**Supplementary information**

**Skyrmion phase in MnSi thin films grown on sapphire by a conventional sputtering**

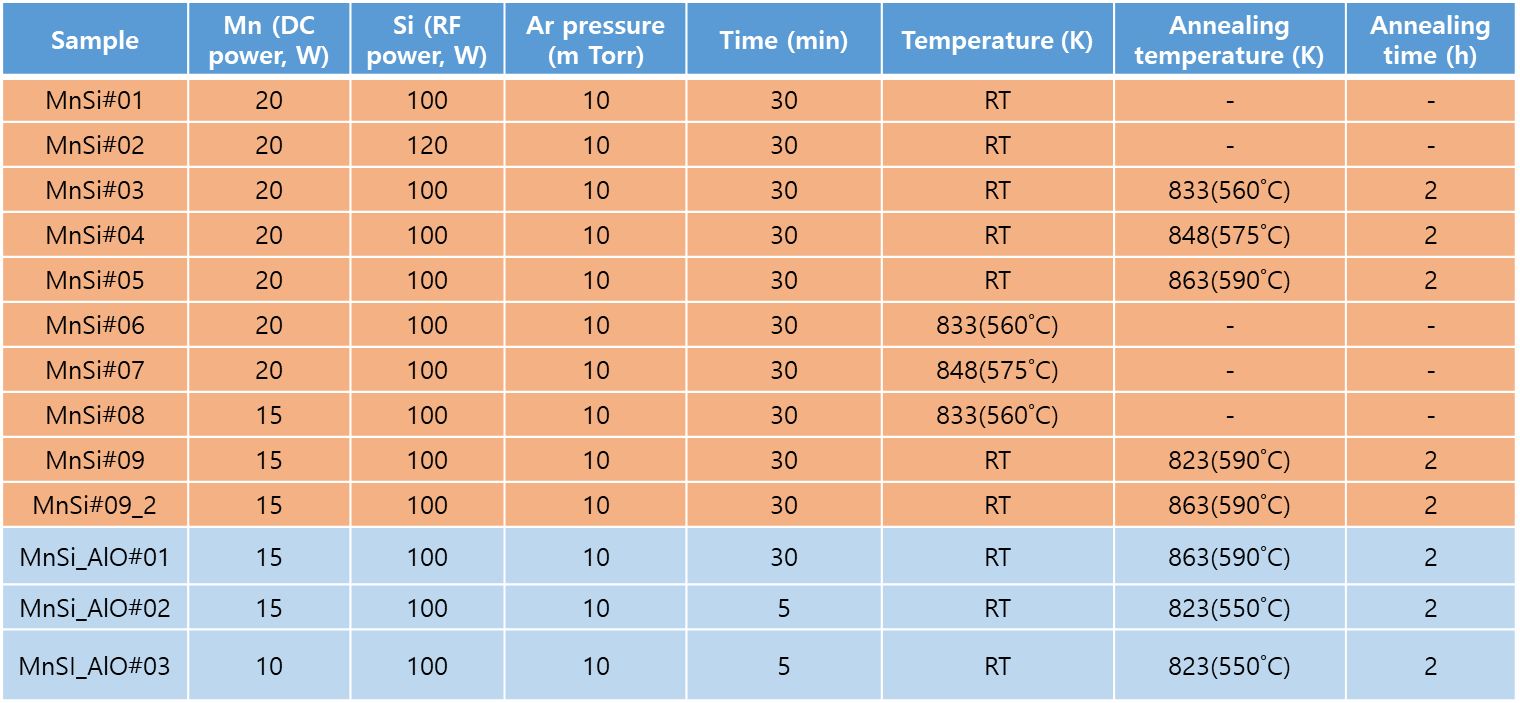
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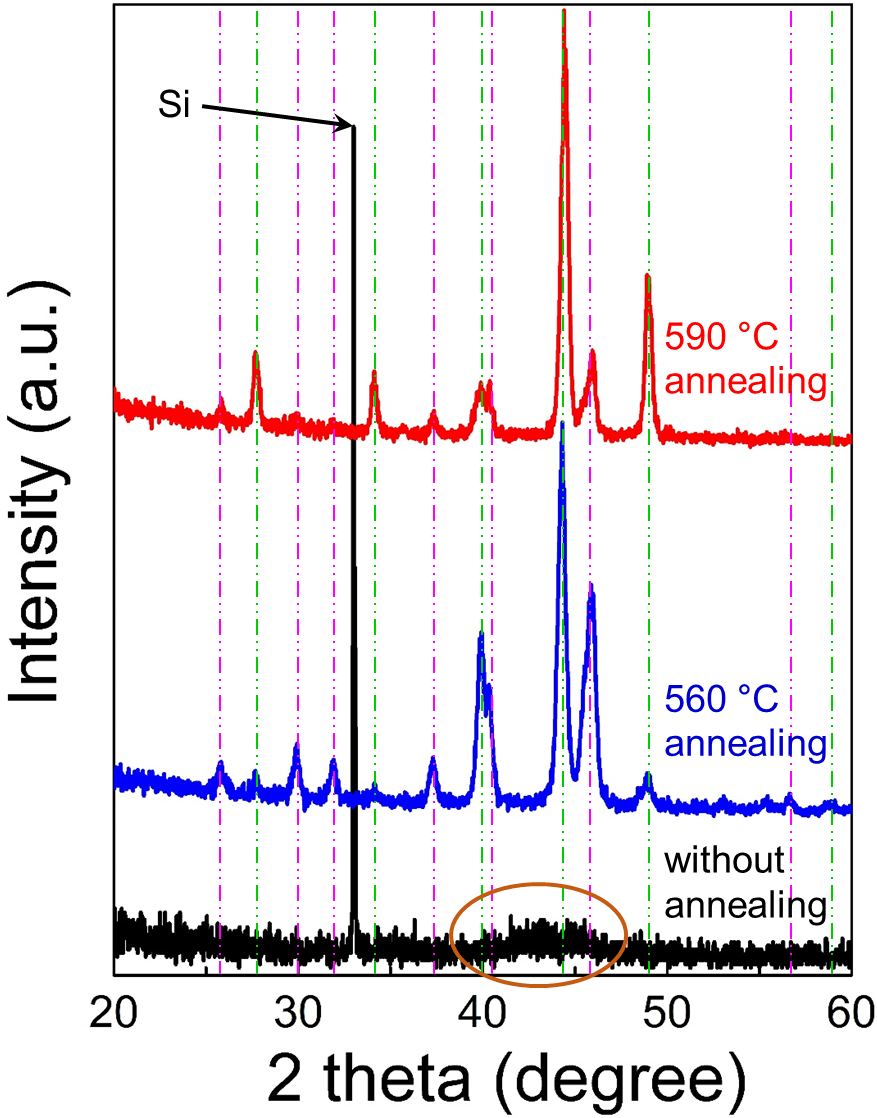
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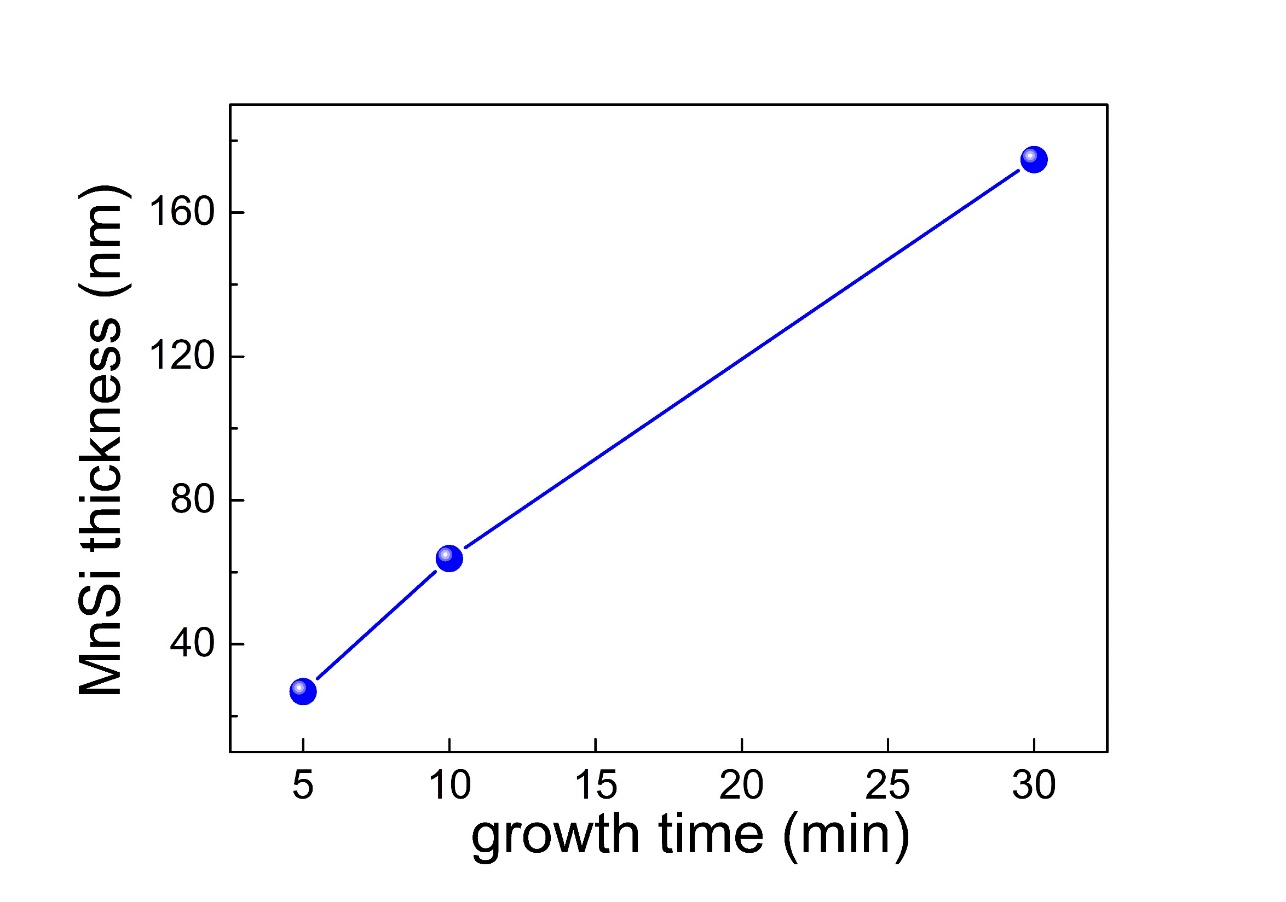
**KEYWORDS:** MnSi, Sputtering, Polycrystal, Skyrmion, Topological Hall effect

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**Table S1.** Growth conditions for MnSi on Si (001) and Al2O3 substrates, varying Mn power/growth temperature/annealing temperature.



**Figure S1.** XRD patterns of MnSi films on Si (001) substrate. By examining the annealing treatment, initially deposited amorphous MnSi (brown open circle in black XRD line) turned into crystallized MnSi phase after annealing treatment over specific temperature. Magenta and green dotted lines indicate Mn5Si3 and MnSi phase, respectively.

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**Figure S2.** Thickness of MnSi films regarding of growth time in conventional sputtering, showing linear behavior.