

### Supplementary Information of images

#### **Semiconducting SnO<sub>2</sub> nanoparticles for surface-enhanced Raman scattering applications**

P. Surya Lakshmi<sup>1§</sup>, B. Mohanarao<sup>1§</sup>, P. Babuji<sup>1</sup>, P V Prakash Madduri<sup>2</sup>, L. Jyothi<sup>3</sup>, P. Gopala Krishna<sup>1</sup>, K. H. Chae<sup>4</sup>, G. S. Chang<sup>5</sup>, and V. Saikiran<sup>1,\*</sup>

<sup>1</sup>Department of Physics, School of Sciences, GITAM deemed to be University, Visakhapatnam, India, 530045.

<sup>2</sup>Department of Sciences, Indian Institute of Information Technology Design and Manufacturing Kurnool, Kurnool 518008, Andhra Pradesh, India.

<sup>3</sup>School of Physics, University of Hyderabad, Hyderabad 500046.

<sup>4</sup>Advanced Analysis Center, Korea Institute of Science and Technology, Seoul 02792, Republic of Korea

<sup>5</sup>Department of Physics and Engineering Physics, University of Saskatchewan, Saskatoon, SK S7N5E2, Canada

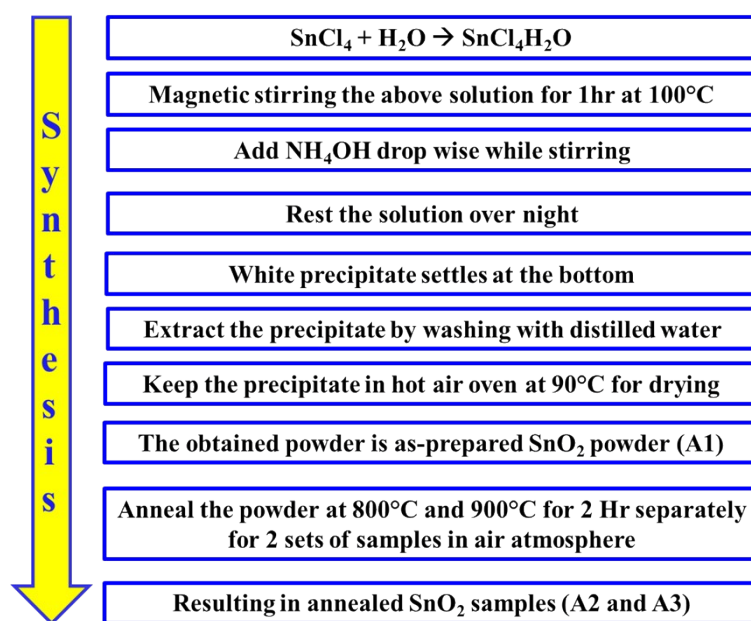


Figure S1: Schematic representation of the sol-gel-assisted precipitation synthesis route followed by thermal annealing to obtain SnO<sub>2</sub> NPs with tunable properties

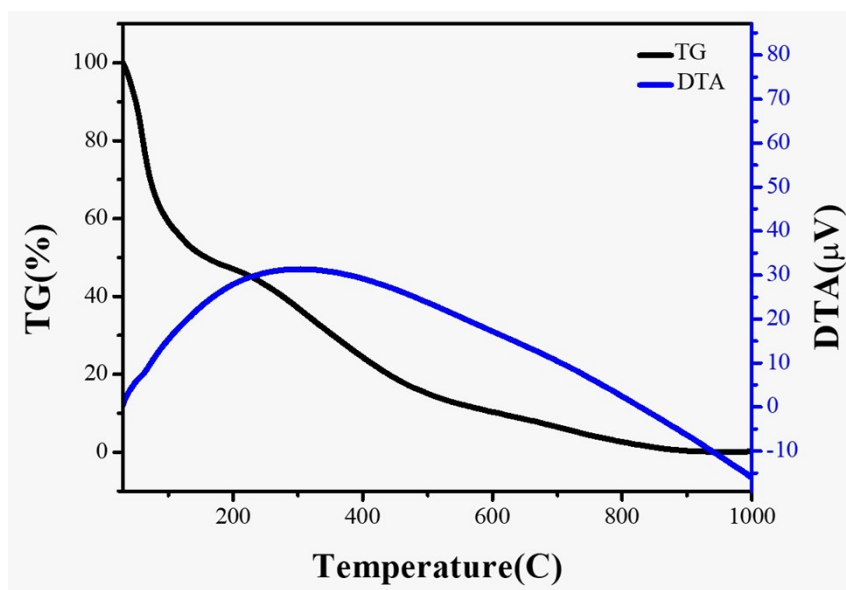


Figure S2: TGA DTA curves of SnO<sub>2</sub> Nanoparticles synthesized.

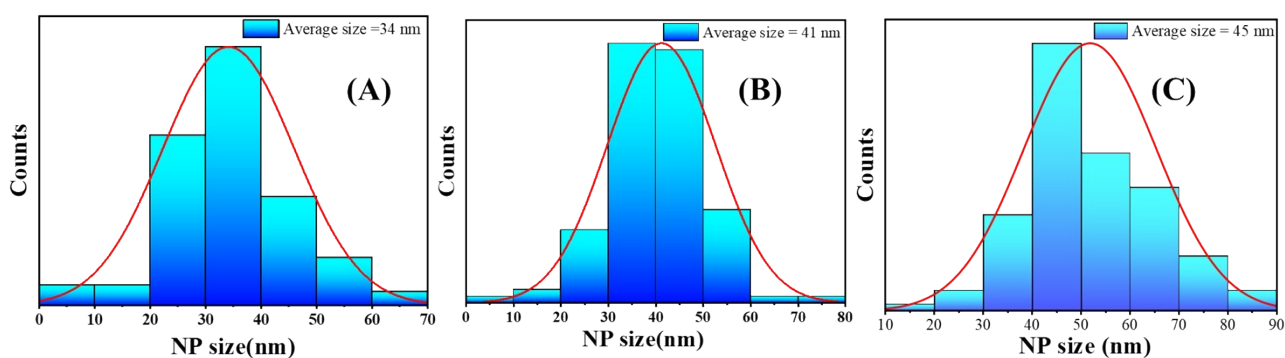


Figure S3: (A) to (C) Size distribution histograms obtained from FESEM images of the SnO<sub>2</sub> NPs samples A1, A2, and A3 respectively.

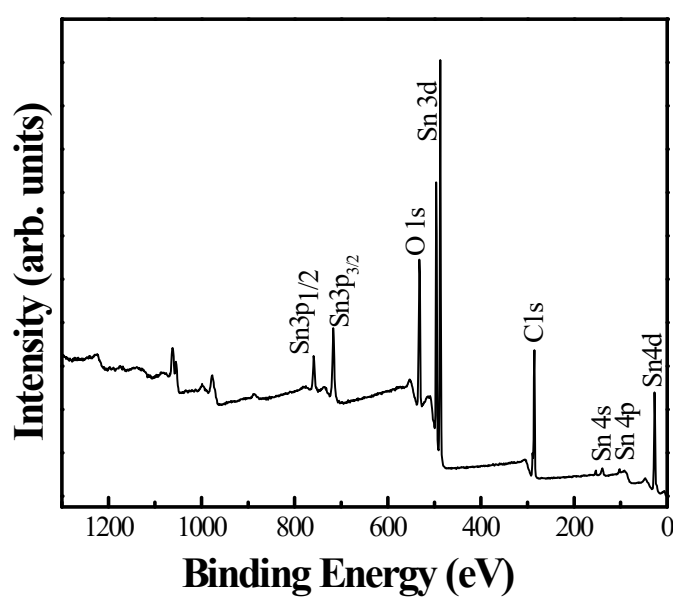


Figure S4: Wide-scan XPS survey of SnO<sub>2</sub> NPs (sample A2)

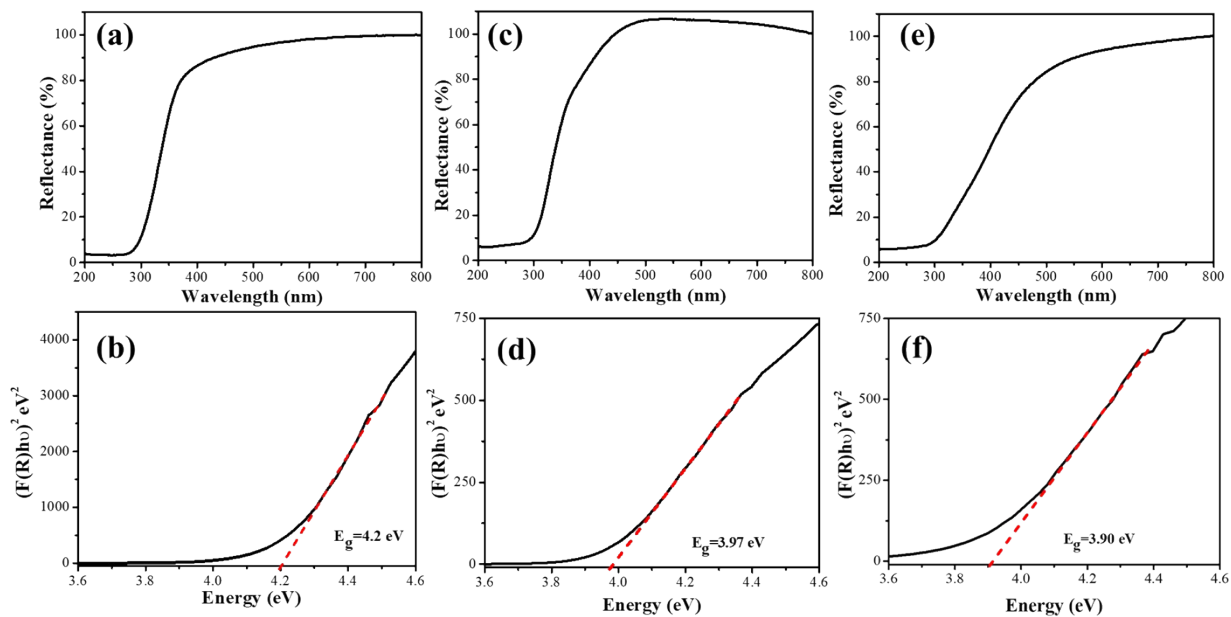


Fig S5: DRS spectra of SnO<sub>2</sub> nanoparticles and the respective band edge estimations. (a) as-prepared (c) 800°C and (e) 900°C annealed SnO<sub>2</sub> NPs and (b), (d), (e) are respective band edge estimations.

Table S1: XRD parameters obtained from Rietveld refinement

a	4.7376 Å°
b	4.7376 Å°
c	3.1867 Å°
alpha	90°
beta	90°
gamma	90°
X Parameter	0.2413
Y Parameter	0.3874
Asymm X	0.014530
Asymm Y	0.005520
Direct Cell Volume	71.5235
Bragg R factor	3.91
R <sub>f</sub> -factor	2.38
R <sub>p</sub>	9.00
R <sub>wp</sub>	11.5
R <sub>exp</sub>	67.20
Chi <sup>2</sup>	0.304E-01

Element	x	y	z	B	Occ	Mult
Sn	0.50000	0.50000	0.50000	0	0.125	2
O	0.80597	0.19402	0.50000	0	0.250	4