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Temperature Dependence of Flux Pinning Properties for Dilute Impurity Doped Y123 Single Crystals YUI ISHII, Univ. Tokyo — Most of studies on pinning properties and relating vortex nature of the RE123 system were performed at high temperatures around 77 K, while extensive applications at low temperatures are also expected. However, both pinning properties and vortex states at low temperatures have not been well understood for RE123 crystals having intentionally introduced pinning sites. On the other hand, we have developed the chemical and versatile technique to introduce effective pinning site in the cuprates, that is dilute impurity doping for the target cation sites. In addition, compositional fluctuations of light rare earth (LRE) elements, which induce disorder transition of vortex system, are known to contribute enhanced pinning properties of LRE123. In this paper, we report that the changes of vortex state and J_c characteristics of RE123 single crystals in H // c at low temperatures by precise control of cation compositions. Our result suggested that dilute impurity doping to Cu (in CuO-chain) or Ba is more effective to enhance pinning strength of Y123 than introduction of compositional fluctuation for Gd123 single crystals at low temperatures below 70 K.

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