

Abstract Submitted
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Magnetic relaxation and critical currents of NdBCO coated conductors¹ A.O. IJADUOLA, Dept. of Physics, Univ. of Tennessee, Knoxville, TN, S.H. WEE, A. GOYAL, J. LI, P.M. MARTIN, Oak Ridge National Lab., Oak Ridge TN, J.R. THOMPSON, Dept. of Physics, Univ. of Tennessee, Knoxville, TN and Oak Ridge National Lab., Oak Ridge, TN, D.K. CHRISTEN, Oak Ridge National Lab., Oak Ridge TN — A magnetic study of the critical current density J_c and magnetic relaxation ('creep') effects in thin $\text{NdBa}_2\text{Cu}_3\text{O}_{7-\delta}$ (NdBCO) superconducting films of thicknesses 0.7 and 2.1 μm was conducted. These films, doped with BaZrO_3 , were deposited by a PLD process on 'IBAD' substrates. The J_c values display broad peaks near the c -axis. This is associated with densely spaced columnar defects distributed about this axis. We analyzed the magnetic relaxation data using the Maley expression for the activation energy U as a function of current density J . The data are described fairly well by the collective creep interpolation formula $U = U_0 [(J_{c0}/J)^\mu - 1]$ with U_0 , J_{c0} , and μ treated as fitting parameters.

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