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Evaluation of the magnetic field induced glassy behavior and oscillating magnetocalaroic effect in $Zn_{0.05}Ni_{0.95}Cr_2O_4$ spinel oxide KAKARLA DEVI CHANDRASEKHAR, Department of Physics, National Sun Yat Sen University, Taiwan, JYOTHINAGARAM KRISHNA MURTHY, ADYAM VENIMADHAV, Cryogenic Engineering Centre, Indian Institute of Technology Kharagpur, India, HUNG-DUEN YANG, Department of Physics, National Sun Yat Sen University, Taiwan, PROF. H. D. YANG TEAM, PROF. A. VENIMADHAV COLLABORATION — Polycrystalline Zn (5%) doped NiCr₂O₄ sample was prepared by standard solid state reaction method. Room temperature structural refinement through X-ray diffraction confirm the cubic crystal structure with Fd-3m space group. Temperature dependent dc and AC magnetic measurements revealed multiple magnetic transitions. Doping small amount of non Jahn-Teller (J-T) ion (Zn²⁺) in place of J-T site (Ni²⁺) shows pronounced influence on the magnetostructural transitions. We have found a frequency independent magnetic transitions in the AC susceptibility measurement indicate the absence of glassy magnetic behavior under zero applied de bias field. However, an unusual new glassy magnetic transition was discerned under the small dc magnetic field (3 kOe) in the AC susceptibility measurement. We have demonstrated oscillating magnetocaloric effect through isothermal magnetization measurements at low temperature. The observed unusual magnetic properties can be ascribed to the strong coupling and competing interaction between the spin-lattice-orbital interactions.

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