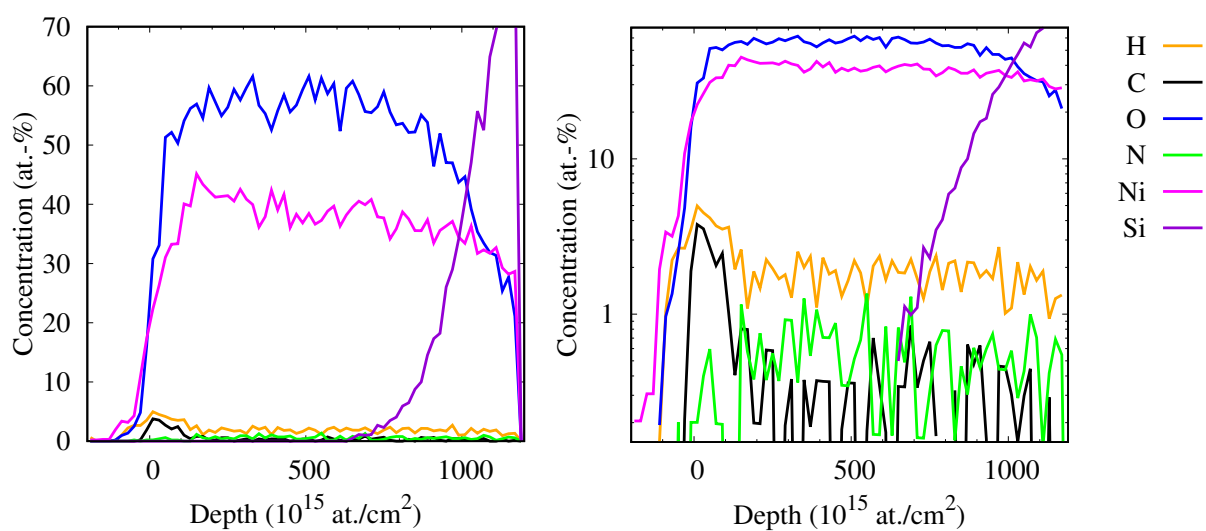


Figure S5: ToF-ERDA measurements of a 100 nm NiO sample grown by Ni(Cp)<sub>2</sub> PEALD onto SiO<sub>2</sub> at 250 °C with 100 W RF pulses and the 2 s/5 s/2 s/5 s optimised pulse sequence

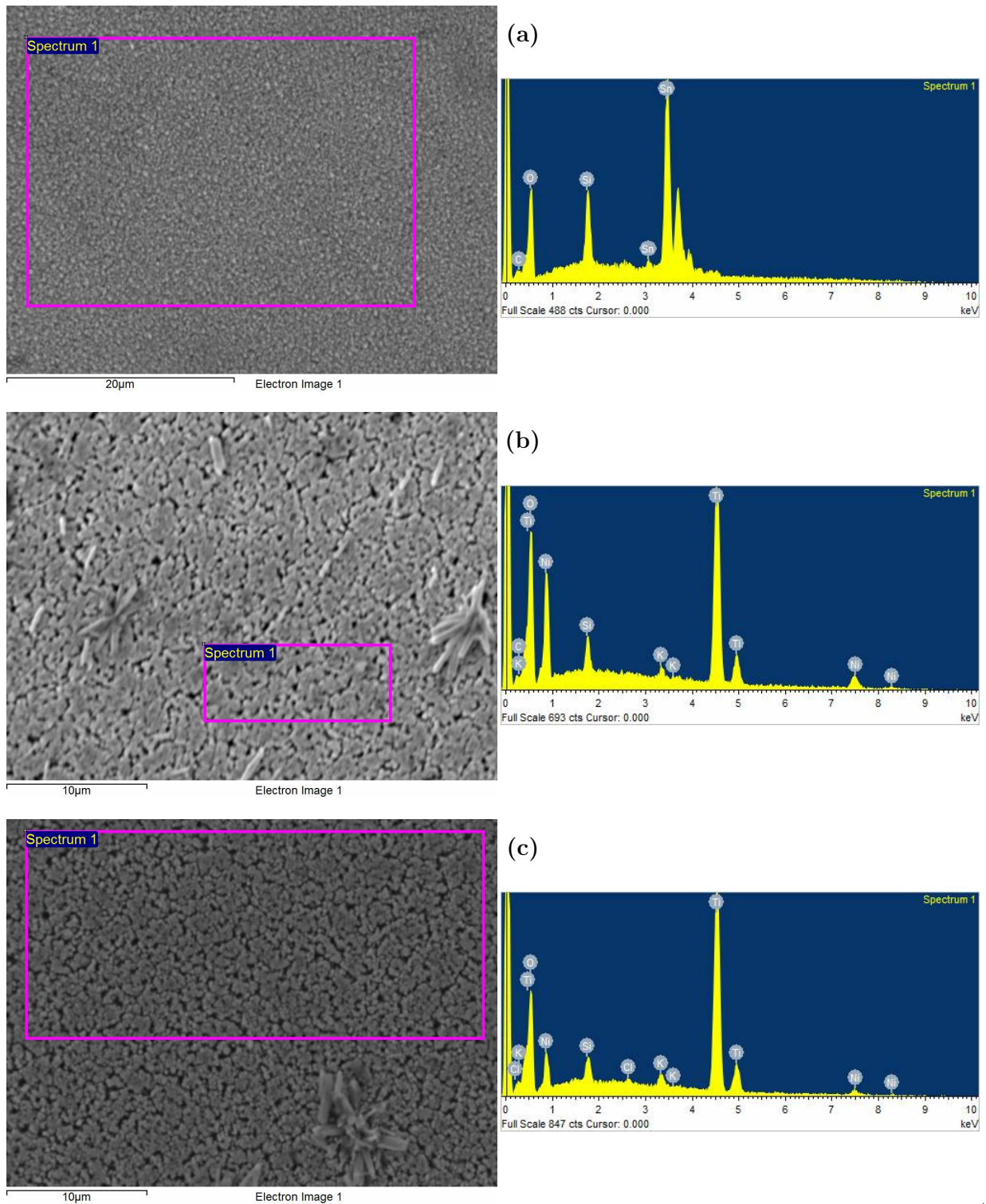


Figure S6: SEM-EDX imaging analysis of  $\text{TiO}_2$  nanorods coated with 600 NiO PEALD cycles deposited at  $250^\circ\text{C}$  (a) A control section of FTO masked during NiO deposition (b) and (c) SEM-EDX of NiO coated  $\text{TiO}_2$  NTs

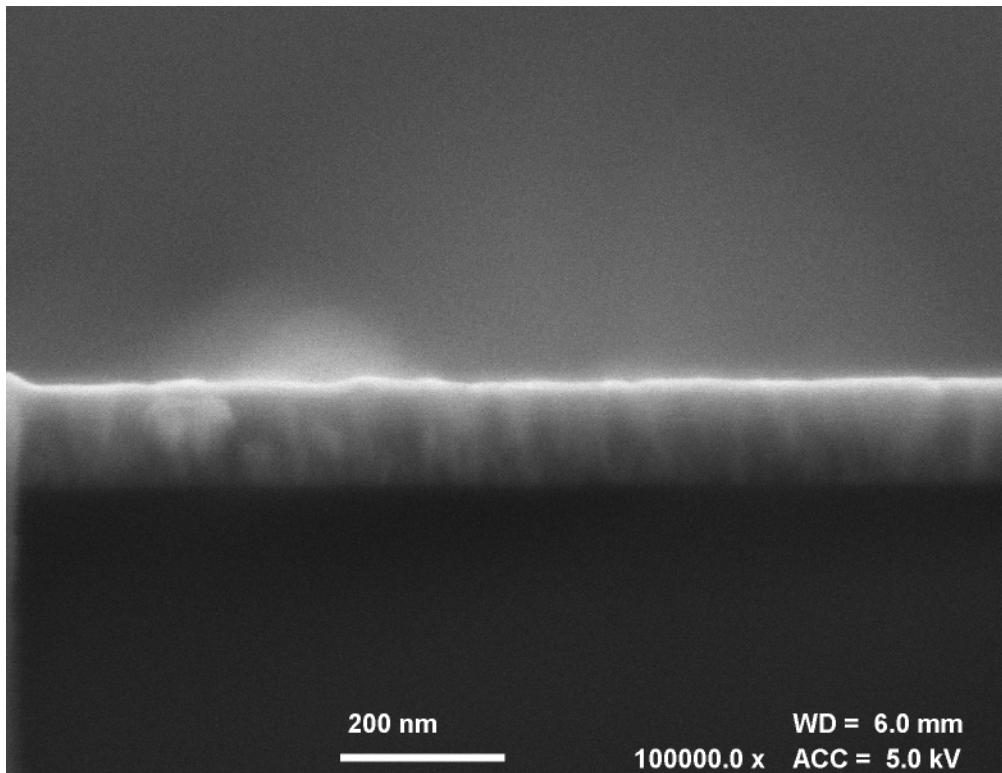


Figure S7: SEM imaging of a 100 nm NiO film grown at 250 °C onto SiO<sub>2</sub> using the 2 s/5 s/2 s/5 s optimised pulse sequence