Supporting Information

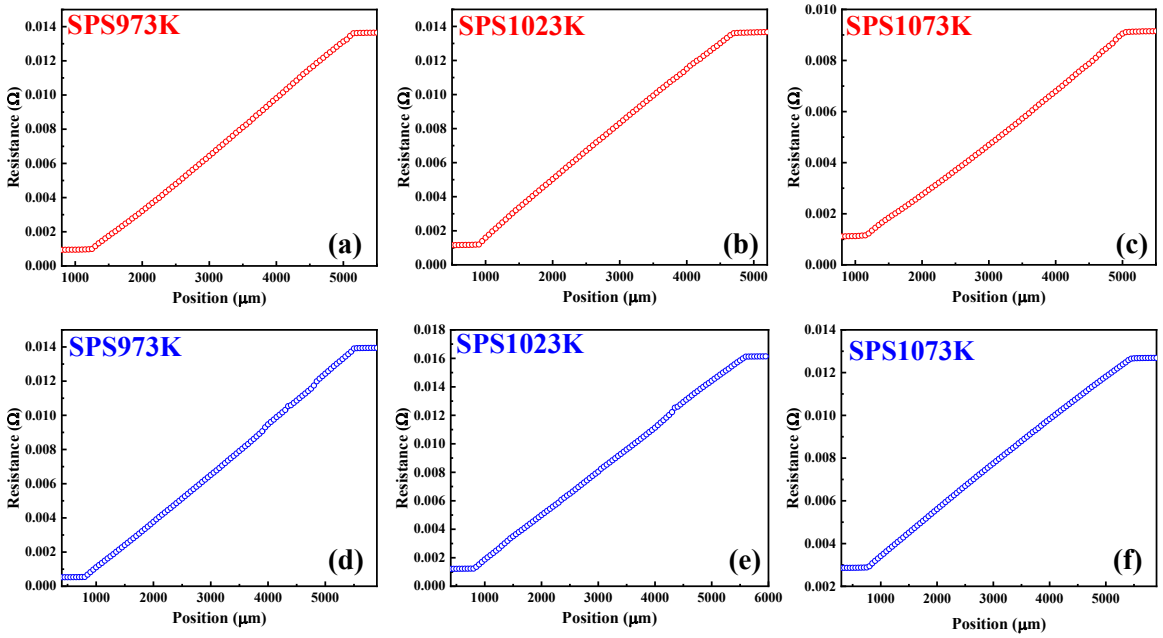

Fig. S1. Resistance scan of powder fabricated $SS_p/Mg_3Sb_{1.5}Bi_{0.5}/SS_p$ sintered at (a) 973 K, (b) 1023 K, (c) 1073 K and foil fabricated $SS_f/Mg_3Sb_{1.5}Bi_{0.5}/SS_f$ sintered at (d) 973 K, (e) 1023 K, (f) 1073 K.

Table. S1. Specific contact resistivity of $SS_p/Mg_3Sb_{1.5}Bi_{0.5}/SS_p$ and $SS_f/Mg_3Sb_{1.5}Bi_{0.5}/SS_f$ sintered at 973 K, 1023 K and 1073 K.

	Sr. No	Sintering temperature (k)	R_1 (mΩ)	R_2 (mΩ)	ΔR (mΩ)	ρ_C (μΩ cm^2)
SS_p	1.	973	0.690	0.922	0.232	19.7
	2.	1023	1.322	1.467	0.145	12.3
	3.	1073	1.075	1.167	0.092	7.9
SS_f	4.	973	0.544	0.678	0.134	10.7
	5.	1023	1.240	1.360	0.120	9.7
	6.	1073	1.217	1.400	0.183	8.2

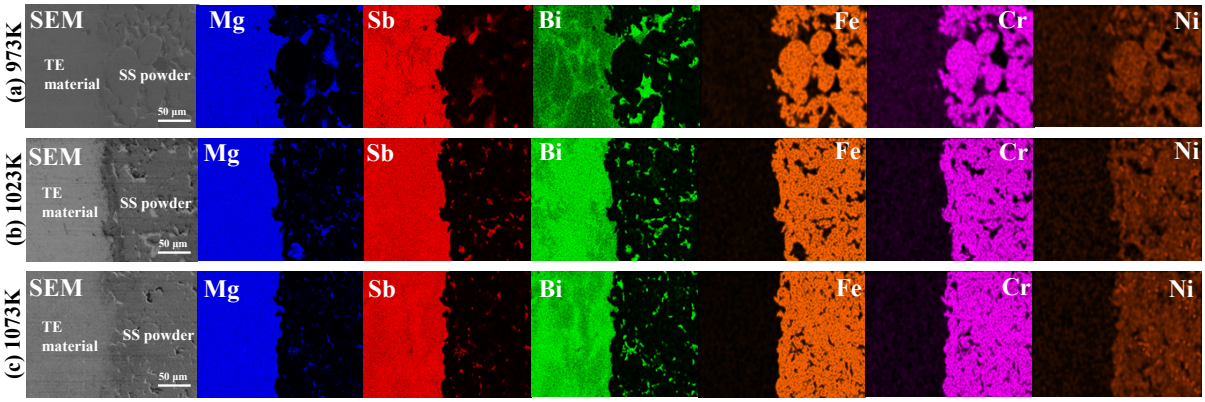

Fig. S2. SEM and EDX of powder fabricated $SS_p/Mg_3Sb_{1.5}Bi_{0.5}/SS_p$ sintered at (a) 973 K (b) 1023 K and (c) 1073 K.

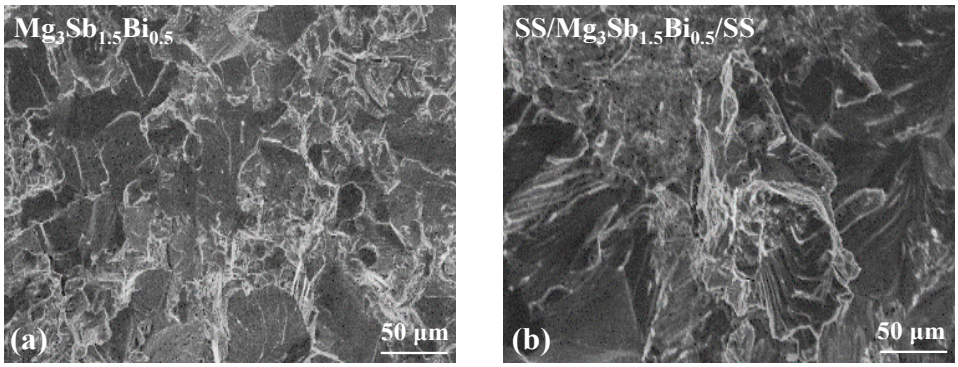

Fig. S3. SEM of $Mg_3Sb_{1.5}Bi_{0.5}$ and $SS/Mg_3Sb_{1.5}Bi_{0.5}/SS$ sintered at 1073 K.

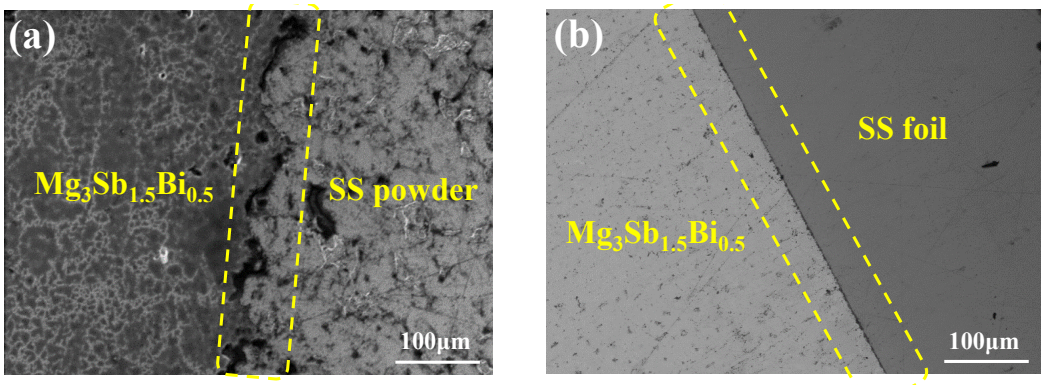

Fig. S4. SEM of (a) $Mg_3Sb_{1.5}Bi_{0.5}/SS_p$ and (b) $Mg_3Sb_{1.5}Bi_{0.5}/SS_f$ interfaces sintered at 1073 K.

Fig. S5. EDX and lins scan comparison of stainless steel powder (SS_p) and stainless steel foil (SS_f) fabricated samples at (a) 973 K, (b) 1023 K and (c) 1073 K.

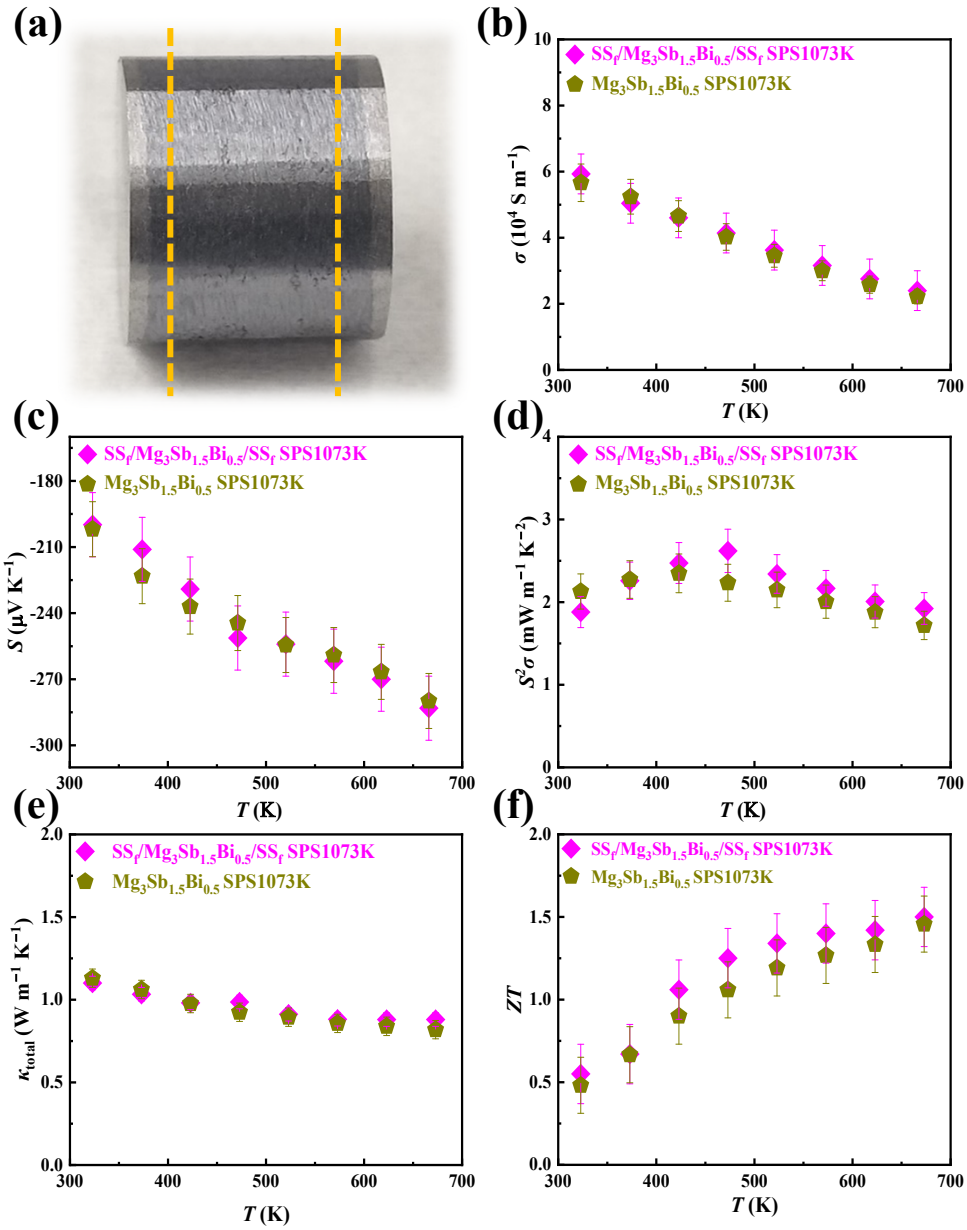

Fig. S6. (a) Image of $SS_f/Mg_3Sb_{1.5}Bi_{0.5}/SS_f$ sample. Thermoelectric properties of $SS_f/Mg_3Sb_{1.5}Bi_{0.5}/SS_f$ and $Mg_3Sb_{1.5}Bi_{0.5}$ sintered at 1073 K, which includes (b) Electrical conductivity (σ), (c) Seebeck Coefficient (S), (d) Power Factor ($S^2\sigma$), (e) Thermal conductivity (κ_{total}) and (f) ZT.

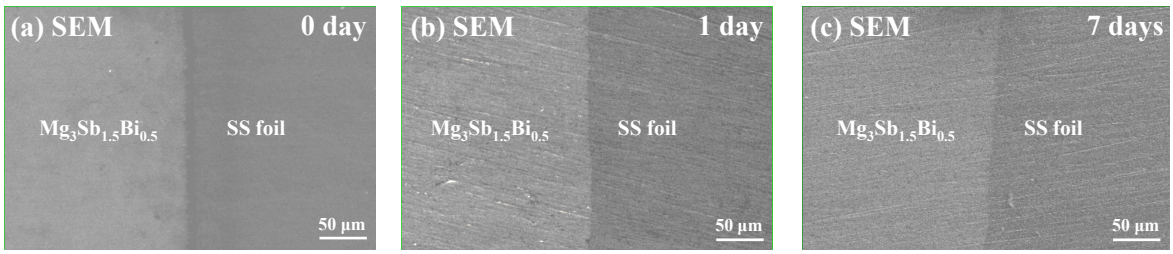

Fig. S7. SEM of foil fabricated $Mg_3Sb_{1.5}Bi_{0.5}/SS_f$ aging at 673K at (a) 0 day, (b) 1 day, and (c) 7 days.

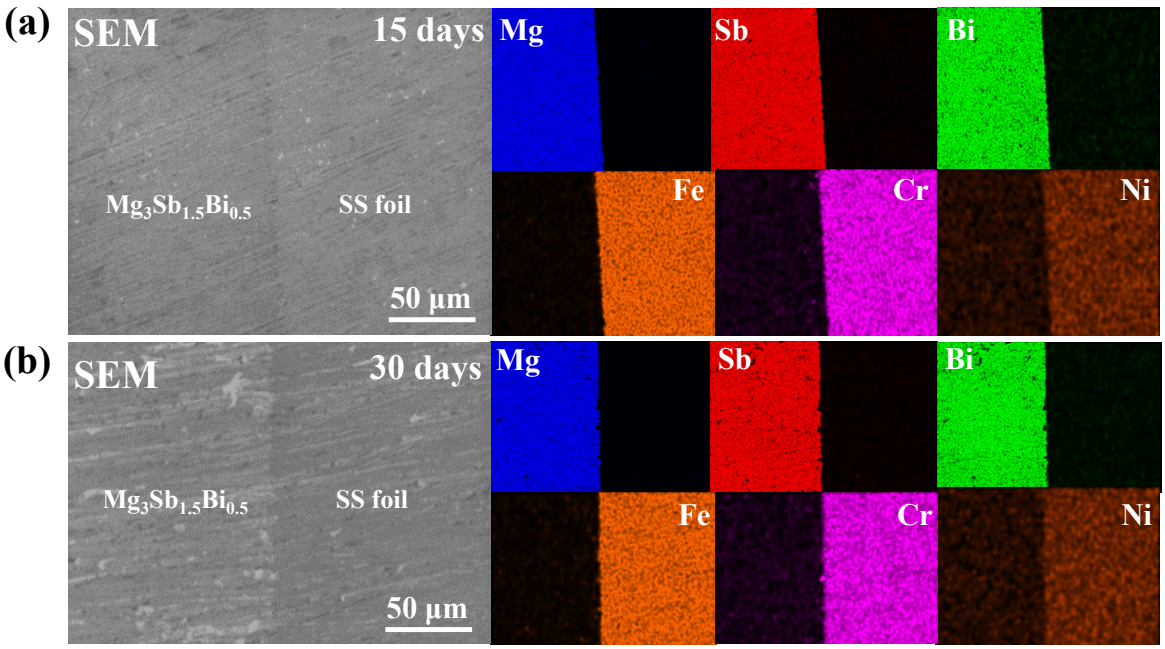

Fig. S8. SEM and EDX of $Mg_3Sb_{1.5}Bi_{0.5}/SS_f$ aging at 673K after (a) 15 days and (b) 30 days.

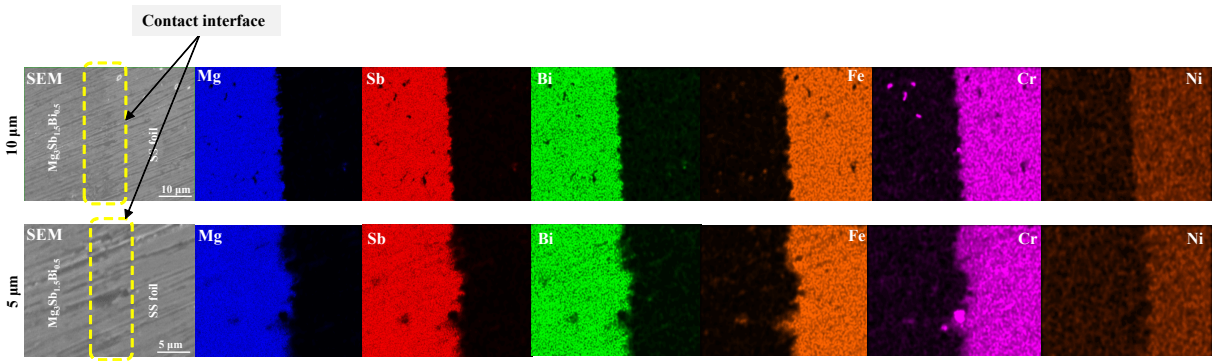

Fig S9. SEM and EDX (10 µm and 5 µm) of $Mg_3Sb_{1.5}Bi_{0.5}/SS_f$ sintered at 1073 K after aging of 30 days.

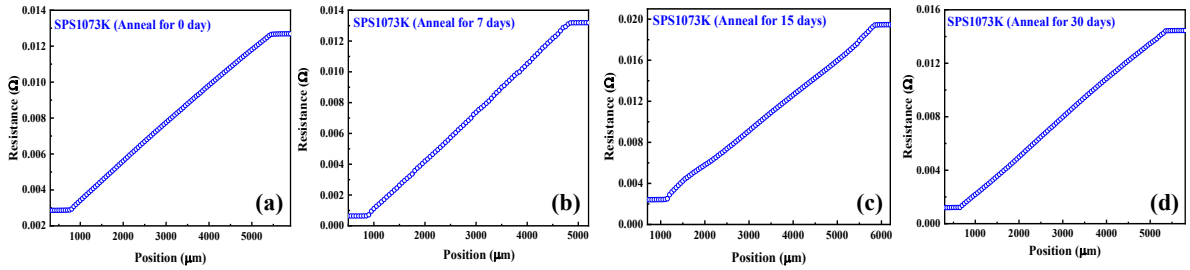

Fig. S10. Resistance scan of $SS_f/Mg_3Sb_{1.5}Bi_{0.5}/SS_f$ aging at 673 K at (a) 0 day, (b) 7 days, (c) 15 days and (d) 30 days.

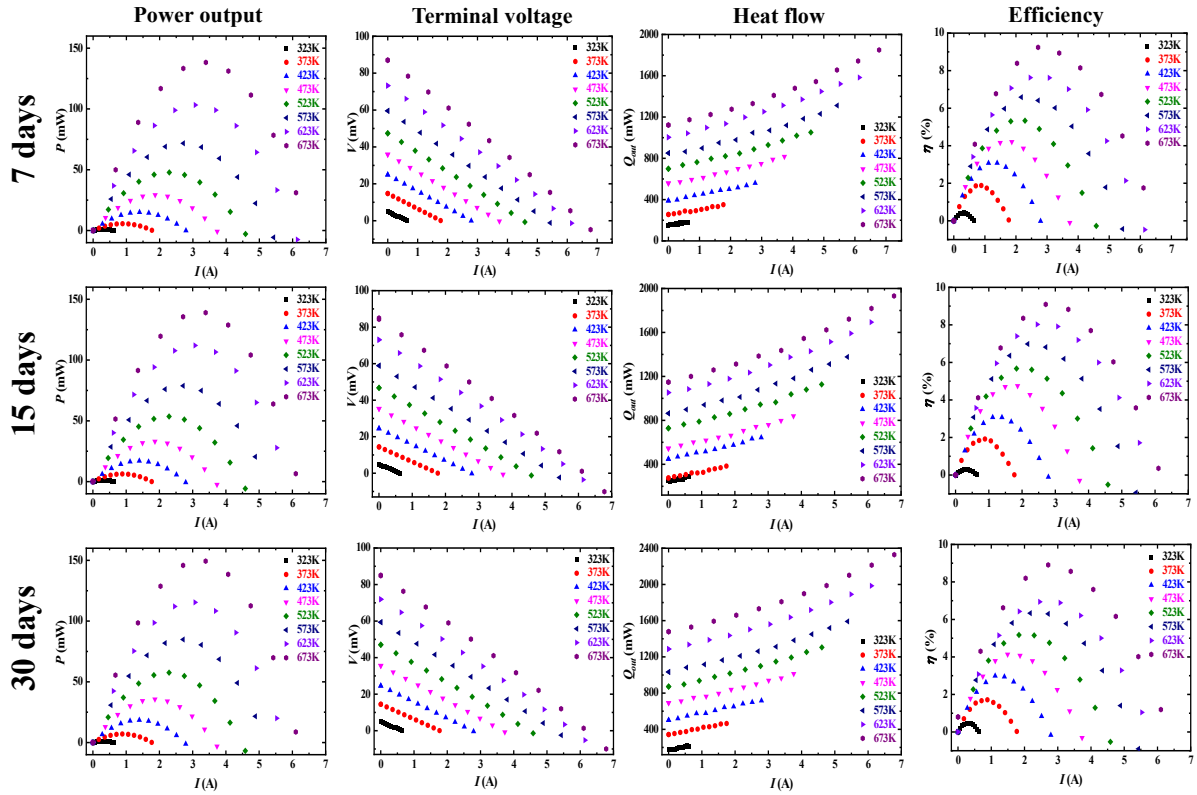

Fig. S11. Power output (P), terminal voltage (V), heat flow (Q_{out}) form cold side and conversion efficiency (η) of $SS_f/Mg_3Sb_{1.5}Bi_{0.5}/SS_f$ after 7, 15 and 30 days of aging at 673 K.

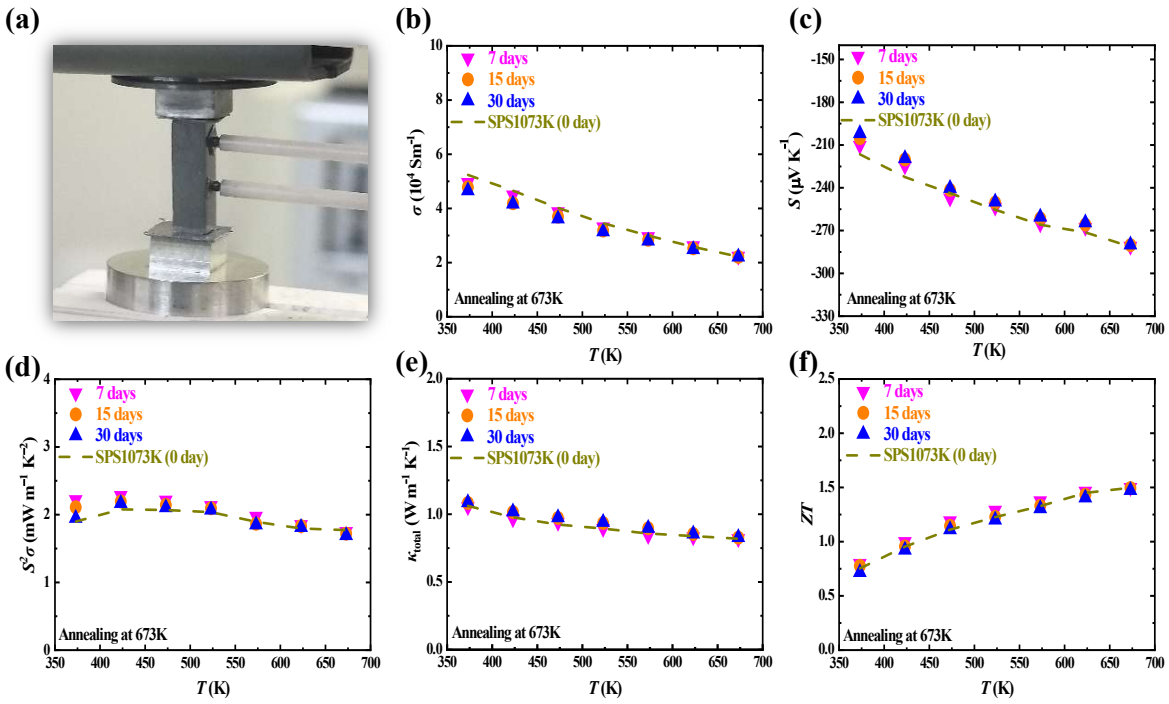

Fig. S12. (a) Four probe (ZEM-3) holders of $Mg_3Sb_{1.5}Bi_{0.5}$ to measure the electrical properties. Thermoelectric (TE) properties of $Mg_3Sb_{1.5}Bi_{0.5}$ aging after 7, 15 and 30 days, including (b) Electrical conductivity (c) Seebeck coefficient (d) Power factor (e) Thermal conductivity and (f) *ZT*.

Fig. S13. SEM, EDX and Line scan of $Mg_3Sb_{1.5}Bi_{0.5}$ with and without annealing at 673 K after 30days.