

Supplementary Figures

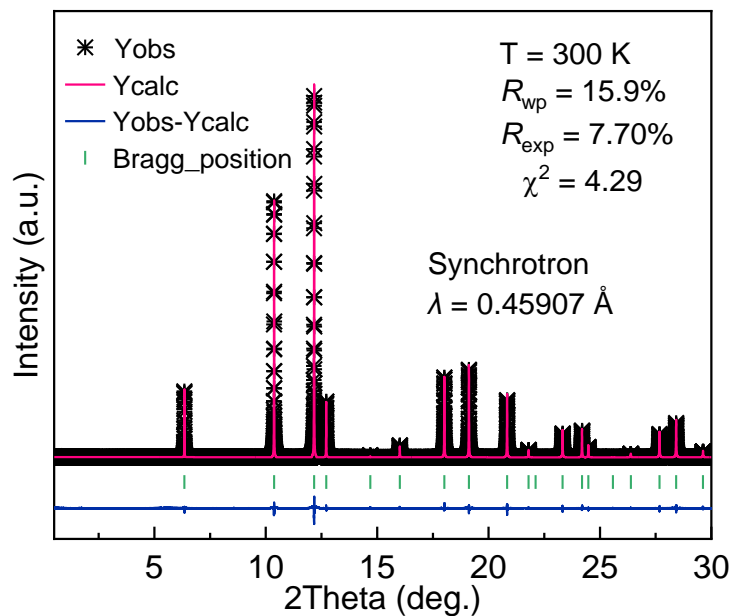


Figure S1. Full profile Rietveld refinements of the SXRD patterns for the $\text{Tb}_{0.6}\text{Er}_{0.4}\text{Co}_2\text{Mn}_{0.1}$ (denoted as TECM) compound at 300 K.

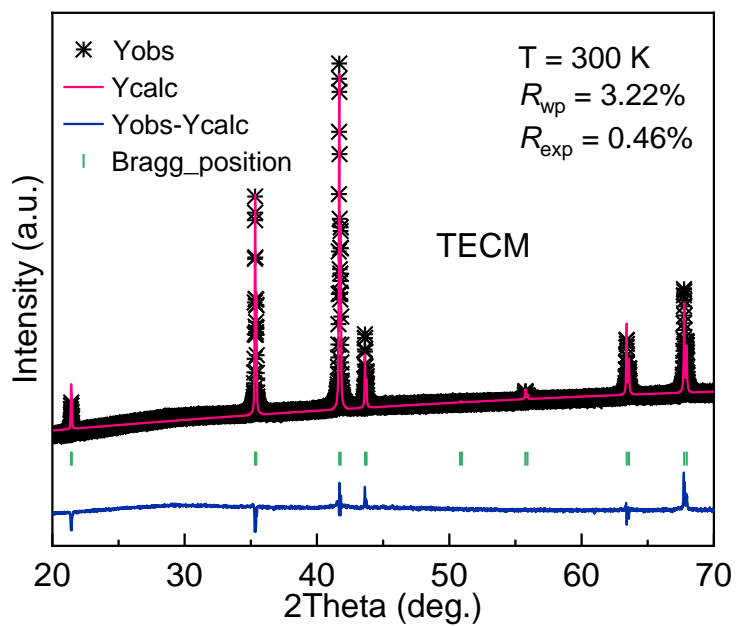


Figure S2. The refinement of the cell parameters by XRD patterns for TECM at 300 K.

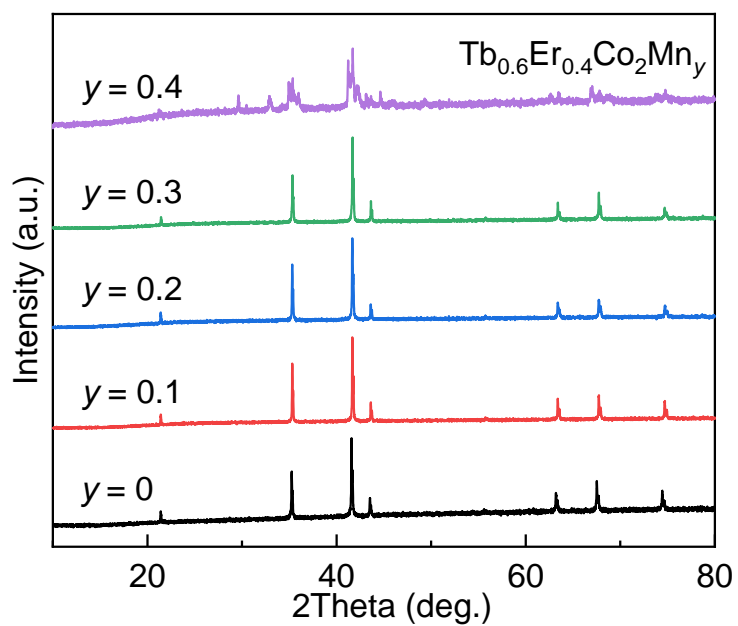


Figure S3. XRD patterns of $\text{Tb}_{0.6}\text{Er}_{0.4}\text{Co}_2\text{Mn}_y$ ($y = 0, 0.1, 0.2, 0.3,$ and 0.4).

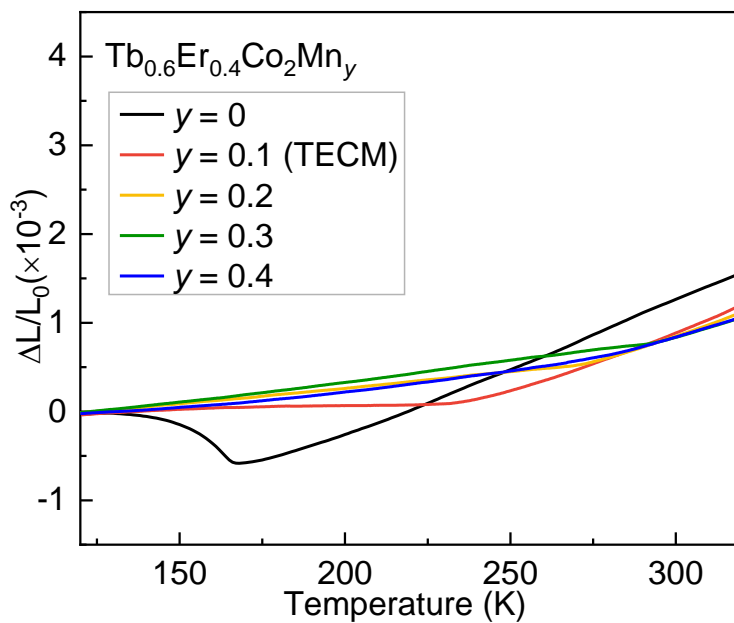


Figure S4. Linear thermal expansion ($\Delta L/L_0$) of $\text{Tb}_{0.6}\text{Er}_{0.4}\text{Co}_2\text{Mn}_y$ ($y = 0, 0.1, 0.2, 0.3,$ and 0.4).

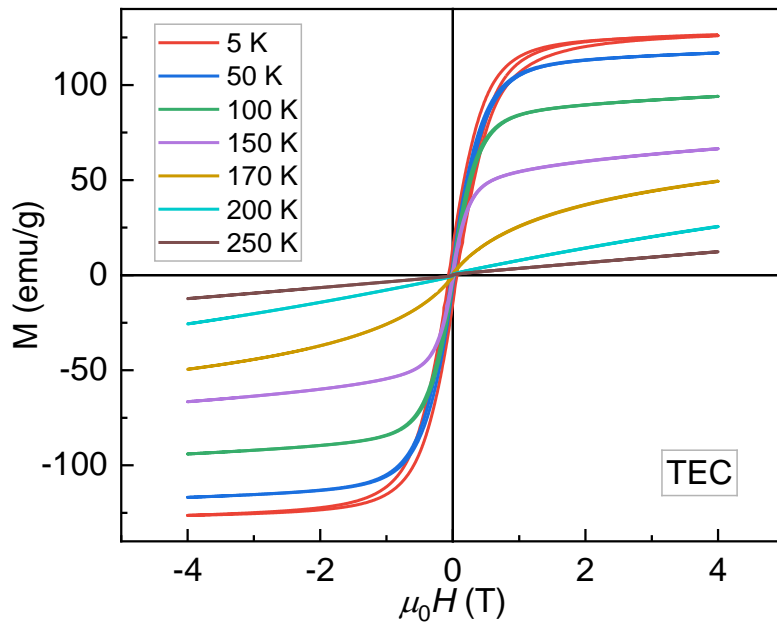


Figure S5. Isothermal M - H curves (-4 to 4 T) for $\text{Tb}_{0.6}\text{Er}_{0.4}\text{Co}_2$ (denoted as TEC).

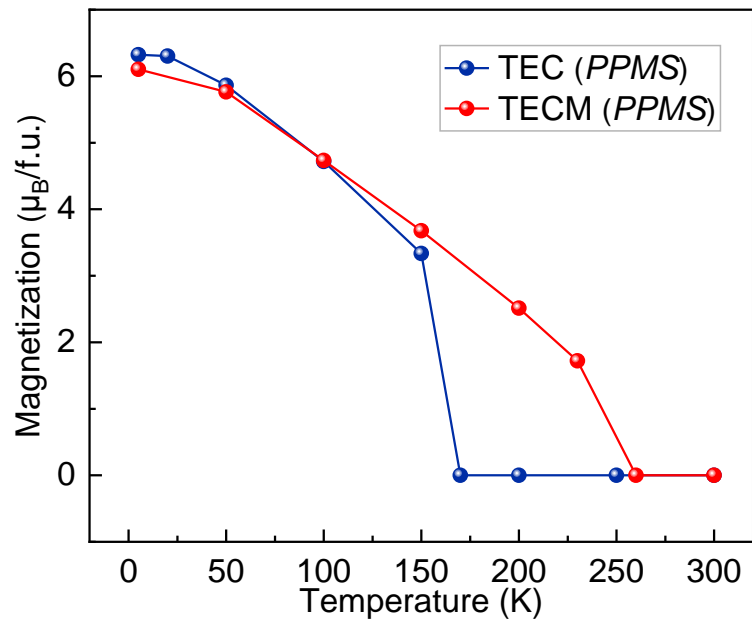


Figure S6. The saturation magnetization for TEC and TEC under temperature dependence by PPMS.

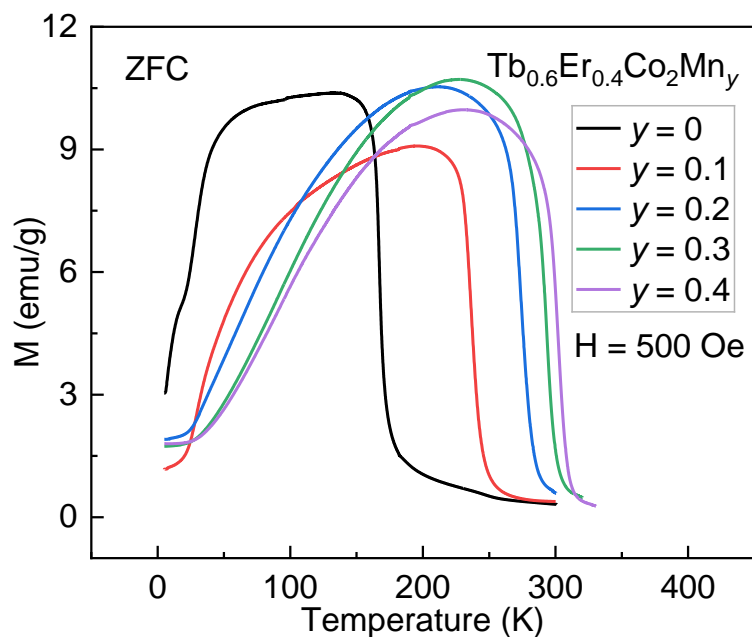


Figure S7. Temperature dependence of ZFC for the $\text{Tb}_{0.6}\text{Er}_{0.4}\text{Co}_2\text{Mn}_y$ ($y = 0, 0.1, 0.2, 0.3$ and 0.4) compounds under an applied magnetic field of 500 Oe.

Table S1. The refinement of the cell parameters by means of XRD patterns for the compounds $\text{Tb}_{1-x}\text{Er}_x\text{Co}_2\text{Mn}_y$ ($x = 0, 0.1, 0.2, 0.4$, and 0.5 , $y = 0$ and 0.1) at 300 K.

Compounds	a (Å)	compounds	a (Å)
TbCo_2	7.2082	$\text{TbCo}_2\text{Mn}_{0.1}$	7.2008
$\text{Tb}_{0.9}\text{Er}_{0.1}\text{Co}_2$	7.2029	$\text{Tb}_{0.9}\text{Er}_{0.1}\text{Co}_2\text{Mn}_{0.1}$	7.2003
$\text{Tb}_{0.8}\text{Er}_{0.2}\text{Co}_2$	7.1961	$\text{Tb}_{0.8}\text{Er}_{0.2}\text{Co}_2\text{Mn}_{0.1}$	7.1948
$\text{Tb}_{0.6}\text{Er}_{0.4}\text{Co}_2$	7.1942	$\text{Tb}_{0.6}\text{Er}_{0.4}\text{Co}_2\text{Mn}_{0.1}$	7.1807
$\text{Tb}_{0.5}\text{Er}_{0.5}\text{Co}_2$	7.1814	$\text{Tb}_{0.5}\text{Er}_{0.5}\text{Co}_2\text{Mn}_{0.1}$	7.1765

Table S2. The Tb, Er, Co, and Mn contents were determined by the EDS measurement on the TEC and TECM compounds, respectively.

Compounds	Tb	Er	Co	Mn
TEC	0.59	0.33	2	
TECM	0.58	0.37	2	0.09

Table S3. The Co and Mn contents were determined by the ICP measurement on the TEC and TECM compounds, respectively.

Compounds	Co content by ICP data	Mn content by ICP data
TEC	1.9904	0
TECM	1.9979	0.0757