

Abstract

The dissipation in the mixed state of a $\text{Ti}_2\text{Ba}_2\text{Ca}_2\text{Cu}_3\text{O}_{10}$ TI-2223 crystal was studied by an analysis of the DC relaxation and that of the frequency dependence of the AC susceptibility. Near the irreversibility line, the field dependence of the activation energy at zero current limit evidences the plastic nature of the vortex movement mediated by individual vortex loops. At lower temperatures, the data are analysed in a current dependent activation energy U_J framework. The data are analysed in the model proposed by Abulafia et al. in $U_0 - 1/y - J_r J_0.1r^2$. which predicts a non divergent energy barrier at zero current. The analysis of the magnetic field dependence of U_0 has shown that the plastic model used in the region of the irreversibility line can account for the observations. In this system, no elastic collective creep was observed in the domain that we have explored. ©1998 Elsevier Science B.V. All rights reserved.