Journal of Materials Chemistry C

Supplementary Information

Balancing structural distortions via competing 4f and itinerant interactions: A case of polymorphism in magnetocaloric $HoCo_2$

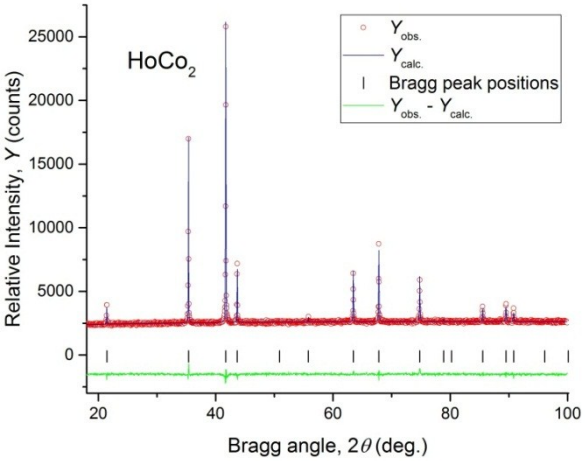

Figure S1. Room temperature X-ray Powder Diffraction Pattern of $HoCo_2$ (II)

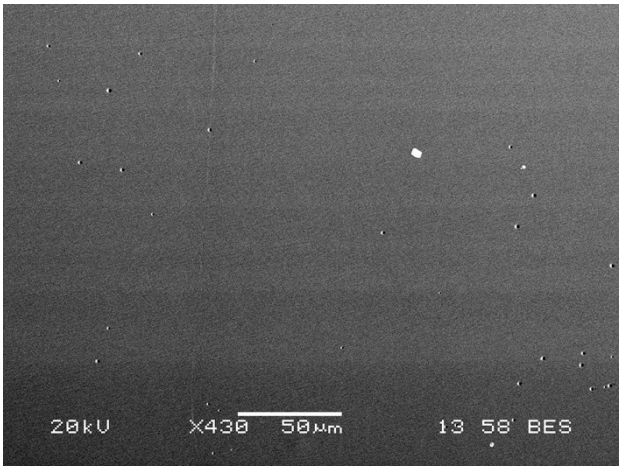

Figure S2. SEM micrograph of $HoCo_2$ sample (II). The white spots belong to holmium oxide.

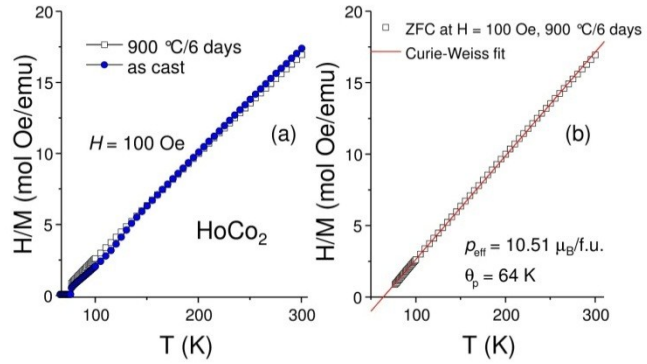

Figure S3. The inverse dc susceptibility of $HoCo_2$: a) a comparison of as cast and heat-treated samples; b) Curie-Weiss fit of the heat-treated sample

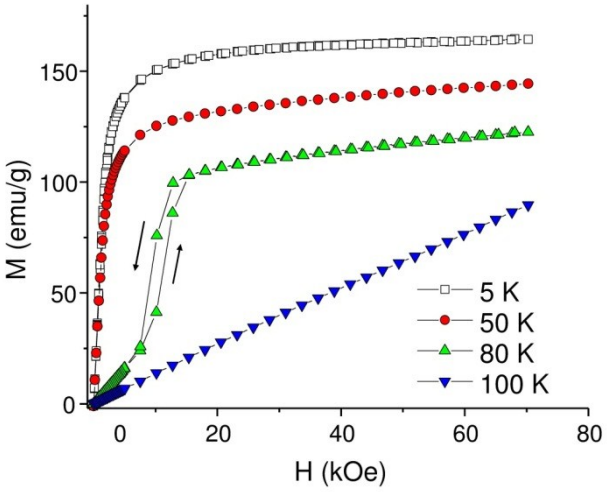

Figure S4. The Magnetization as a function of applied magnetic field measured for $HoCo_2$ at 5, 50, 80, and 100 K.

Table S1. Crystal structures observed in $HoCo_2$.

T, K	Space Group	*a*, Å	*b*, Å	*c*, Å	Ho: x,y,z	Co: x,y,z
300	$Fd\bar{3}m$	7.1786(1)	7.1786(1)	7.1786(1)	5/8, 5/8, 5/8	0, 0, 0
50	$I4_1/amd$	5.0718(1)	5.0718(1)	7.1552(2)	0, 1/4, 3/8	0, 0, 0
10	Fddd	7.1742(2)	7.163(1)	7.161(1)	5/8, 5/8, 5/8	0, 0, 0
10	Imma*	5.0610(1)	5.0671(1)	7.1753(2)	0, 1/4, 0.376	Co1:0,0,0 Co2:1/4,3/4,1/4

*Refined as potential crystal structure; used for the DFT calculations

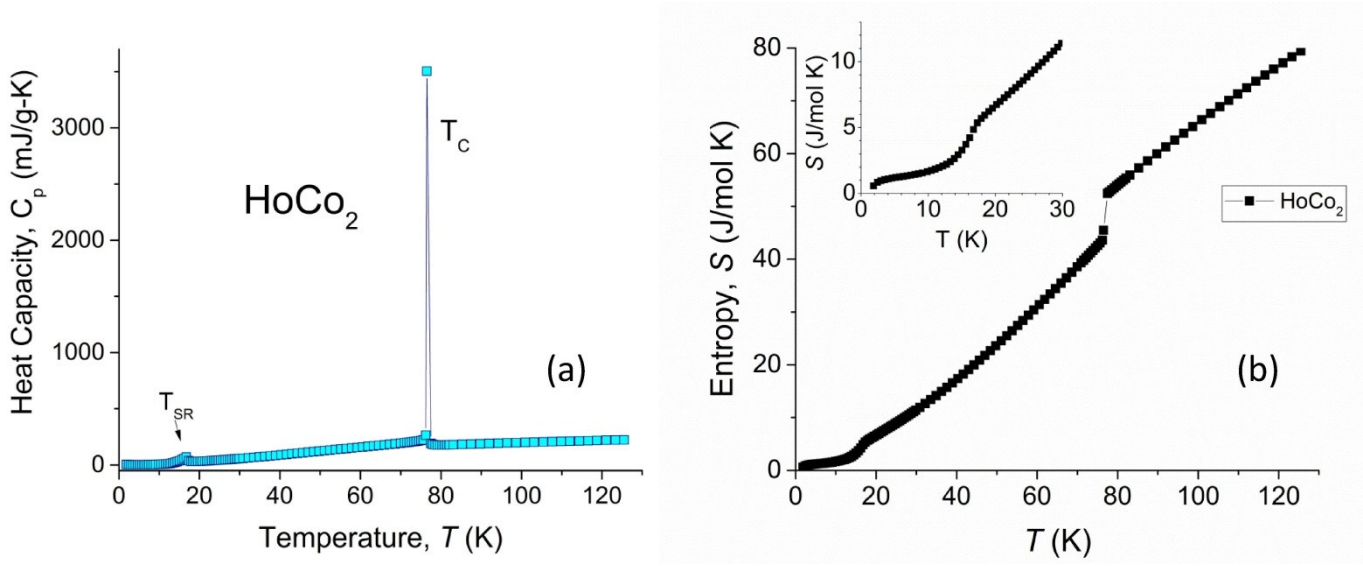

Figure S5. (a) Heat capacity and (b) Entropy of $HoCo_2$ as a function of temperature between 2 and 125 K in zero magnetic field. Note: Entropy plot has a small systematic error due to not accounting for the heat capacity of $HoCo_2$ between 0 and 2 K but it can be used to verify the order of the transitions.