Supporting Information

Magnetocaloric Effect in Mn-rich Heusler Derived Alloys for Room Temperature Application

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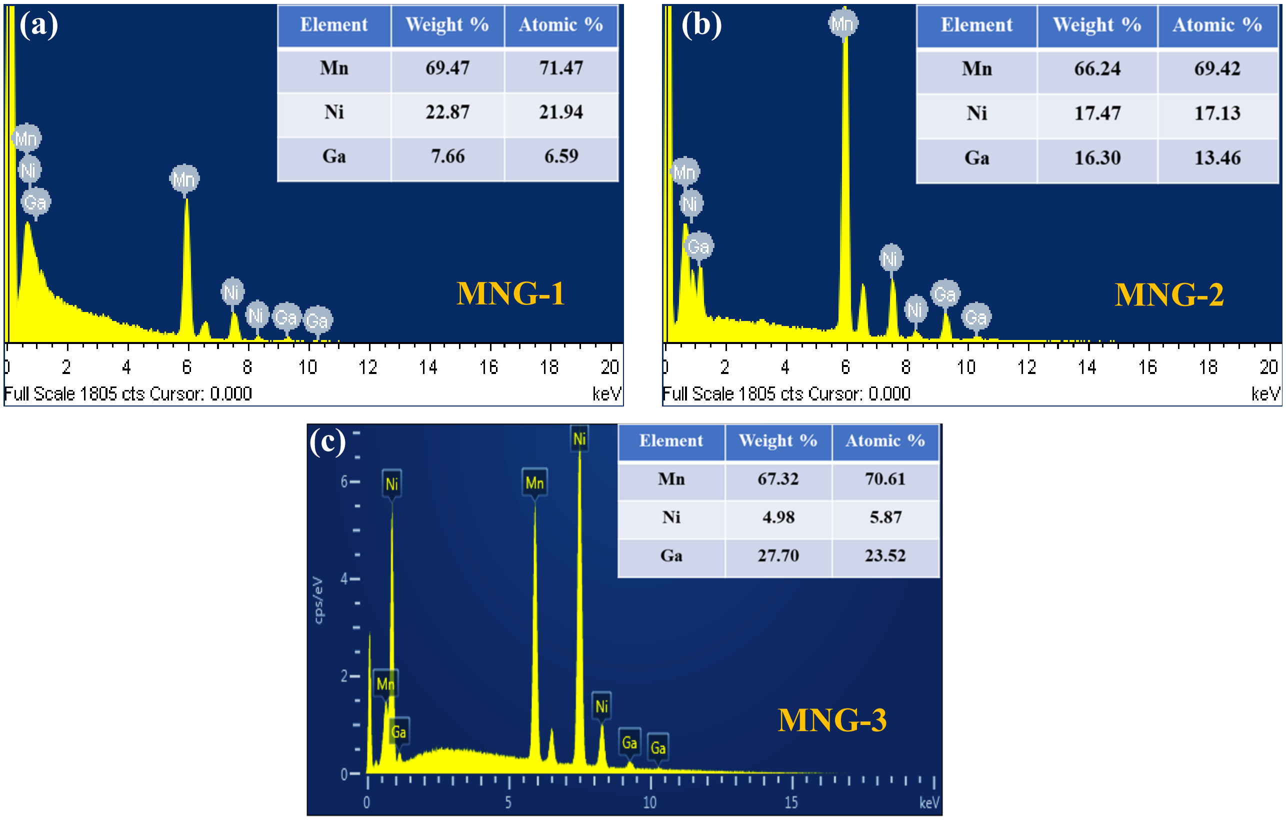

Figure S1: ***(a)*** *SEM-EDS analysis for MNG-1* ***(b)*** *SEM-EDS analysis for MNG-2* ***(c)*** *SEM-EDS analysis for MNG-3*

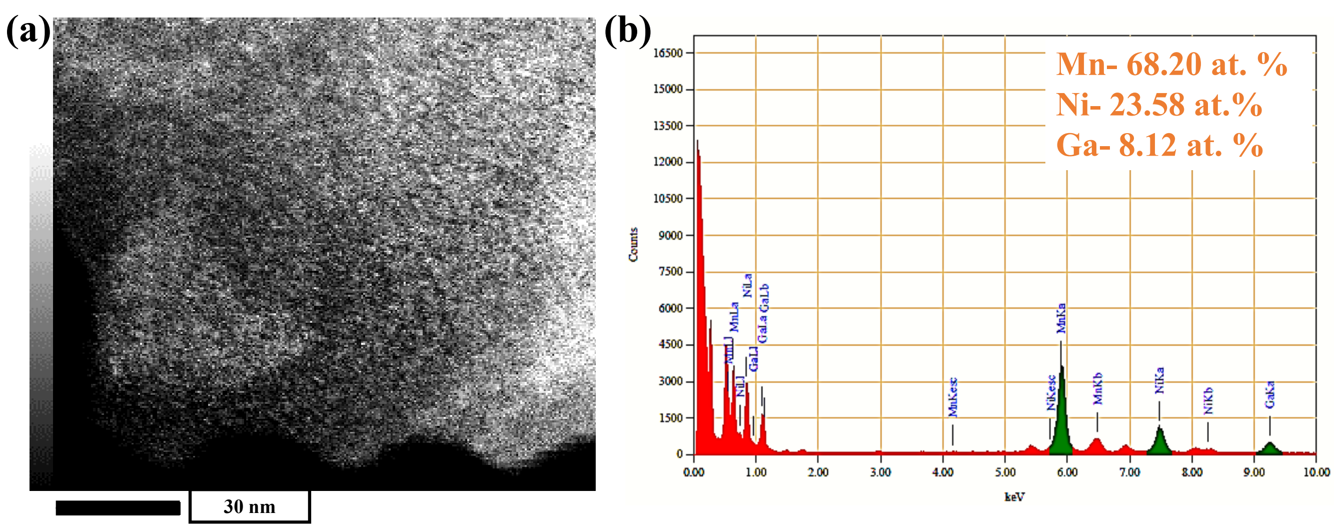

Figure S2: *EDS spectra of STEM image of MNG-1.*

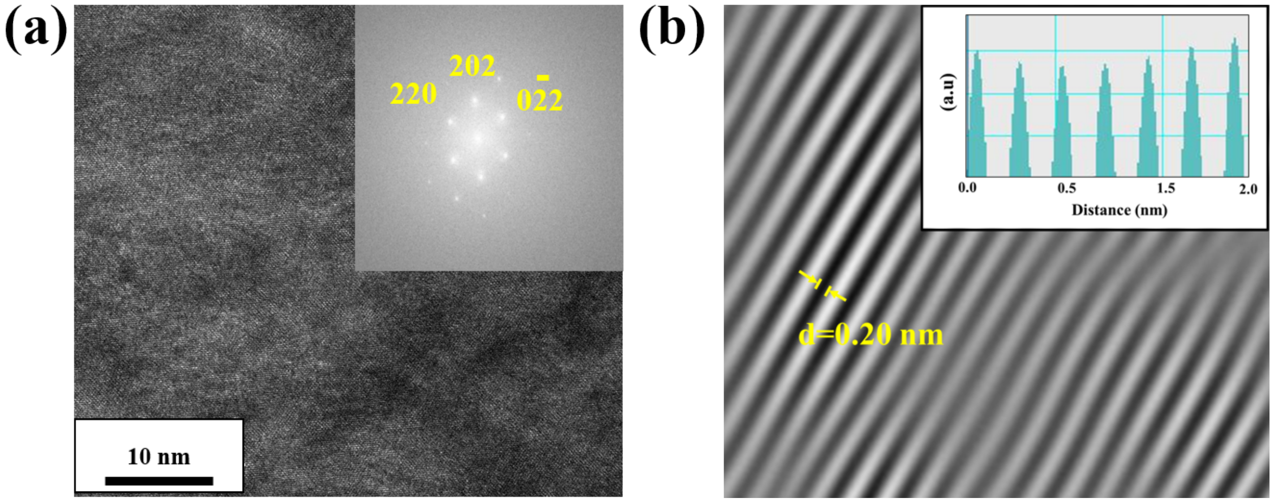

Figure S3: ***(a)*** *HR-TEM image of MNG-2 along with the FFT pattern (inset)* ***(b)*** *Corresponding lattice fringes from inverse FFT and line profile (inset)*

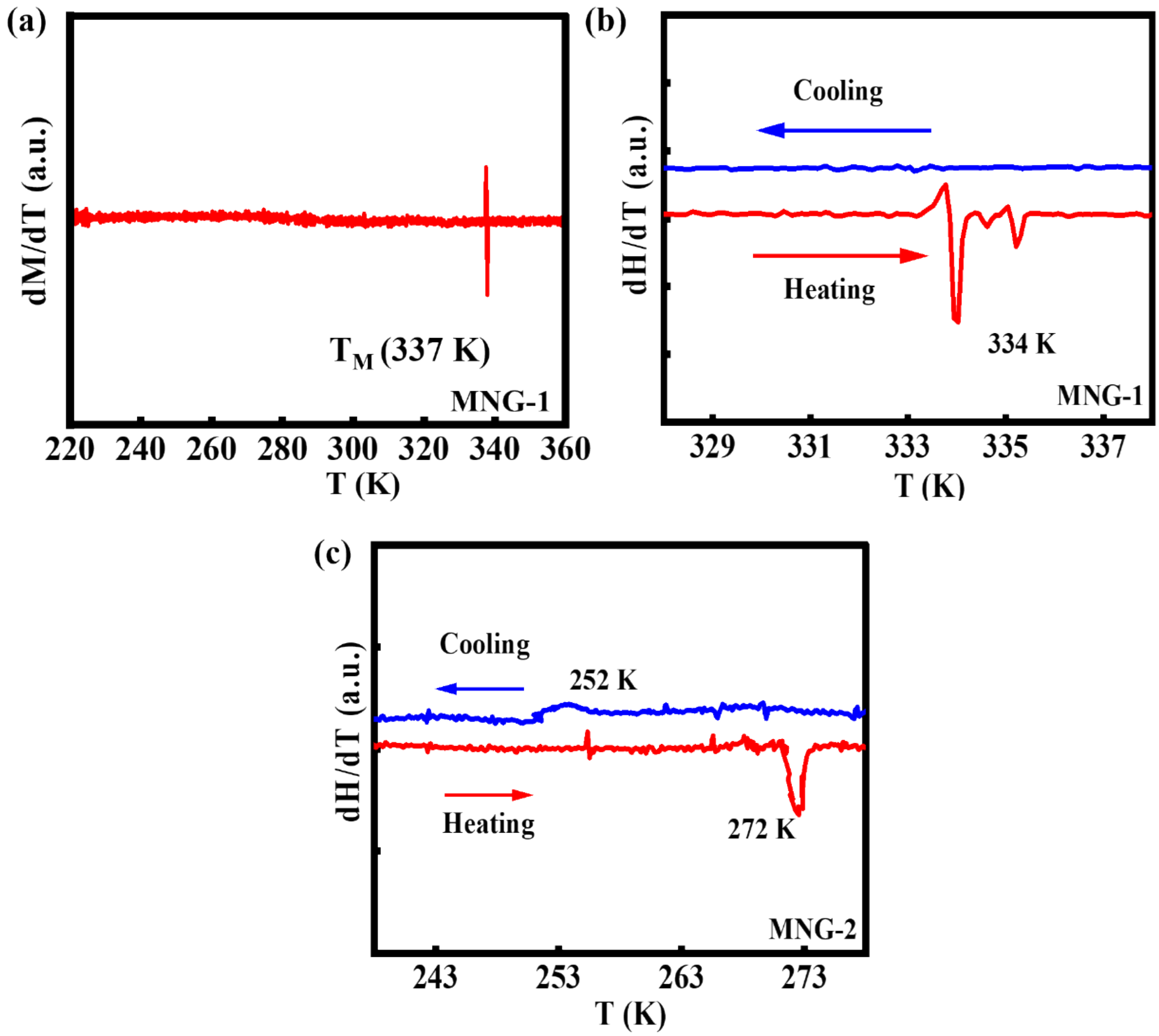

Figure S4: ***(a)*** *First order derivative of magnetization (dM/dT (arbitrary units)) as a function of Temperature (M-T) in MNG-1 under the magnetic field of 4 T,* ***(b)*** *First order derivative of heat flow (dH/dT (arbitrary units)) as a function of Temperature (M-T) in MNG-1 and* ***(c)*** *First order derivative of heat flow (dH/dT (arbitrary units)) as a function of Temperature (M-T) in MNG-2.*

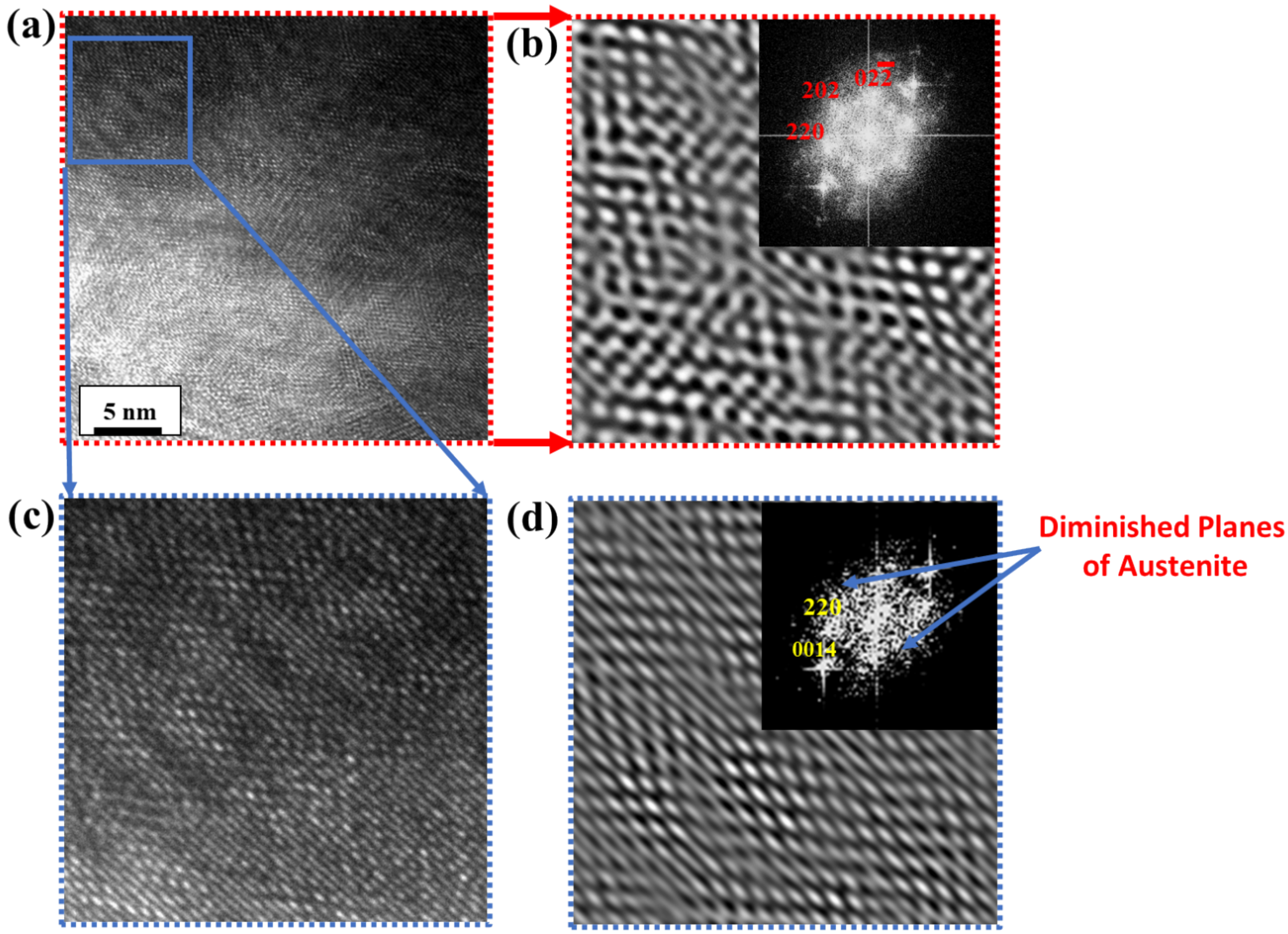

Figure S5: (a) *HR-TEM image of MNG-1 after cooling* ***(b)*** *Corresponding FFT pattern austenite phase* ***(c)*** *Enlarged view of HR-TEM image showing a presence of lathe like structure* ***(d)*** *Corresponding FFT pattern confirming martensite phase.*

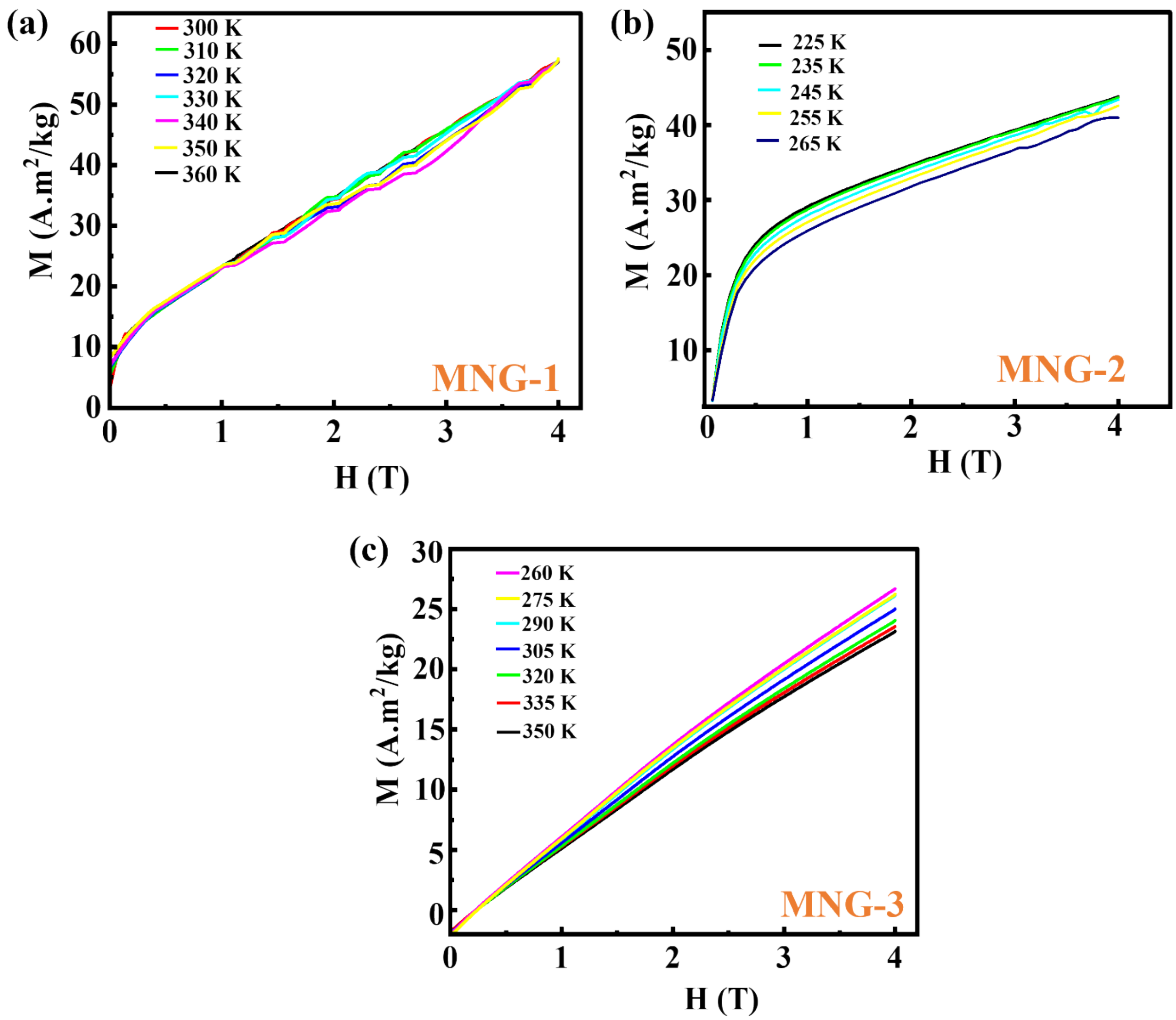

Figure S6: (a) *Isothermal magnetization M-(H) curves of MNG-1 across the transition temperature (T_M, T_C).* ***(b)*** *Isothermal magnetization M-(H) curves of MNG-2 across the transition temperature (T_M, T_C).* ***(c)*** *Isothermal magnetization M-(H) curves of MNG-3 across the transition temperature (T_M, T_C).*

Table S(I): Comparative study of thermal hysteresis behavior between present study and other Ni-Mn-Ga based alloys.

Alloy	Mn (at. %)	Ni (at. %)	Ga (at. %)	ΔT_h(K) Thermal Hysteresis	Ref.
1	28.4	50.7	20.9	12.5	[1]
2	30.3	49	20.7	10	[1]
3	33	47	20	5.5	[1]
5	28.7	51	20.3	8	[1]
6	23.8	54.9	21.3	27	[1]
7	26.4	53.7	19.9	24	[1]
8	27.4	51.2	21.4	4.5	[1]
9	23	52	25	10	[2]
10	28	50	22	8.3	[3]
11	28.8	50	21.2	9.5	[4]
12	23	52	25	10.7	[5]
13	22	53	25	14	[5]
14	18.1	55.8	26.1	8	[6]
15	19.5	55.5	25	10	[7]
16	18	55	27	9.4	[8]
17	27	50	23	12	[9]
18	17.8	55.5	26.7	13.2	[10]
19	27.3	50.4	22.3	6.4 (H//<001>)	[11]
20	27.3	50.4	22.3	5.8 (H⊥<001>)	[11]

21	25	54	21	26	[12]
22	23	54	23	15	[13]
23	28	50	22	16.08	[14]
24	28	50	22	6.3	[15]
25	70	25	5	Not Available	Present Work
26	70	17	13	20	Present Work
27	70	5	25	4.2	Present Work

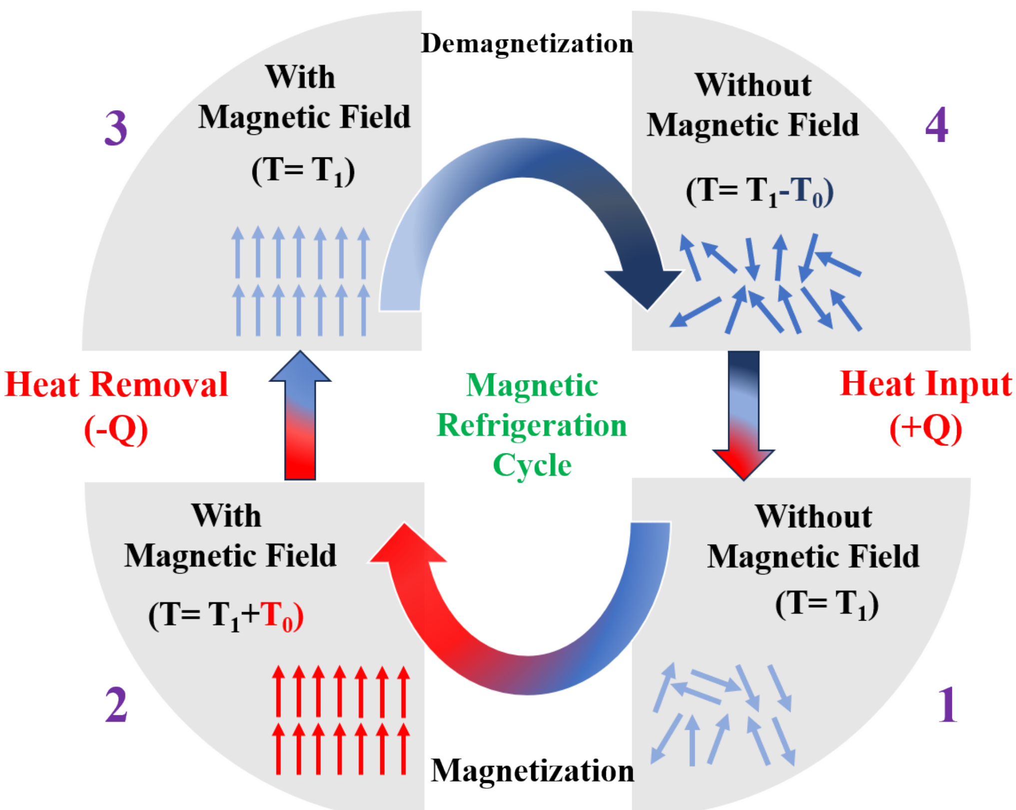

Figure S7: *Schematic of magnetic refrigeration cycle.*

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