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Supporting Information

Tuning the structural stability and spin-glass behavior in the α-MnO_2 nanotubes by Sn ions doping

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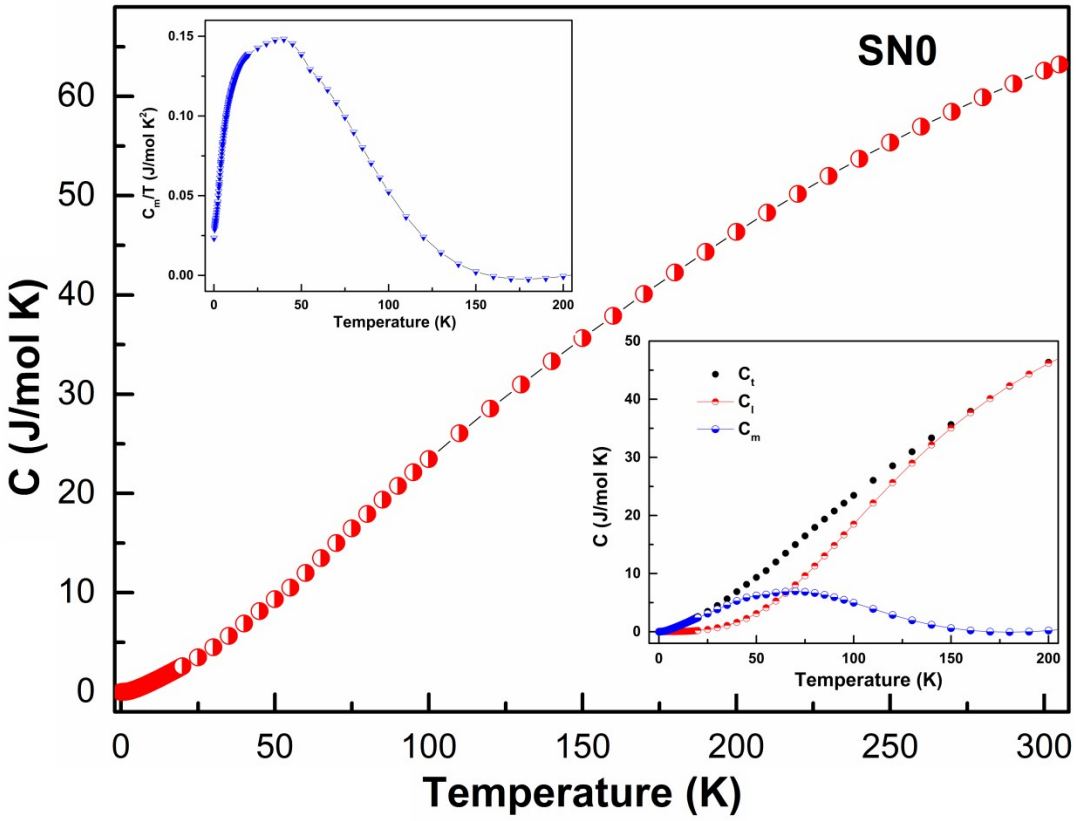

Figure S1. Temperature dependence of the specific heat in SN0

The measured specific heat (C_t) in SN0 includes the contributions from the lattice specific (C_l) and the magnetic specific heat (C_m). We first fitted the high temperature range of the curve from 150 to 300 K, and determined the Debye temperature θ_D= 561 K. Then we calculated the lattice contribution C_l by the expression:

$$C_{m,p} = 9N_A k_B \frac{T^3}{\theta_D^3} \int_0^{\frac{\theta_D}{T}} \frac{x^4 e^x}{(e^x - 1)^2} dx$$

As shown in the lower right part of the Fig. S1. After subtracting the lattice contribution C_l from the C_t, we obtained the C_m contribution. The upper inset shows the magnetic spectic heat plotted as C_m/T vs T.