Supplementary Information

Figure SI.1 shows the FE-SEM images of $(Sn_{1-x}Ce_x)O_2$ nanoparticles calcined at 650 °C; (a) $x = 0$, (b) $x = 0.3$ and (c) $x = 0.7$. The inset shows the particles size histogram which were obtained from several SEM images fitted by a log-normal distribution. The FE-SEM images show that the particles have larger sizes with increasing *Ce* concentration and exhibit a "popcorn" like morphology. On the other hand, in Fig. SI.1(a) the pure SnO_2 nanoparticles have a spherical morphology with mean particle size (29.4 ± 0.3) nm obtained from the adjustment of log-normal function in the particle size distribution (see inset this Figure).

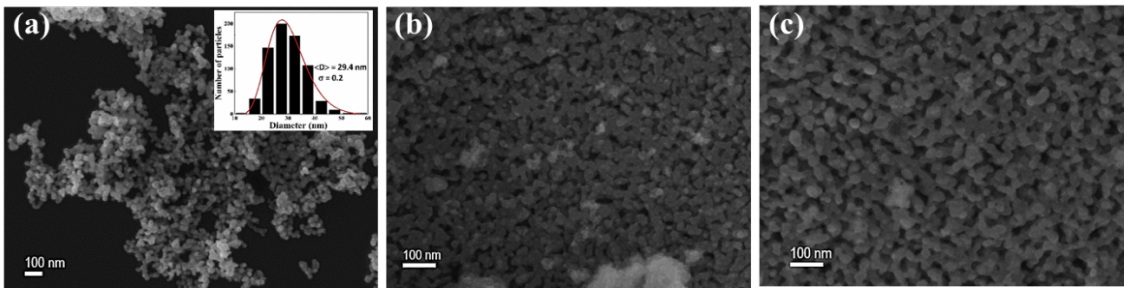

Fig. SI.1. FE-SEM images for the $(Sn_{1-x}Ce_x)O_2$ calcined at 650 °C: (a) $x = 0$, (b) $x = 0.3$ and (c) $x = 0.7$. The insert: particle size histogram fitted with a log-normal size distribution.

Table SI.1 shows the molar concentration of each phase, lattice parameters (*a*, *b*, *c*), unit cell volume (V), mean diameter of the crystallite $<D_{X\text{-}ray}>$, strain and statistical indicator of the Rietveld refinement (*S*) for the $(Sn_{1-x}Ce_x)O_2$ calcined at 650 ° C.

Table SI.1. List of parameters obtained from the Rietveld refinement of the XRD patterns for the $(Sn_{1-x}Ce_x)O_2$ calcined at 650 °C for 2 hours.

$(Sn_{1-x}Ce_x)O_2$	Phases	(%) Molar	Lattice Parameter (Å)		Cell volume V (Å^3)	$<D_{X\text{-}ray}>$ (nm)	Strain (%)	*S*
			a = *b* (Å)	*c* (Å)				
$x = 0$	T-SnO_2	100	4.742	3.188	71.67	29.9	0.6261	1.52
$x = 0.3$	T-SnO_2	72.89	4.743	3.195	71.86	10.0	2.0819	1.21
	CeO_2	27.11	5.242	5.242	144.0	2.4	9.3489	
$x = 0.7$	T-SnO_2	18.60	4.747	3.198	72.07	21.2	0.8648	1.13
	CeO_2	81.40	5.354	5.354	153.44	5.8	7.8488	
$x = 1$	CeO_2	100	5.415	5.415	158.79	10.2	0.6936	1.17

Figure SI.2 shows the XRD patterns for the samples $(Sn_{1-x}Ce_x)O_2$ changing the molar concentration of *Ce* (x = 0, 0.3, 0.7, 1) calcined at 650 °C per 2 hours. We also show the difference (blue line) between the experimental and calculated patterns, which have been evaluated using the Rietveld method.

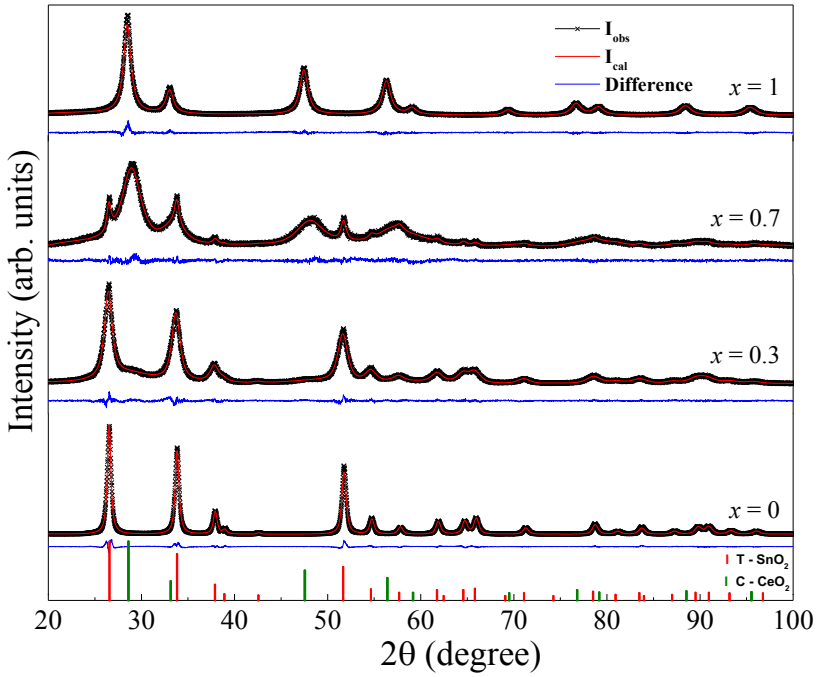

Fig. SI.2. X-ray diffraction patterns for the $(Sn_{1-x}Ce_x)O_2$ calcined at 650 °C for 2 hours. The red solid lines are the adjustments obtained using the Rietveld method and the blues represent the difference between the experimental and calculated standard. The red and green bars, respectively, correspond to SnO_2 pattern peaks (ICSD 39173) and CeO_2 (ICSD 72155).

Table SI.2 shows the quantitative EDS analysis for the sample $(Sn_{1-x}Ce_x)O_2$ calcined at 750 °C.

Table SI.2. Weight and atomic percentage of $(Sn_{0.7}Ce_{0.3})O_2$ sample heated at 750°C.

$(Sn_{0.7}Ce_{0.3})O_2$	*Sn L*	*Ce L*	*O K*
Molar (%)	72.99	26.56	0.45
Atomic (%)	62.46	16.31	21.23