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Giant exchange bias effect in $YCo_{0.25}Mn_{0.75}O_3$ compound according to change of ratio by additional Mn ions SANGHYUP OH, JAI YOUNG MOON, MI KYUNG KIM, NARA LEE, YOUNG JAI CHOI, Yonsei Univ — Recently studied on exchange bias (EB) phenomena in Y_2CoMnO_6 reveals interfacial exchange coupling between Mn^{4+}-O-Mn^{4+}, Co^{2+}-O-Co^{2+} antiferromagnetic (AFM) ordering induced by antisite defect and Co^{2+}-O-Mn^{4+} ferromagnetic (FM) ordering, while we approached EB effect by additional Mn ion according to change of ratio between Co and Mn ions, successfully made $YCo_{0.25}Mn_{0.75}O_3$ compound. Spin-glass behavior is observed because of complex magnetic properties. We observed that the week FM hysteresis loop is at 2 K, giant exchange bias field, H_{EB} ˜13 kOe, was observed at 2 K in measuring field range 15 kOe after applied field cooled (FC) in 40 kOe. The observed exchange bias effect reveals the strong dependence on cooling magnetic fields, measuring fields, and temperature. We suggest that the giant EB effect would originate from the interfacial pinning of exchange couplings between not only FM and AFM ordering but also FM and SG areas generated due to Mn^{3+}-O-Mn^{3+} AFM ordering created by additional Mn ion.

Sanghyup Oh
Yonsei Univ

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