

STRUCTURE AND MAGNETIC CHARACTERIZATION OF BiFeO₃/YBa₂Cu₃O₇ BILAYERS

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Complex perovskite oxides exhibit a rich spectrum of functional responses including superconductivity, magnetism, ferroelectricity etc. Combination of different oxides offers a new physical effects in structures composed of such systems. Multiferroic materials are both ferroelectric and magnetic. BFO is antiferromagnetic below Neel temperature $T_N = 643$ K and ferroelectric below $T_C = 1143$ K. Bilayers composed of multiferroic BiFeO₃ (BFO) layers and superconducting YBa₂Cu₃O₇ (YBCO) layers were fabricated using high pressure sputtering on (100) LSAT substrates. X-ray diffraction analysis confirms epitaxial growth of BFO layers on YBCO buffer layers. Magnetization measurements indicate both superconducting state and weak ferromagnetism. Such epitaxial coupling could create a new way of obtaining a magnetoelectric effect between magnetization of BFO layer with screening currents in superconducting YBCO layer.

13.4 cm

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9.7 cm