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Field induced an irreversible ferromagnetic transition in BiFeO₃ based composite system

Azizur Rahman*¹ Zhongping Wang², Rucheng Dai² and Zengming Zhang^{2,3}

1. *Department of Physics, University of Science and Technology of China, Hefei, Anhui 230026, China;*
2. *The Centre for Physical Experiments, University of Science and Technology of China, Hefei, Anhui 230026, China)*
3. *Key Laboratory of Strongly-Coupled Quantum Matter Physics, Chinese Academy of Sciences, School of Physical Sciences, University of Science and Technology of China, Hefei, Anhui 230026, China*

*Corresponding author: aziz_physics@yahoo.com Phone: +86 15695656753

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Abstract

In this work Sr doped BiFeO₃ (BSFO) and CoFe₂O₄ (CFO), (BSFO-CFO) composite polycrystalline samples are prepared via simple solid state route. We report the existence of an irreversible room temperature field-induced a ferromagnetic (FM) transition that does not quench even after removing the magnetic field in BiFeO₃ and CoFe₂O₄ composite system. The field induced FM order transition occurs over a long range of temperature from 330 K to 5 K and remain stable for at least 45 mints after the field quenching. The fraction of field induced FM phase increases and its decay rate decreases at lower temperatures. The strong temperature dependence of the magnetic field induced FM phase is also observed. These findings will lead the researcher to design new composite materials system for desired applications.

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