Pinning Performance of (Nd_{0.33}Eu_{0.2}Gd_{0.47})Ba_2Cu_3O_y Single Crystal

M. Jirsa^1, M. Rames^1, P. Das^2, M. R. Koblischka^2, T. Wolf^3, U. Hartmann^2

^1 Institute of Physics ASCR, Na Slovance 2, CZ-182 21 Prague 8, Czech Republic; e-mail: jirsa@fzu.cz
^2 Institute of Experimental Physics, Saarland University, D-66041 Saarbrücken, Germany
^3 Forschungszentrum Karlsruhe, Institute of Solid State Physics, D-76021 Karlsruhe, Germany

Abstract - The critical current density \( J_c \), the pinning force density \( F(=BJ_c) \), and the relaxation rate \( Q \) were determined from magnetic hysteresis loops (MHL) measured from 65 K to 90 K on a twinned (Nd_{0.33}Eu_{0.2}Gd_{0.47})Ba_2Cu_3O_y single crystal with a strip-like surface structure. The strong second peak observed on the MHL at 65 K continuously decreased with increasing temperature but persisted up to 84 K. None of the \( J_c(B) \) and \( F(B) \) dependences scaled, let alone in a narrow range of \( T \). A strong effect of twin channeling was observed but no special pinning effect due to the strip-like surface structure was recognized.