Electronic Supplementary Material (ESI) for New Journal of Chemistry.

SUPPORTING INFORMATION

Structural Differences Between Sb- and Nb-Doped Tin Oxides and Consequences for Electrical Conductivity

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Characterisation data

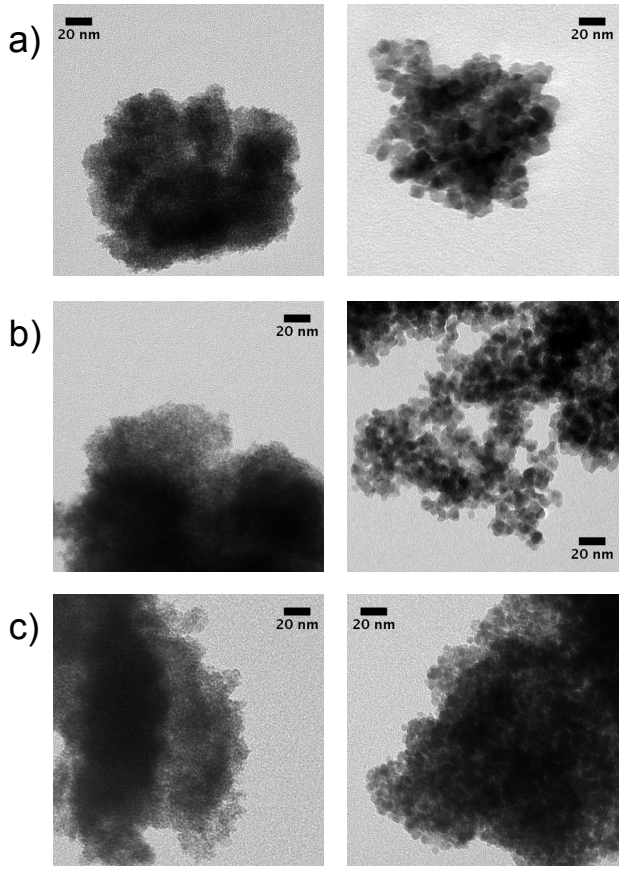

Figure S1. Representative Bright Field TEM images of a) SnO_2, b) SnO_2:Sb and c) SnO_2:Nb before (left) and after (right) calcination

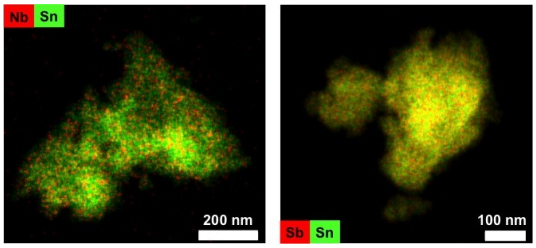

Figure S2. EDX maps of SnO_2:Nb (left) and SnO_2:Sb (right) before calcination

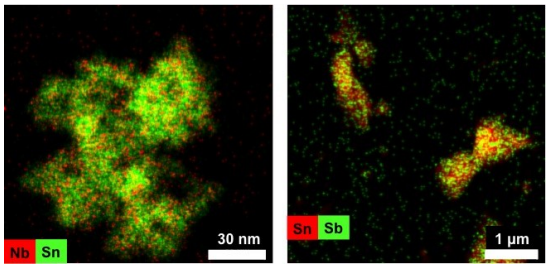

Figure S3. EDX maps of SnO_2:Nb (left) and SnO_2:Sb (right) after calcination

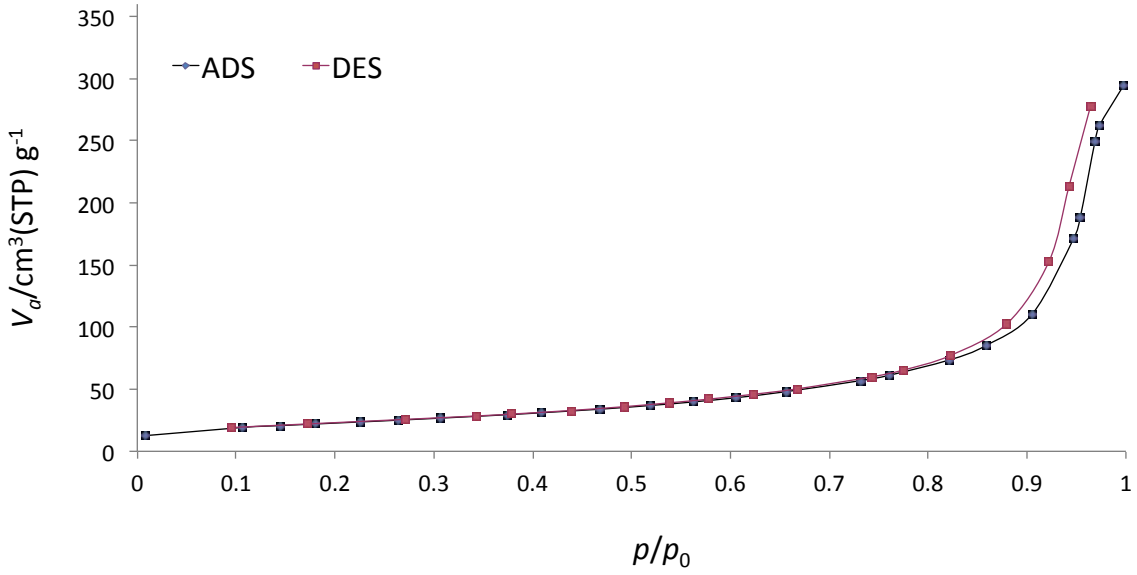

Figure S4. Representative N_2 adsorption desorption isotherms of SnO_2:Sb

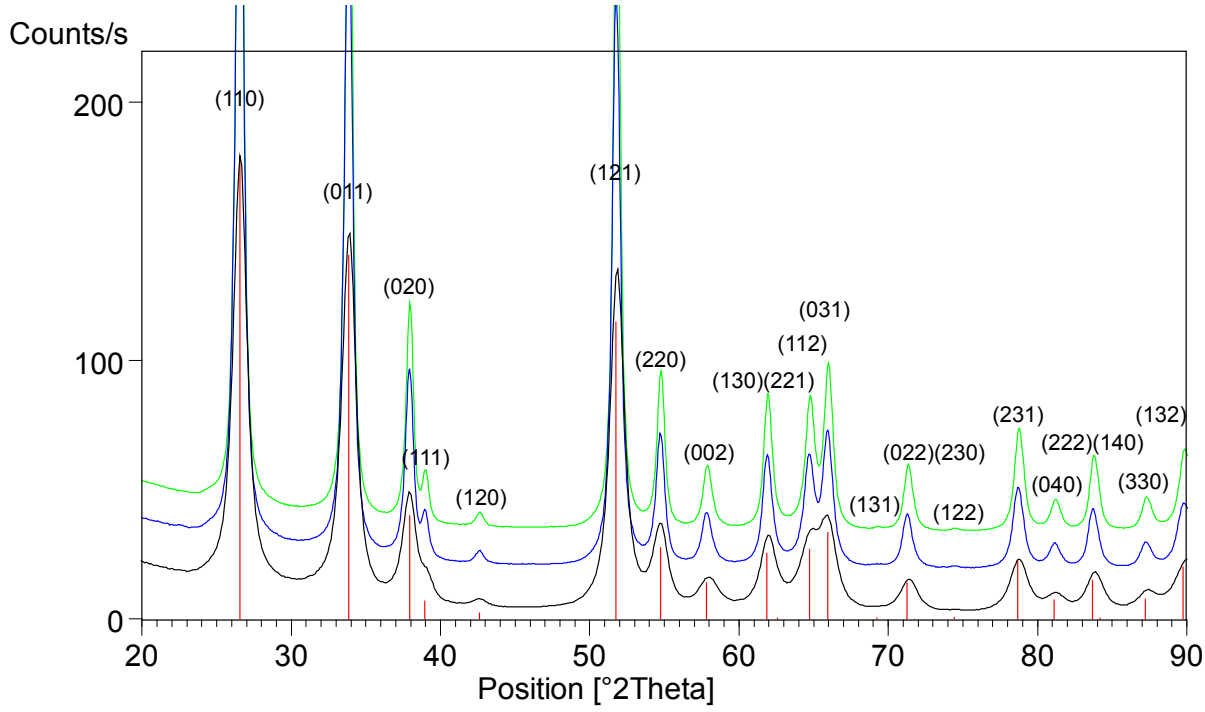

Figure S5. XRD powder diffraction patterns of SnO_2 (green), SnO_2:Sb (blue) and SnO_2:Nb (black) measured on a glass substrate at room temperature after the HT-XRD measurements. The red lines represent the theoretical peak positions of Cassiterite SnO_2. Major diffraction peaks are indexed (*hkl*) and assigned to cassiterite SnO_2.

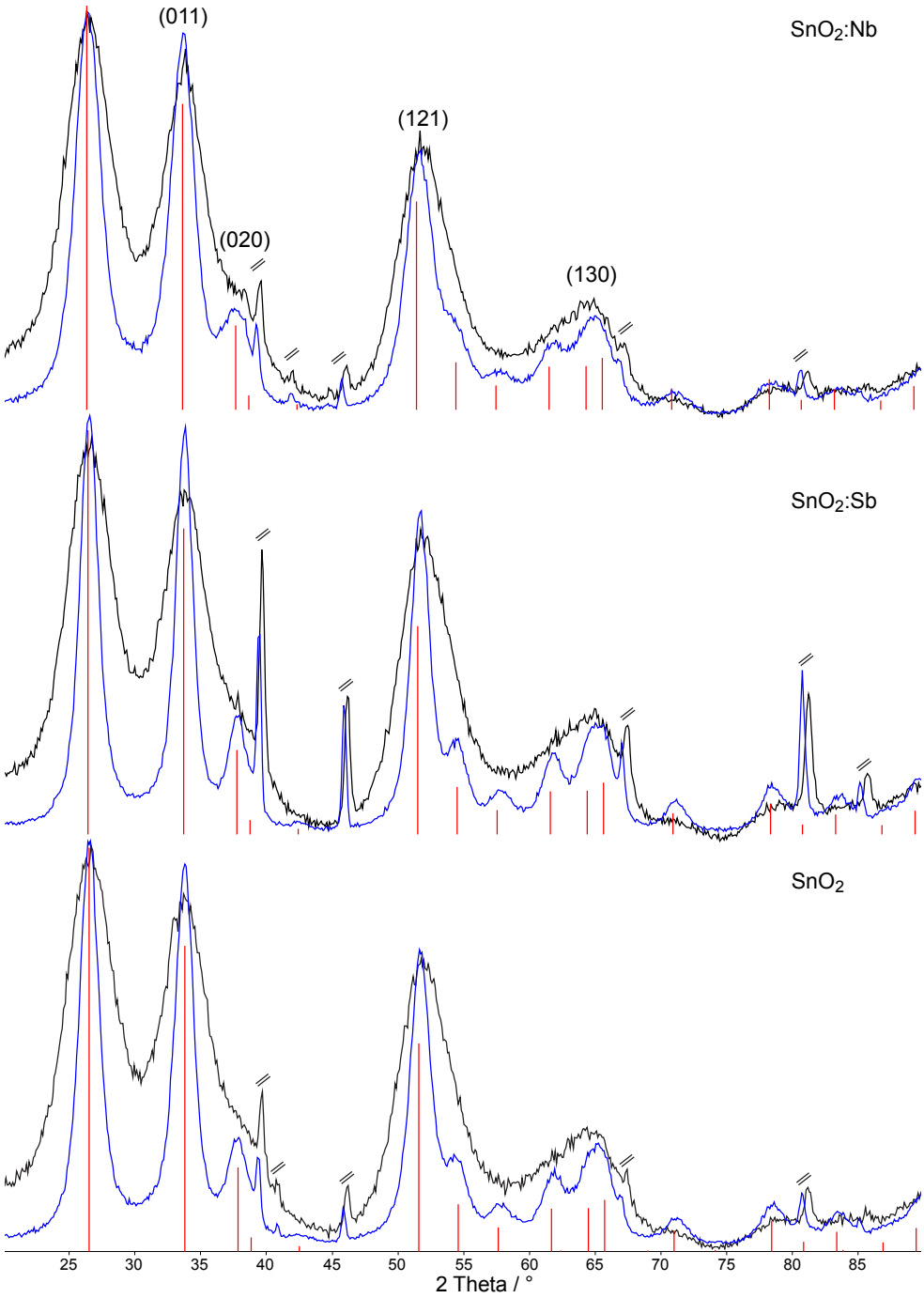

Figure S6. XRD powder diffraction patterns of SnO_2, SnO_2:Sb and SnO_2:Nb before calcination (black) and at 500 °C (blue). Red lines represent the theoretical peak positions of cassiterite SnO_2. Double line represent peaks due to the Pt heating strip. A small shift in the peaks assigned to the Pt heating strip is observed due to thermal expansion for the diffractograms recorded at 500 °C (blue). Major diffraction peaks are indexed (*hkl*).

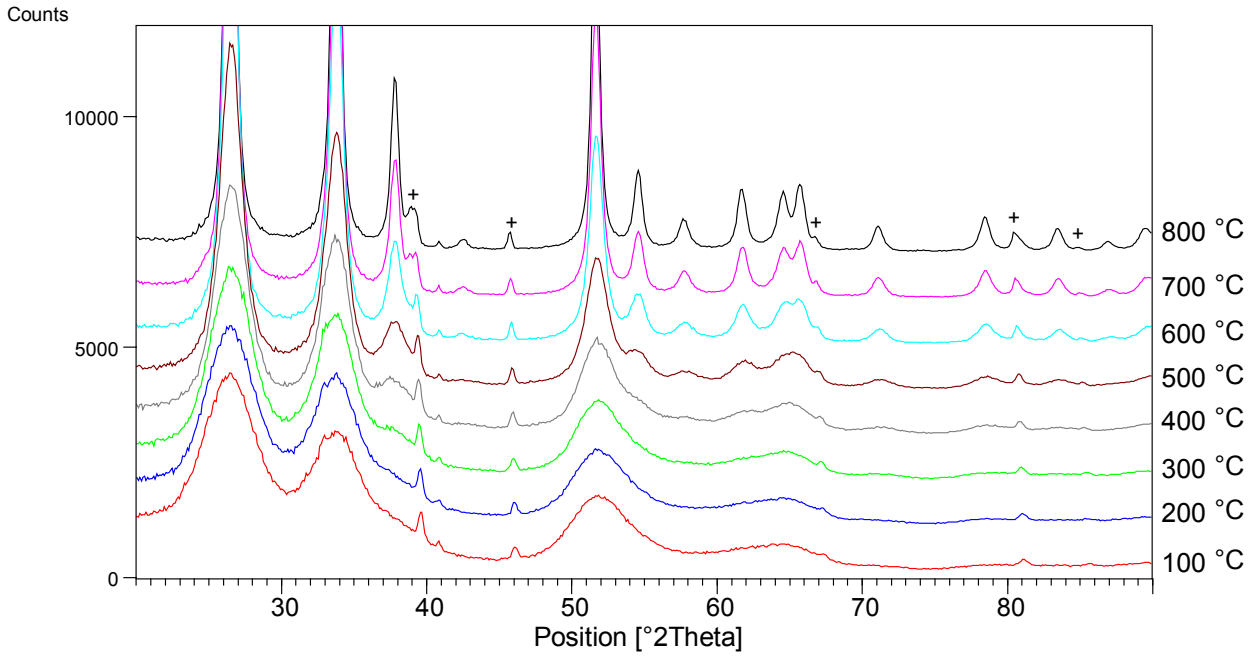

Figure S7. HT-XRD diffraction patterns of SnO_2 during heating cycle 1. Peaks due to the Pt heating strip are denoted by a + sign. All others correspond to cassiterite SnO_2.

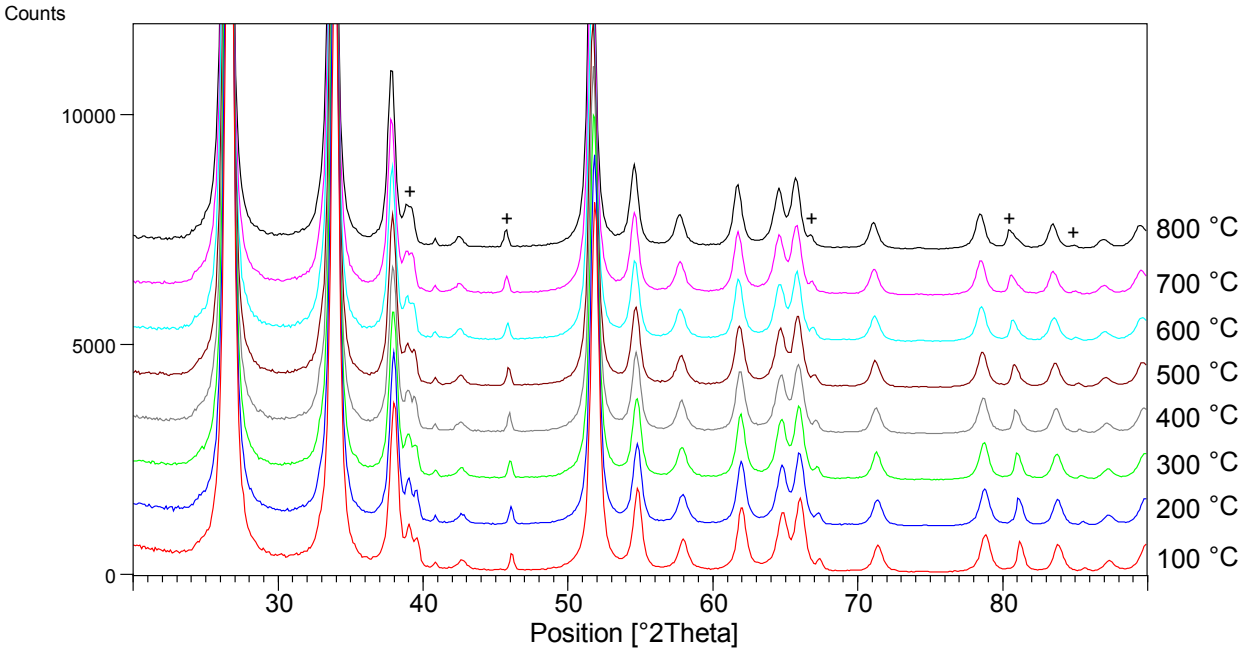

Figure S8. HT-XRD diffraction patterns of SnO_2 during heating cycle 2. Peaks due to the Pt heating strip are denoted by a + sign. All other corresponds to cassiterite SnO_2.

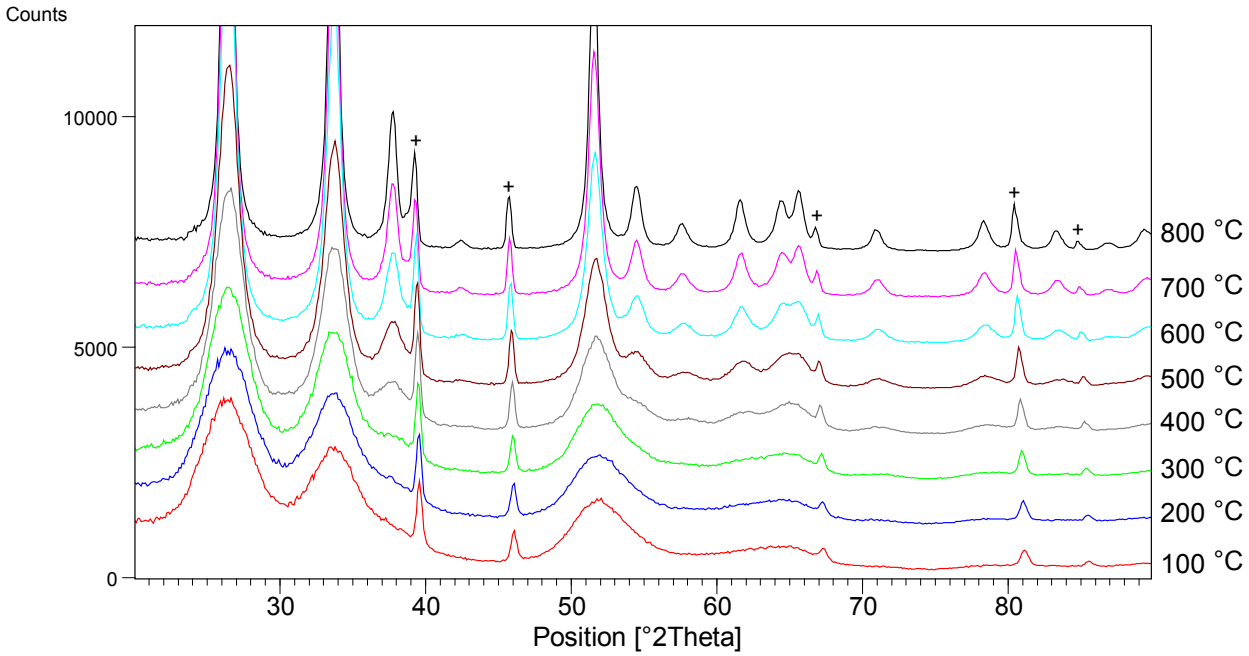

Figure S9. HT-XRD diffraction patterns of SnO_2:Sb during heating cycle 1. Peaks due to the Pt heating strip are denoted by a + sign. All others correspond to cassiterite SnO_2.

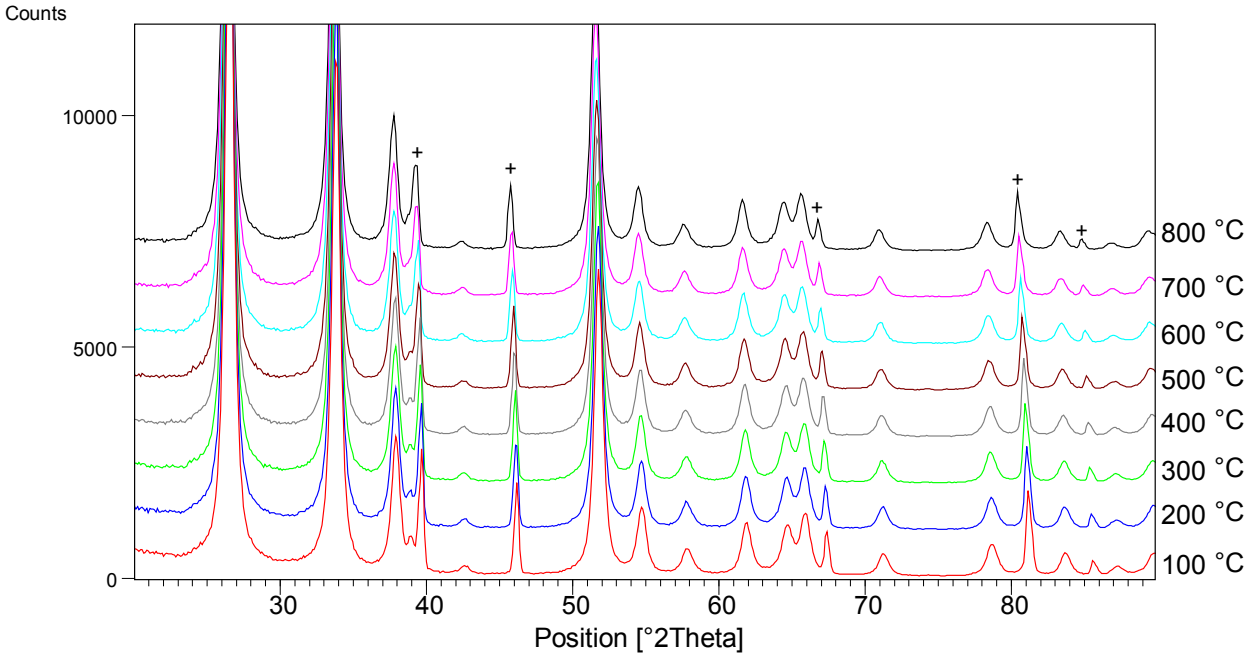

Figure S10. HT-XRD diffraction patterns of SnO_2:Sb during heating cycle 2. Peaks due to the Pt heating strip are denoted by a + sign. All others correspond to cassiterite SnO_2.

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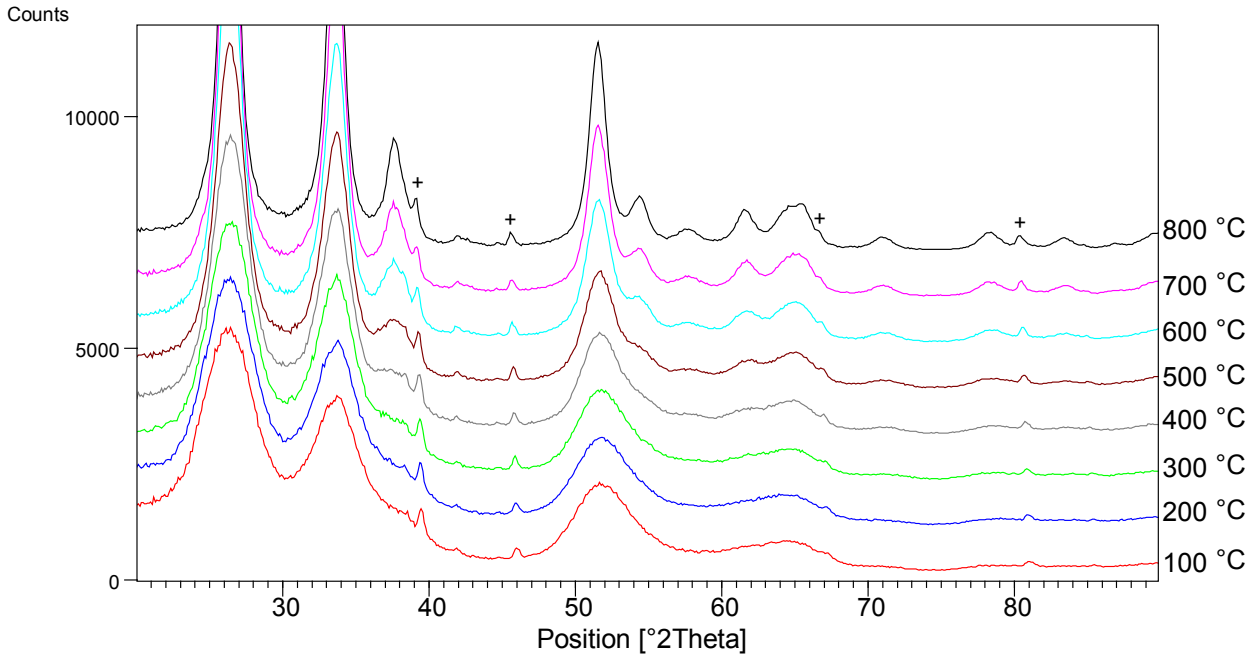

Figure S11. HT-XRD diffraction patterns of SnO_2:Nb during heating cycle 1. Peaks due to the Pt heating strip are denoted by a + sign. All others correspond to cassiterite SnO_2.

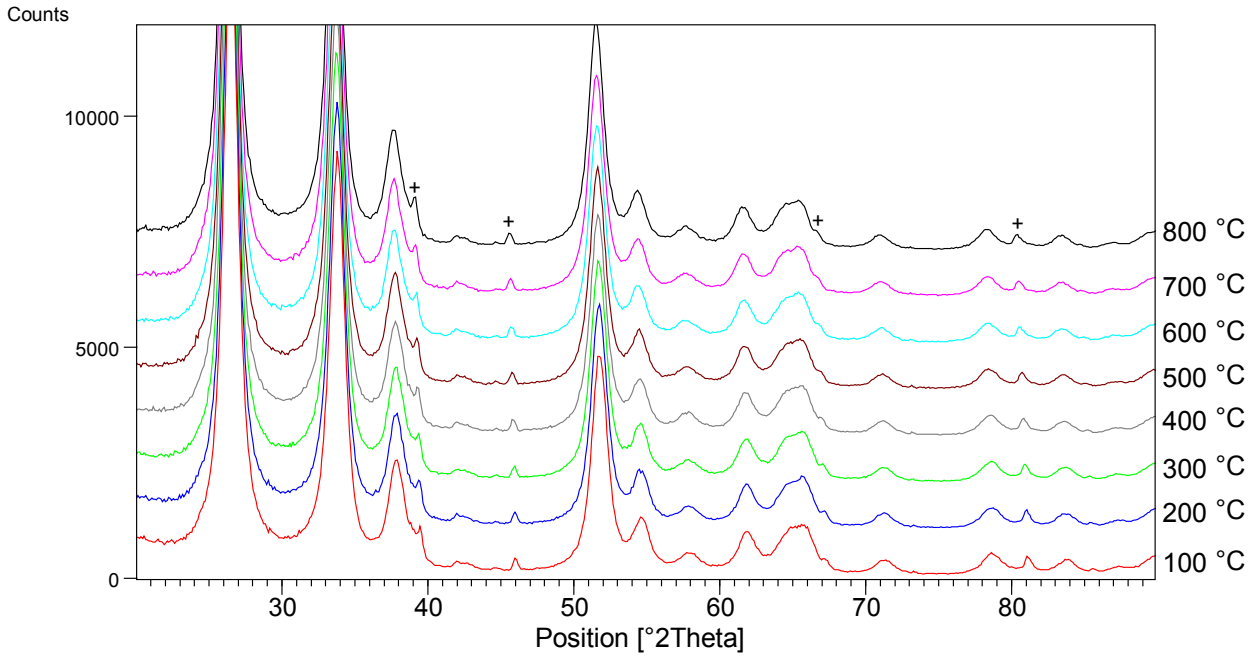

Figure S12. HT-XRD diffraction patterns of SnO_2:Nb during heating cycle 2. Peaks due to the Pt heating strip are denoted by a + sign. All others correspond to cassiterite SnO_2.

Table S1. Elemental analysis data for SnO_2:Sb and SnO_2:Nb (wt%)

Sample	Sn	Sb	Nb	Cl
SnO_2:Sb	73.2	1.92	-	0.53
SnO_2:Nb	70.5	-	2.97	1.18

Table S2. Surface area and electrical conductivity data of the SnO_2:Sb samples

Sample	Calcination / T °C	S_{BET} / $m^2.g^{-1}$	Electrical conductivity / $S.cm^{-1}$
SnO_2:Sb	500	83	0.02
Commercial SnO_2:Sb	-	70-80	0.03

Table S3. Surface area and electrical conductivity data of the SnO_2:Nb samples with varied Nb content calcined at 500 °C

Nb content / mol_M%	S_{BET} / $m^2.g^{-1}$	Electrical conductivity / $S.cm^{-1}$
0	33	10^{-6}
1	28	10^{-6}
2	28	10^{-6}
5	43	10^{-5}
10	55	10^{-6}

Table S4. Surface area and electrical conductivity data of the 5 mol_M% SnO_2:Nb samples with varied calcination temperatures

Calcination T / °C	S_{BET} / $m^2.g^{-1}$	Electrical conductivity / $S.cm^{-1}$
-	257	10^{-7}
350	143	10^{-6}
500	92	10^{-5}
650	59	10^{-5}
800	28	10^{-6}