

## Supplementary

# Photoluminescence of oxygen vacancies and surface functional hydroxyl groups of SnO<sub>2</sub> nanoparticles

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**TABLE SI.** Size and Band gap of the SnO<sub>2</sub> NPs with respect to annealing temperature.

Sample (Annealing Temperature)	Calculated size Using LFRS (nm)	Measured size using TEM (nm)	Band gap (eV)
A (100 °C)	2.41±0.15	2.4±0.1	4.4 ± 0.05
B (200 °C)	2.66±0.18	-	4.25 ± 0.05
C (250 °C)	3.1±0.22	-	4.06 ± 0.05
D (300 °C)	3.7±0.27	4.1±0.2	3.9 ± 0.05
E (500 °C)	-	9.5±0.7	3.67 ± 0.05
F (800 °C)	-	25±1	3.62

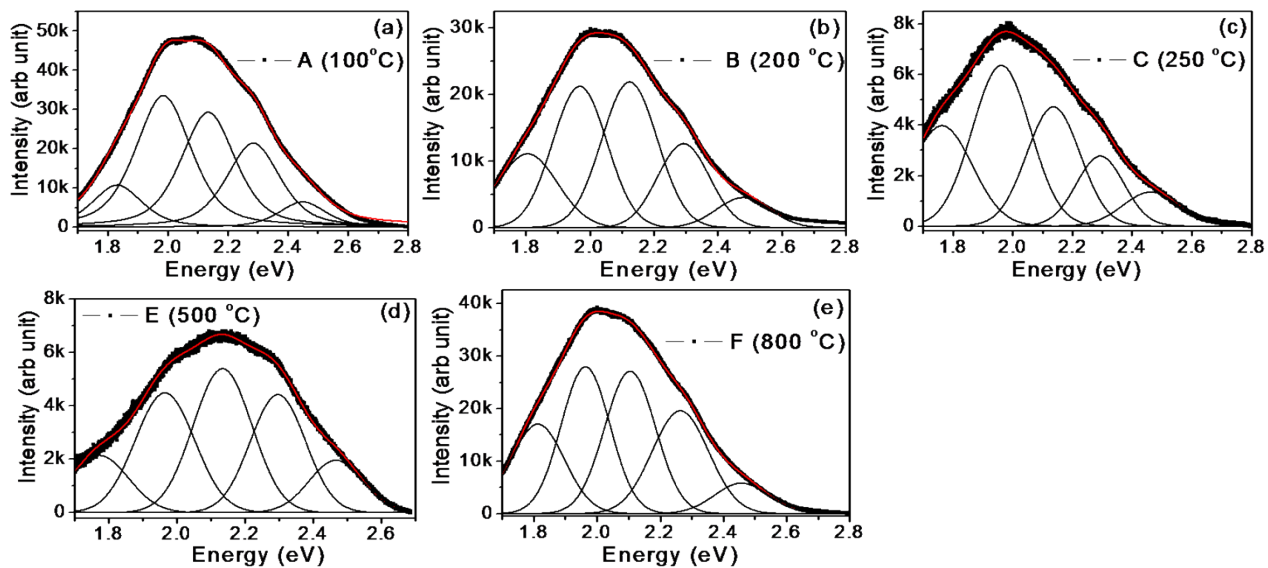


Fig. S1. Gaussian deconvolution of the PL spectra shown in Fig. 6. Area under each curve is deduced and shown in TABLE 2.

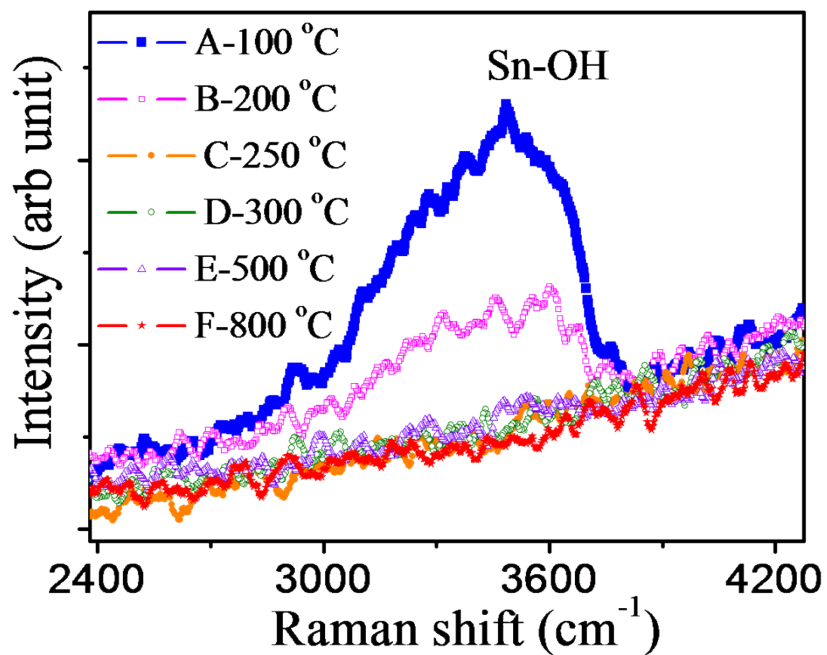


Fig. S2. Hydroxyl Raman mode of different size  $\text{SnO}_2$  NPs with excitation 325 nm.