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Peculiar Magnetic Properties of Polycrystalline $La_{1-x}Sr_xCoO_3$ K. K. YU, J. S. PARK, Y. P. LEE, Quantum Photonic Science Research Center and Department of Physics, Hanyang University, Seoul, 133-791 Korea, Y. S. LEE, Division of Information Communication and Computer Engineering, Hanbat National University, Daejeon, 305-719 Korea, J. H. KANG, Process Development Team, Samsung Electronics Co., Ltd., Yongin, 449-711 Korea — Polycrystalline $La_{1-x}Sr_xCoO_3$ samples were synthesized by the standard solid-state reaction. The x-ray diffraction (XRD) measurement was performed at each step of the preparation to monitor the progress of reaction. The ferromagnetic transition temperatures were obtained from the a.c. susceptibility measurement, and the temperature dependence of magnetization was measured by using a superconducting quantum interference device (SQUID) magnetometer. The structural and the magnetic orderings at low temperatures were further investigated by neutron diffraction. It was found that the antiferromagnetic and the ferromagnetic states coexist at low temperatures. This anomalous magnetic behavior can be explained by the existence of ferromagnetic grains in the non-ferromagnetic matrix.

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