Electronic Supplementary Material (ESI) for Journal of Materials Chemistry C.

Electronic Supplemental Information

Synthesis of Colloidal MnSb Nanoparticles: Consequences of Size and Surface Characteristics on Magnetic Properties

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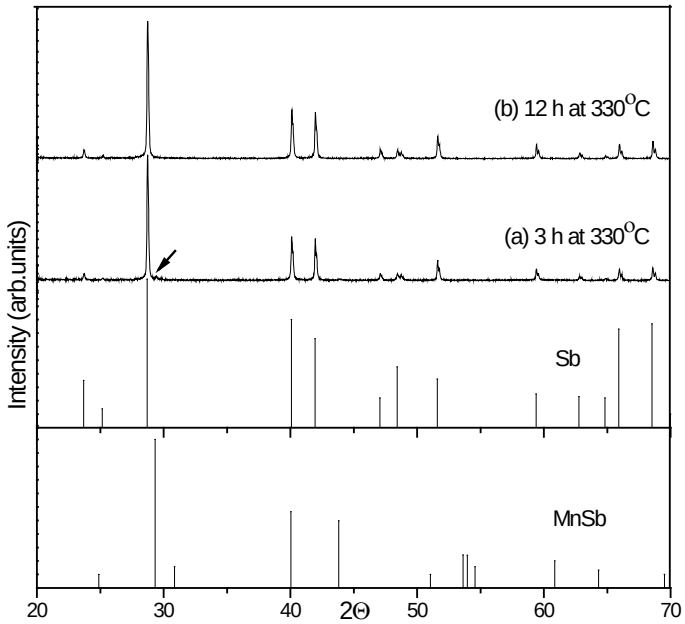

Fig. S1: PXRD patterns of MnSb nanoparticles synthesized using an Mn:Sb precursor concentration of 1:1 at **(a)** 3 h at 330 °C and **(b)** 12 h at 330 °C by the slow heating method (MnSb- PDF #- 03-065-0388, Sb-PDF #- 00-035-0732). The arrow indicates a smaller peak for MnSb, suggestive of the presence of minor MnSb phase.

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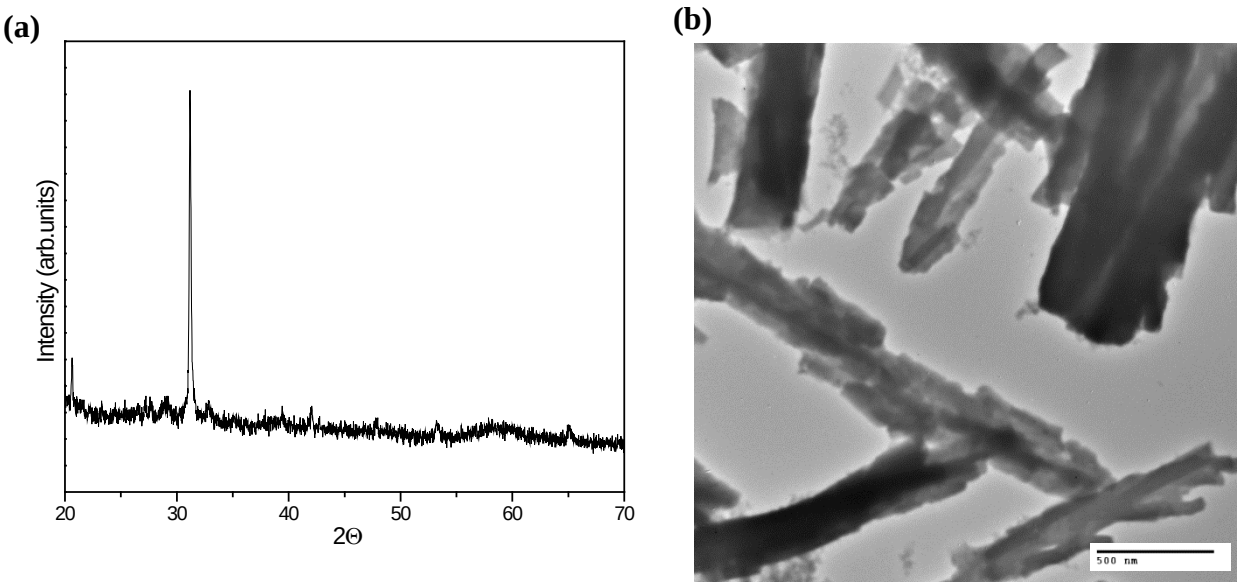

Fig. S2: (a) PXRD pattern **(b)** TEM image obtained of the product isolated from an attempt to synthesize MnSb nanoparticles at 200 °C for 3 h.

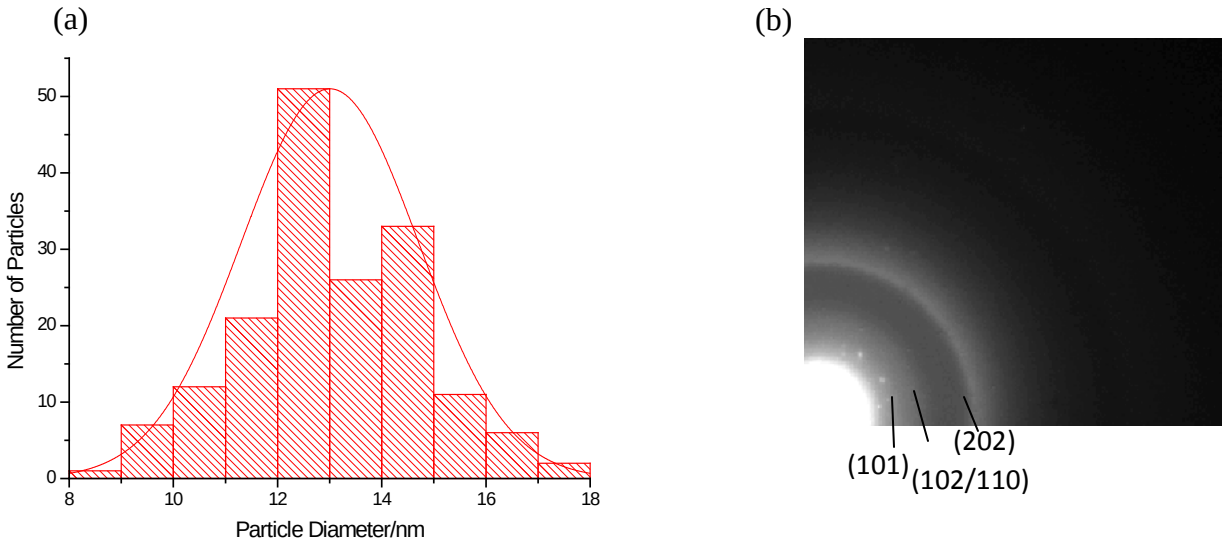

Fig. S3: (a) Particle size distribution histogram (b) SAED pattern of the MnSb nanoparticles synthesized by slow heating. The data correspond to the TEM image in **Fig. 5(b)**

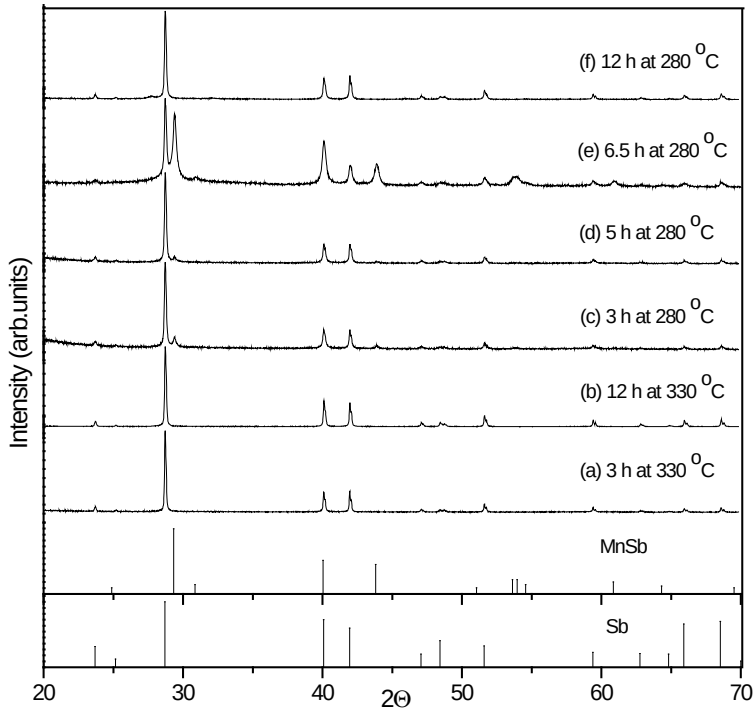

Fig. S4: PXRD patterns of MnSb nanoparticles synthesized using an Mn:Sb precursor concentration of 1:1 under different reaction temperatures and reaction times by the cannulation method, cannulated at 200 °C (MnSb- PDF #- 03-065-0388, Sb-PDF #- 00-035-07

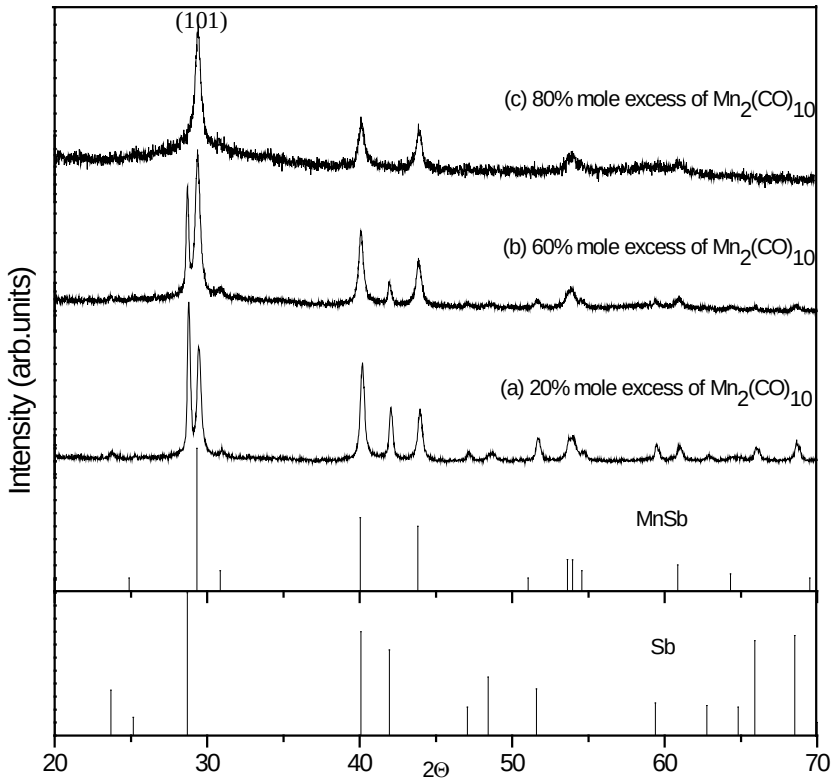

Fig. S5: PXRD patterns obtained for MnSb nanoparticle synthesis by the cannulation method using different $Mn_2(CO)_{10}$ amounts. The % excess corresponds to the extra molar equivalents of $Mn_2(CO)_{10}$ relative to Ph_3Sb. (MnSb- PDF #- 03-065-0388, Sb-PDF #- 00-035-0732)

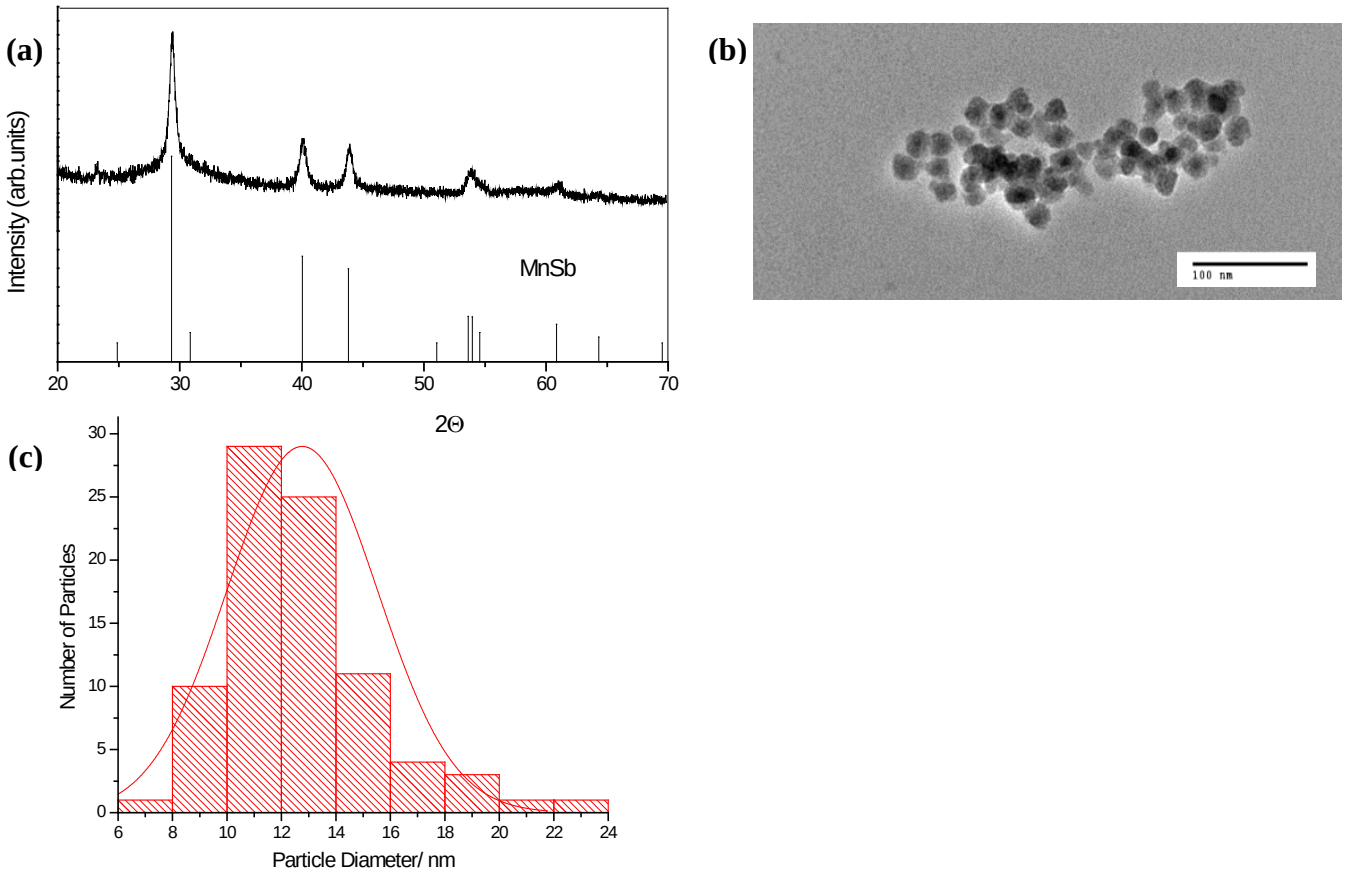

Fig. S6: (a) PXRD pattern and **(b)** TEM images of MnSb nanoparticles synthesized by the cannulation method (diameter *ca*. 15 nm) using conditions similar to the optimized slow-heating method and **(c)** corresponding particle size distribution histogram. The average particle diameter is 14±2.2 nm. (MnSb- PDF #- 03-065-0388)

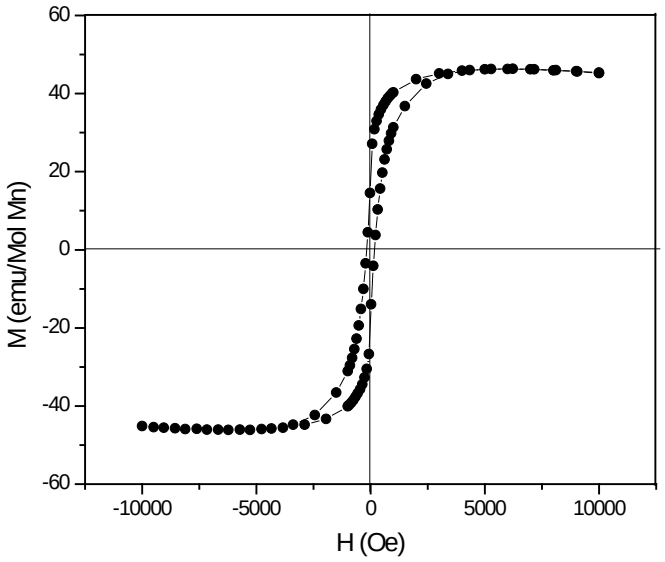

Fig. S7: Field dependence of the DC molar magnetization (M) (normalized to Mn moles) recorded at different magnetic fields (H) at 50 K for MnSb nanoparticles synthesized by the slow heating method at 280 $^{\circ}$C for 5 h and left to sit exposed to the ambient for 6 months.

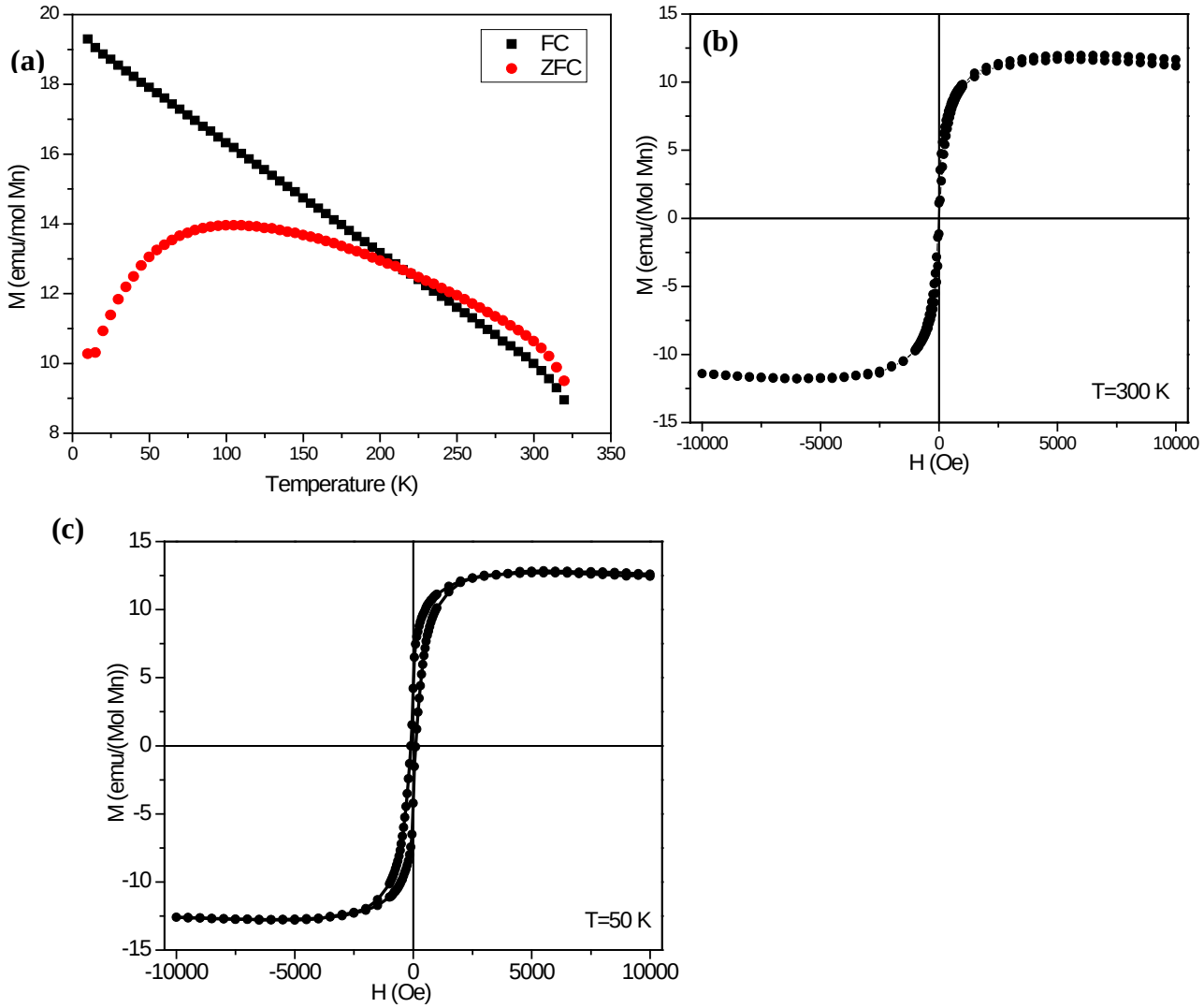

Fig. S8: Magnetic properties of MnSb nanoparticles synthesized by the cannulation method **(a)** Temperature dependence of the DC molar magnetization (M) (normalized to Mn moles) recorded under Zero-Field-Cooled (ZFC) and Field-Cooled (FC) conditions (collected at 100 Oe) Field dependence of the DC molar magnetization (M) (normalized to Mn moles) recorded at different magnetic fields (H) recorded at **(b)** 300 K and **(c)** 50 K