Electronic supplementary information (ESI)

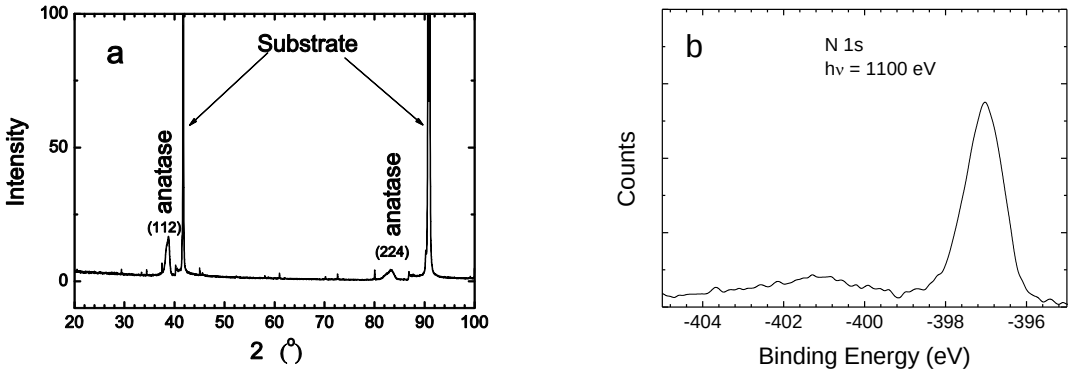

Fig. 1 (a) XRD pattern of the N-doped $TiO_{2-\delta}$ thin film prepared under N_2 pressure of 2 Pa, (b) N 1s peak in the XPS spectrum of the N-doped $TiO_{2-\delta}$ thin film prepared in 4 Pa N_2.

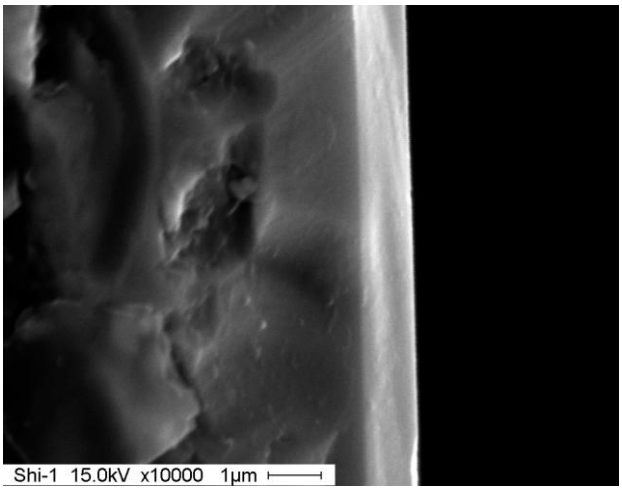

Fig. 2 SEM micrograph of the cross-section of the N-doped $TiO_{2-\delta}$ thin film showing the thickness of the film of about 1 μm.

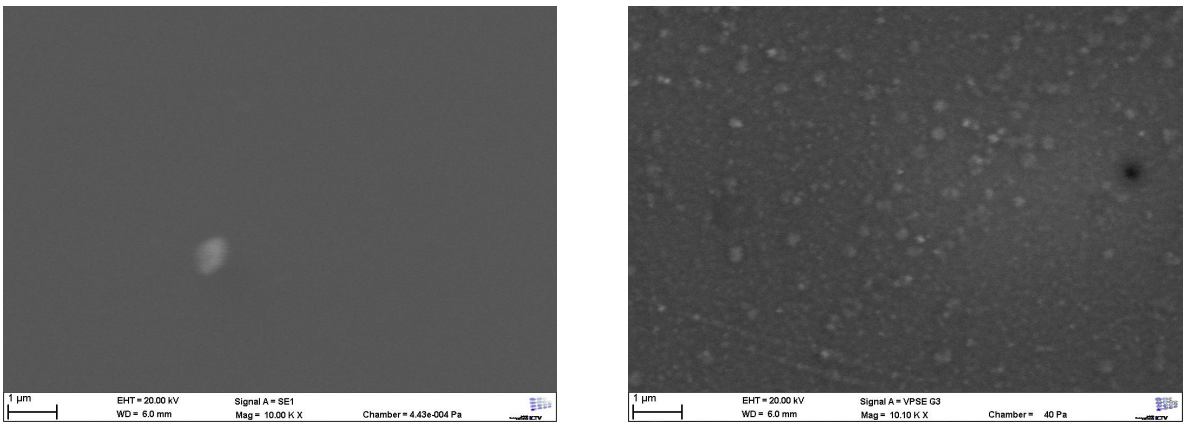

Fig. 3 SEM micrograph of the surface N-doped $TiO_{2-\delta}$ thin film (a) before and (b) after oxidation in O_2.

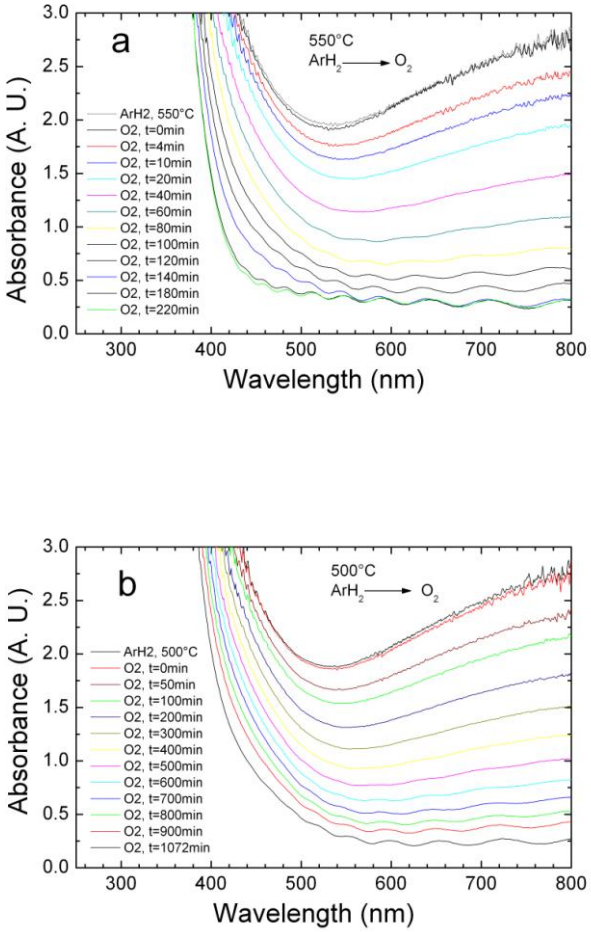

Fig. 4 Time-dependent electronic absorption spectra at (a) 550 ^{o}C and (b) 500 ^{o}C of the N-doped $TiO_{2-\delta}$ thin film, prepared under nitrogen partial pressure of 2 Pa, upon the rapid change of surrounding atmosphere from Ar + 5% H_2 to O_2.