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Magnetic exchange bias effect with magnetization reversal in double perovskite $\text{Er}_2\text{CoMnO}_6$ single crystal JAE YOUNG MOON, MI KYUNG KIM, SANG HYUP OH, NARA LEE, YOUNG JAI CHOI, Yonsei Univ — We have successfully synthesized the high-quality single crystals of double perovskite $\text{Er}_2\text{CoMnO}_6$ by the conventional flux method with Bi_2O_3 flux, and have investigated their magnetic properties and magnetic exchange bias effects. The ferromagnetic order arises at $T_C = 63.5$ K from the dominant Co^{2+} and Mn^{4+} superexchange interactions, mainly along the c axis. A huge increase in the temperature dependence of specific heat divided by temperature occurs due to the Er^{3+} spin ordering at $T_{\text{Er}} = 12$ K. Magnetization reversal in temperature dependence of magnetic susceptibility and inverted hysteresis loop along the c axis in magnetic field dependence of magnetization are observed below $T_{\text{Comp}} = 3.15$ K, resulted from the interaction between Er^{3+} and $\text{Co}^{2+}/\text{Mn}^{4+}$ sublattices. The exchange bias effects are exhibited in the inverted hysteresis loops, and the maximum exchange bias field of 0.3 kOe is obtained after field cooling in $H_{\text{FC}} = 0.190$ kOe.

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