

Supplementary Information

Spin reorientation transition and spin dynamics study of perovskite orthoferrite TmFeO_3 detected by Electron Paramagnetic Resonance

Poorva Sharma^{1,2,*}, Jiyu Fan^{1,*}, Ashwini Kumar^{1,2}, Arvind Yogi³, Y. S. Chai⁴, Wei Ren⁴,
Shixun Cao⁵, Caixia Wang⁶, Chunlan Ma⁷, Wei Tong⁸, Nikolai Perov⁹, Hao Yang^{1,*}

¹Department of Applied Physics, Nanjing University of Aeronautics and Astronautics, Nanjing,
210016 – China

²Key laboratory of Multifunctional Materials, Department of Electronic Engineering, Luzhou
Vocational and Technical College, Luzhou, Sichuan - China

³UGC-DAE-Consortium for Scientific Research, Indore, 452001 – India

⁴Department of Applied Physics, Chongqing University, Chongqing, 400044 - China

⁵Department of Physics, International Center for Quantum and Molecular Systems, Materials
Genome Institute, Shanghai University, Shanghai, 200444 - China

⁶College of Physics Science and Technology, Yangzhou University, Yangzhou - China

⁷School of Mathematics & Physics, Suzhou University of Science & Technology, Suzhou -
China

⁸High Magnetic Field Laboratory, Chinese Academy of Sciences, Hefei 230031, China

⁹Department of Magnetism, Faculty of Physics, Lomonosov Moscow State University, Leninskie
Gory B.1-2, GSP-1 119991, Moscow, Russia

Table S1 and Fig. S1:

Table S1: Elemental compositions for TmFeO_3 .

Element	Weight %	Atomic %
O K	44.79	84.25
Fe K	16.40	8.83
Tm L	38.81	6.91
Total	100.00	99.99

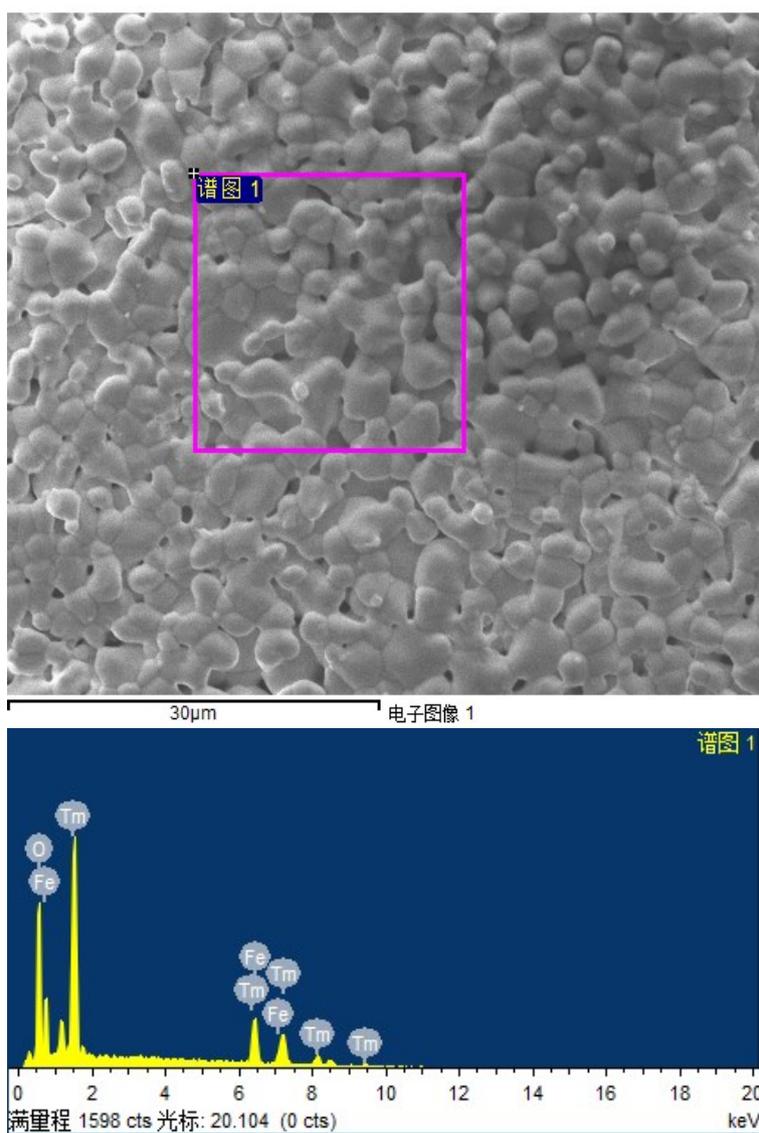
Figure S1: SEM Image and EDX spectra for TmFeO_3 .

Figure S2

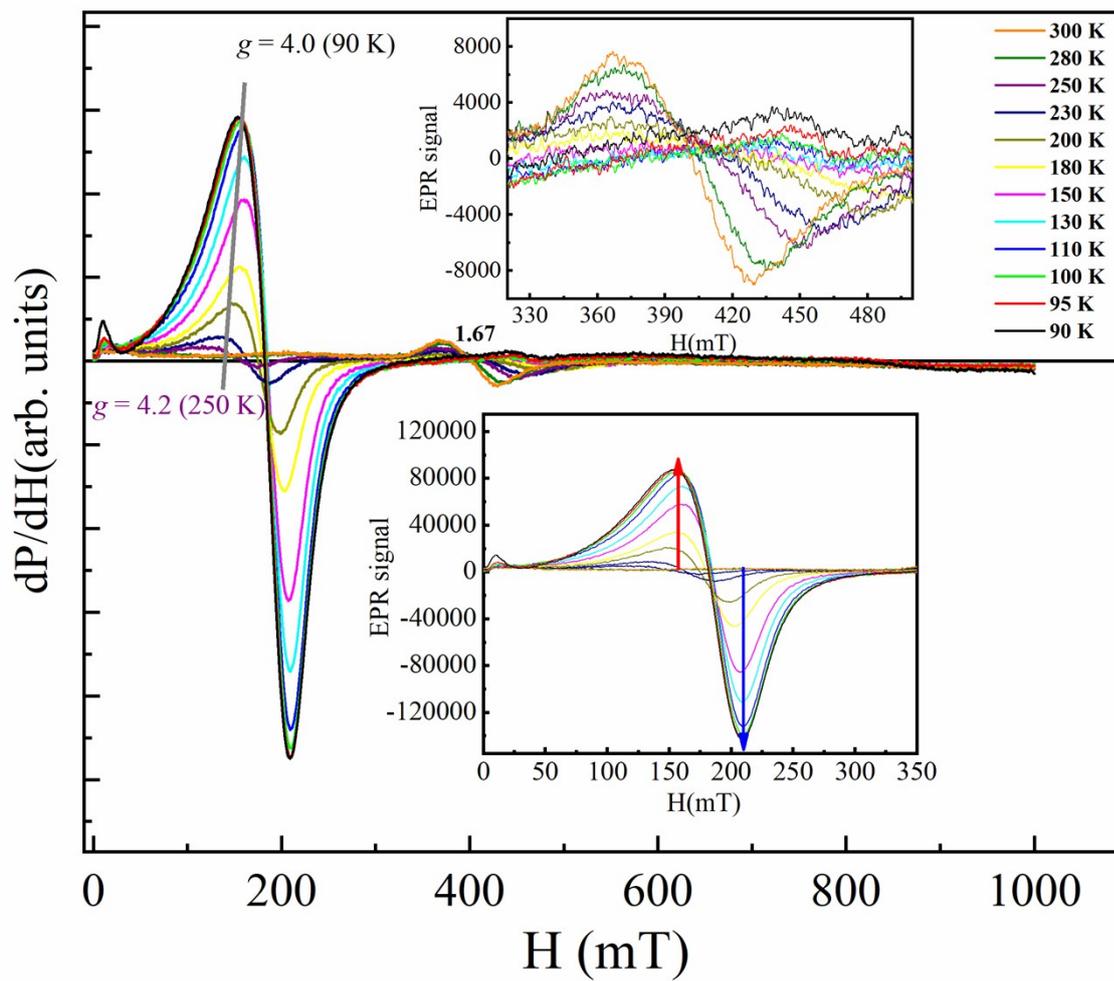


Figure S2: dP/dH vs H plot at several selected temperatures for $TmFeO_3$.

Figure S3:

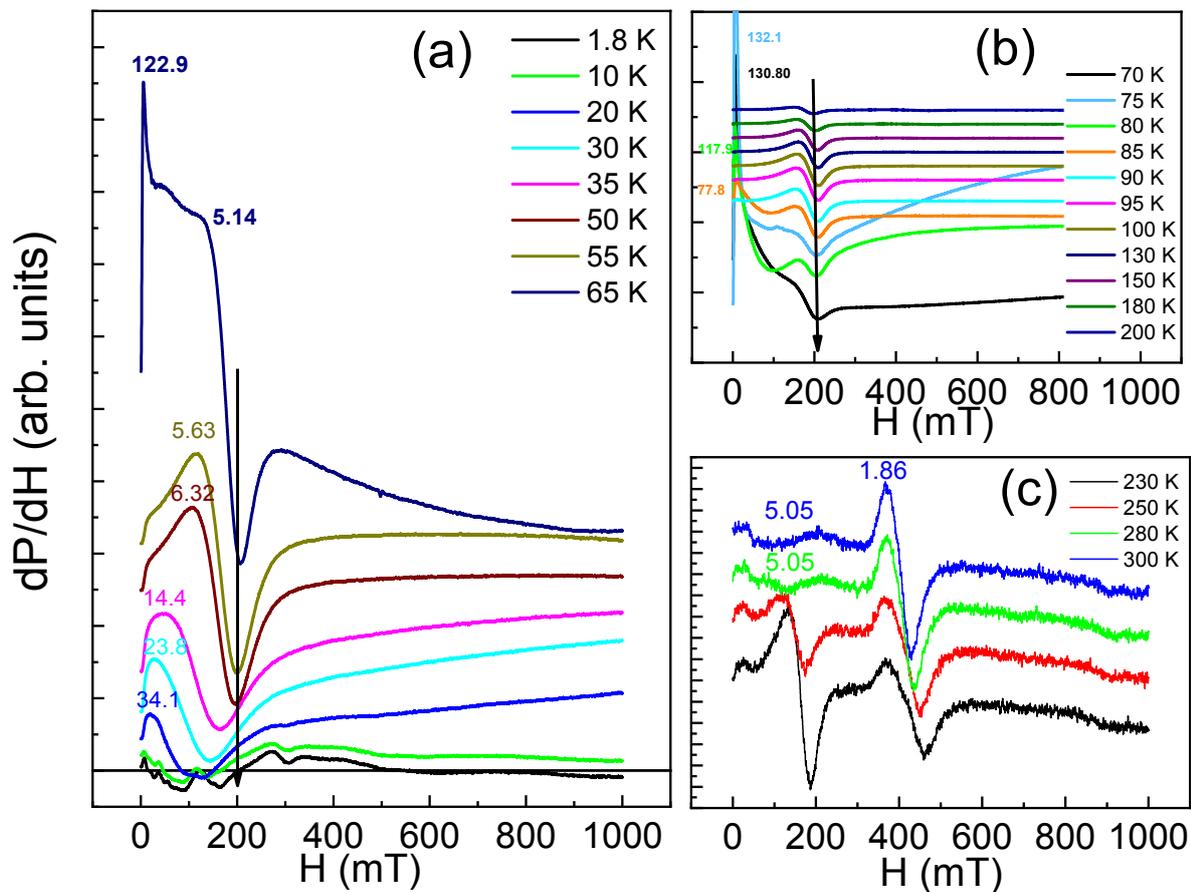


Figure S3: dP/dH vs H plot at several selected temperatures for $TmFeO_3$, (a) dP/dH vs H plot for 1.8 -65 K (b) dP/dH vs H plot for 70-200 K and (c) dP/dH vs H plot for 230 – 300 K.

Figure S4:

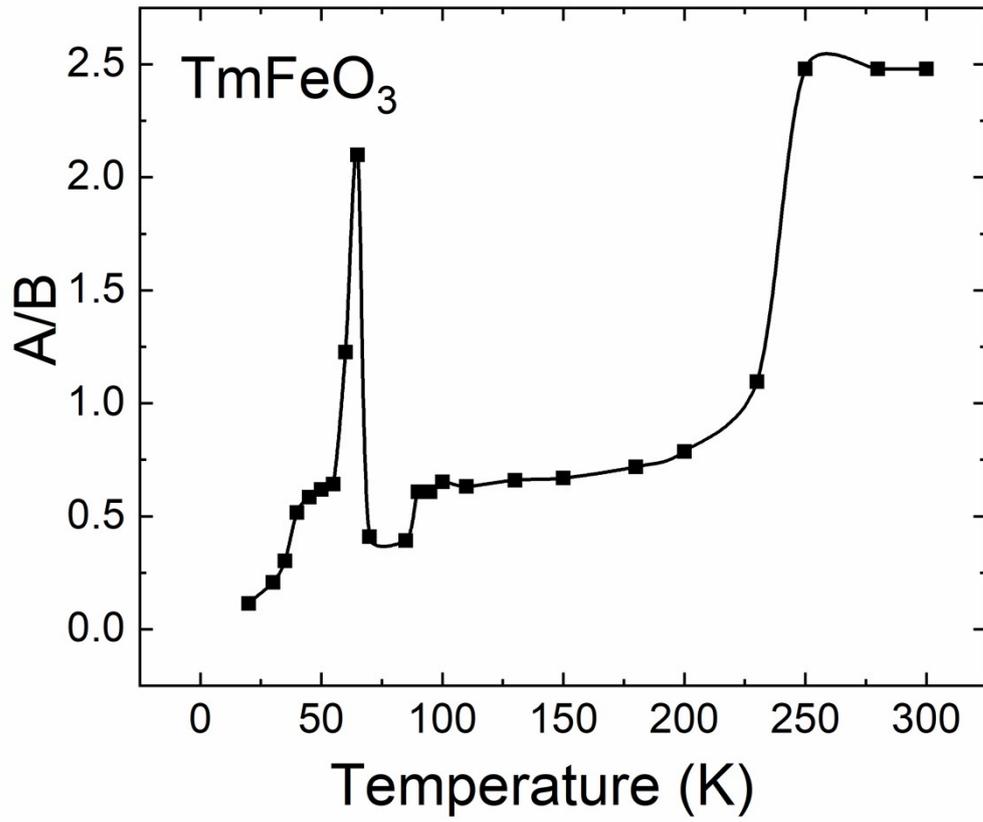


Figure S4: Variation of A/B ratio with temperature for TmFeO₃ sample.