Supplementary Information for

Enhanced thermoelectric performance of higher manganese silicides by shock-induced high dense dislocations

Zhipeng Gao[†,‡,*], Zhengwei Xiong[‡], Jun Li[†], Chengjia Lu[†], Ganghua Zhang[§], Tao Zeng[§], Yongjun Ma[‡], Guohua Ma[‡], Ruizhi Zhang[//], Kan Chen[//], Tao Zhang[†], Yi Liu[†], Jia Yang[†], Linhong Cao[‡], Ke Jin[†,*]

[†]National Key Laboratory of Shock Wave and Detonation Physics, Institute of Fluid Physics, China Academy of Engineering Physics, Mianyang 621900, China

[‡]Southwest University of Science and Technology, Mianyang 621010, China

[§]Shanghai Key Laboratory of Engineering Materials Application and Evaluation, Shanghai Research Institute of Materials, Shanghai 200437, China

[//]School of Engineering and Materials Science, Queen Mary University of London, London, E1 4NS, UK

*Corresponding authors:

Zhipeng Gao (z.p.gao@foxmail.com)

Ke Jin (jinke_102@caep.cn)

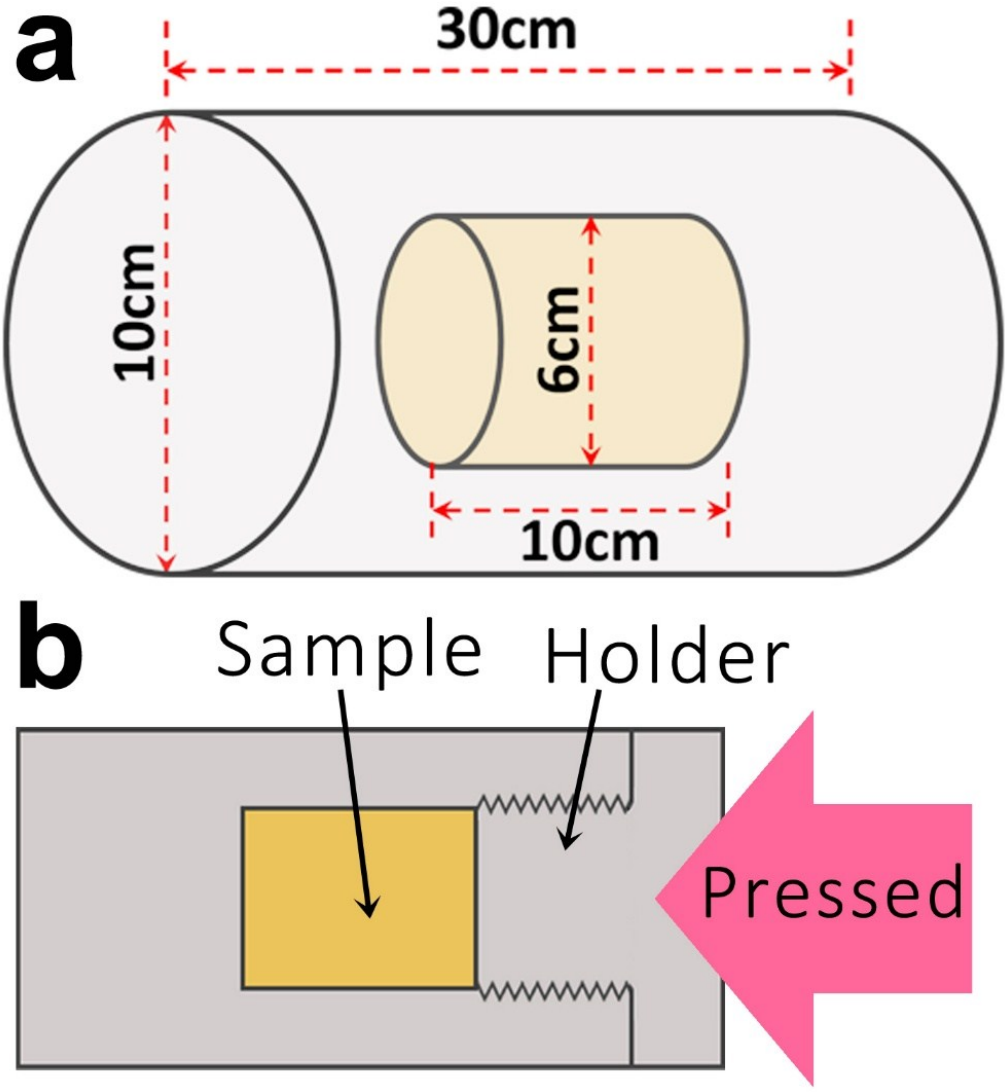

Figure S1. (a) The size of the SPS sample and the steel holder. (b) The structure of the holder and the pre-press process.

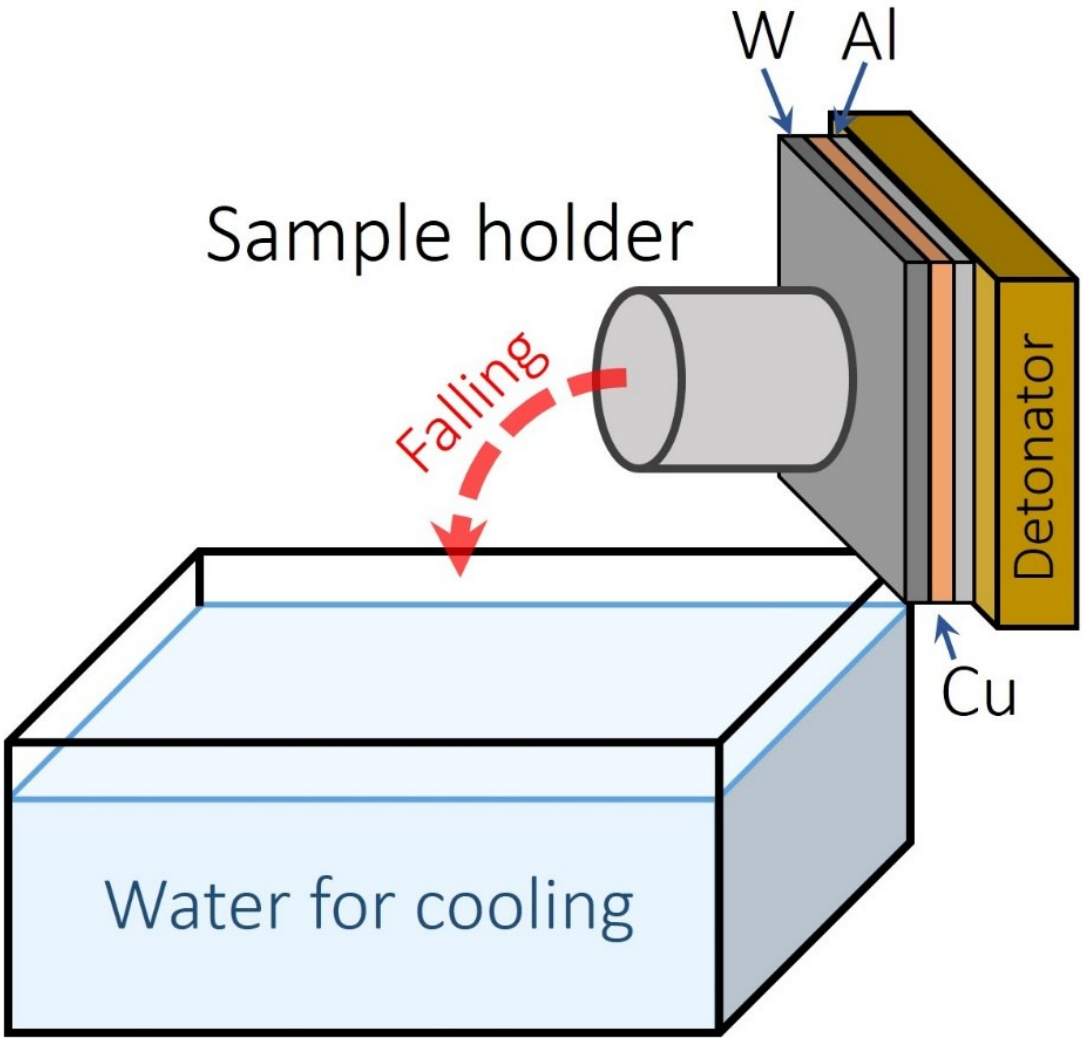

Figure S2. The schematic diagram of shock compression experiment.

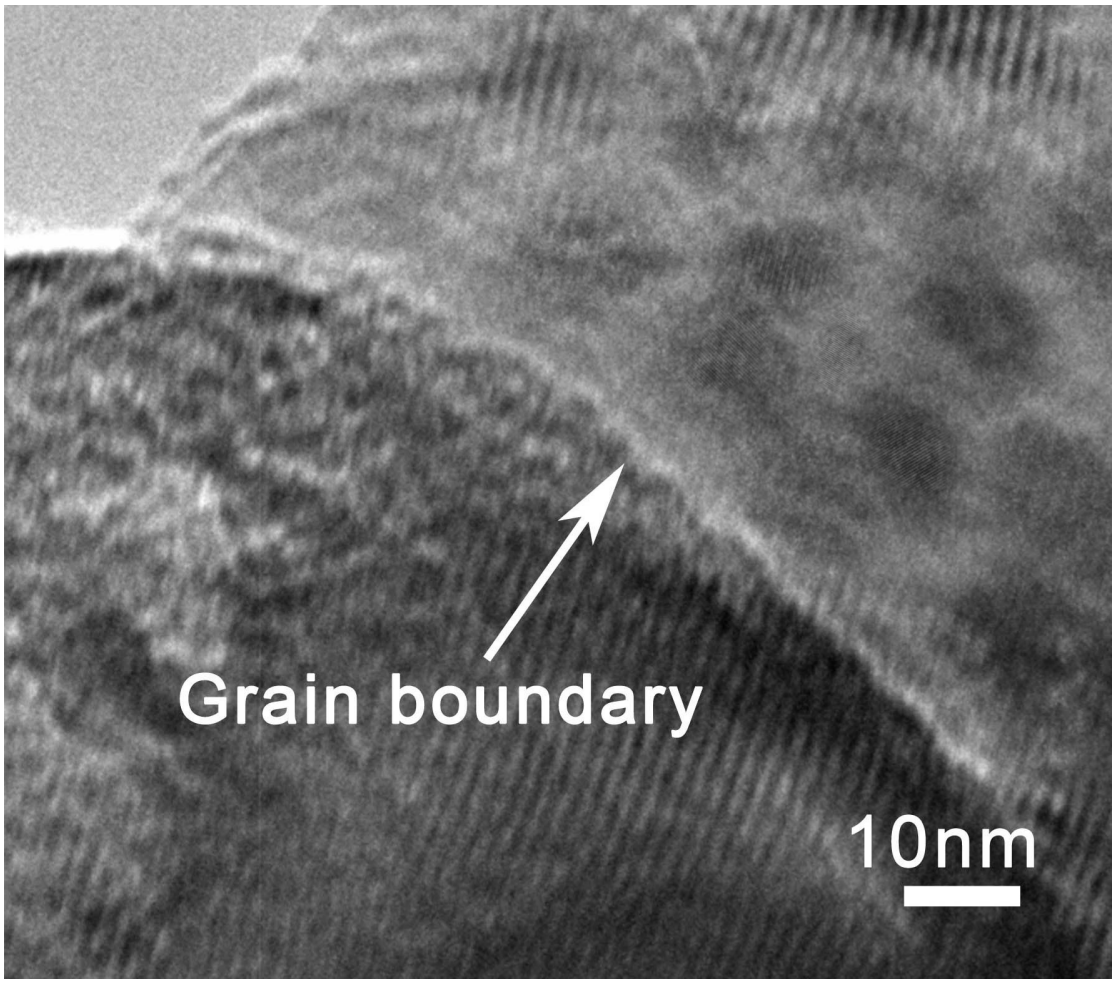

Figure S3. TEM image of a typical grain boundary

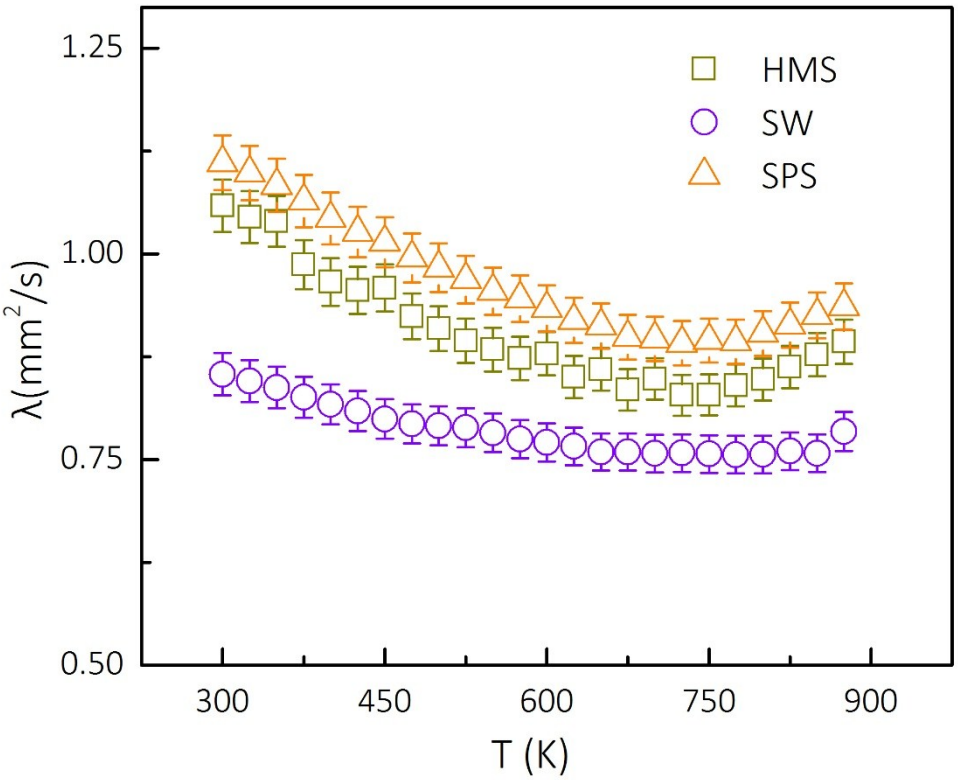

Figure S4. Temperature dependence of the thermal diffusivity

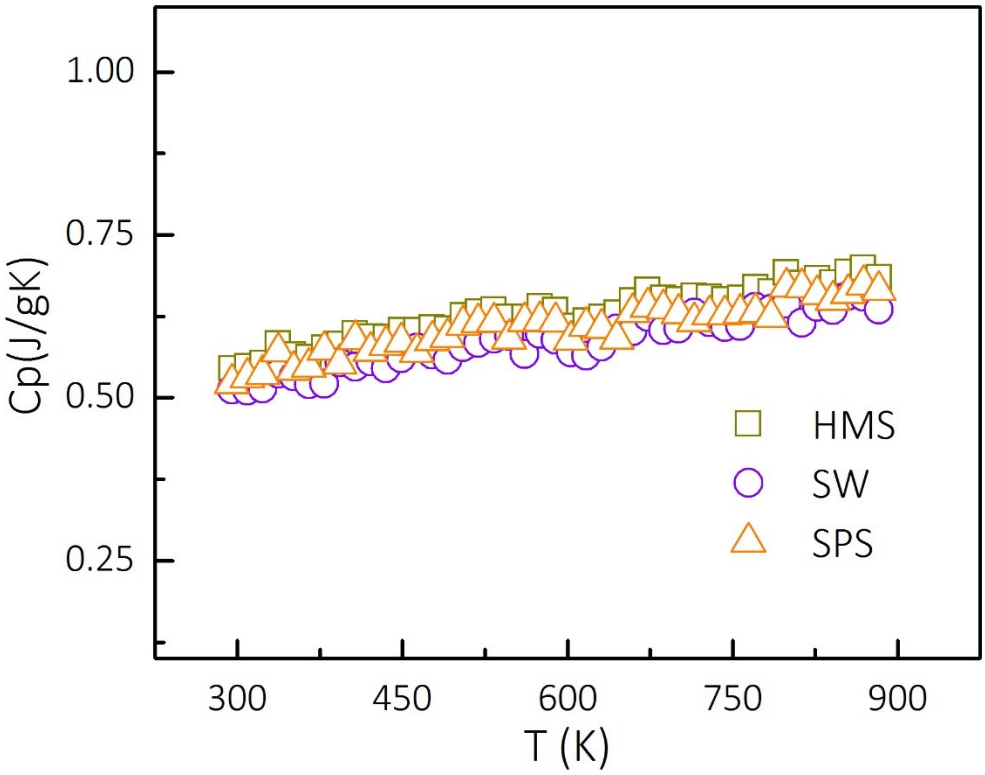

Figure S5. Temperature dependence of the heat capacity

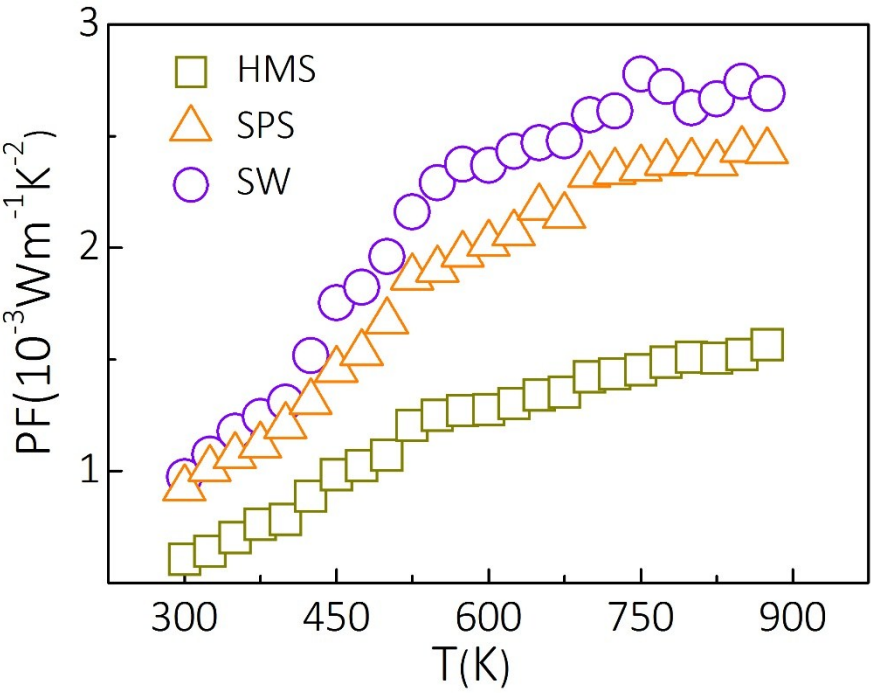

Figure S6. The power factors of the HMS, SPS and SW samples, respectively

Table S1. The parameters for the samples at 300K

	ρ	σ	S	R_h	p	μ_H	m^*/m_0
	g/cm^3	S/cm	μV/K	10^{-9}m^3/C	10^{21}/cm^3	cm^{2}V^{-1} s^{-1}	
HMS	4.86	443	116.9	3.54	1.764	1.57	9.3
SPS	4.99	910	100.6	2.41	2.596	1.34	10.2
SW	4.89	838	107.8	2.40	2.583	1.13	10.9