Electronic Supplementary Material (ESI) for Physical Chemistry Chemical Physics.

Supplementary Information: Electron doping as a handle to increase the Curie temperature in ferrimagnetic $Mn_3Si_2X_6$ (X=Se, Te)

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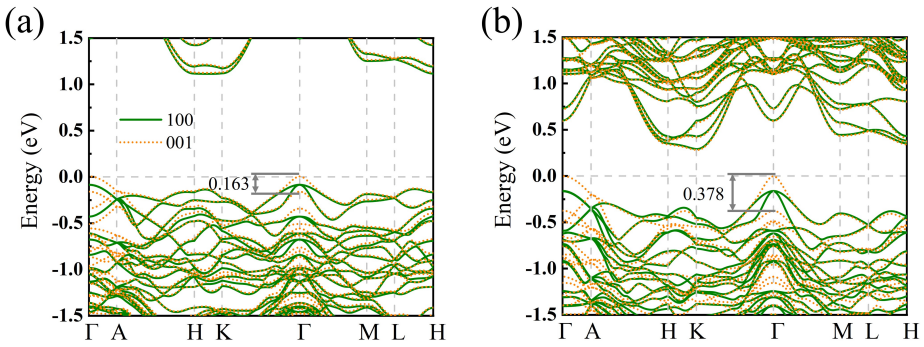

FIG. S1. Band structures of (a) MSS and (b) MST calculated with different directions of magnetic moments (SOC included). The dotted line 001 and the solid line 100 represent the band structure calculated with out-of-plane magnetization and in-plane magnetization, respectively. The band splitting Δ at the Γ point for the valence band maximum is 0.163 eV in MSS and 0.378 eV in MST.

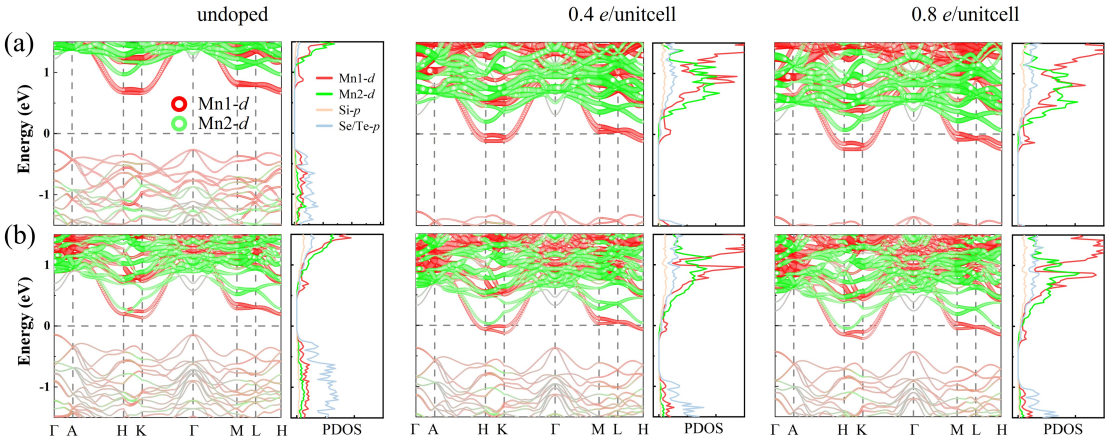

FIG. S2. Band structures and the corresponding projected DOS of (a) MSS and (b) MST, at different doping concentration, *i.e.* undoped (left column), 0.4 (middle column) and 0.8 (right column) e/unit-cell.

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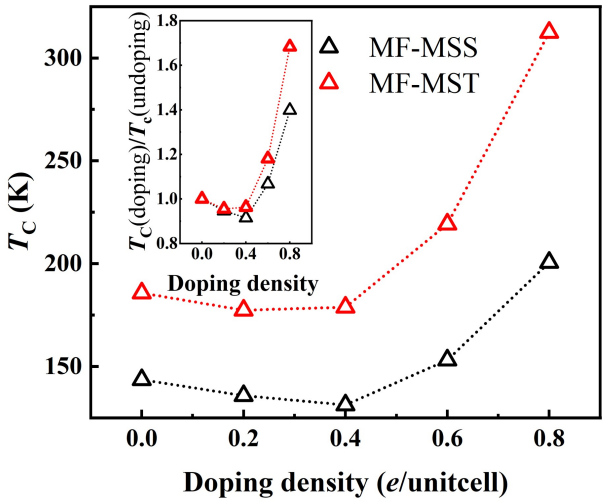

FIG. S3. T_C of MSS and MST obtained from MF method.

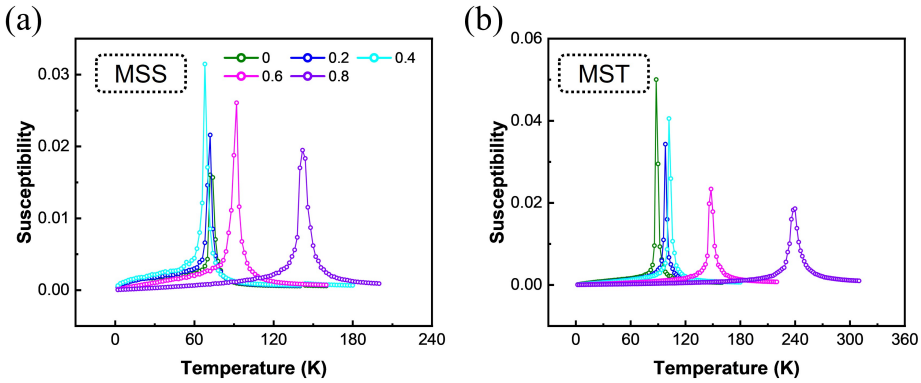

FIG. S4. Susceptibility, calculated via MC simulations, of (a) MSS and (b) MST as a function of temperature for different doping levels.