Improvement of trapped field in DyBaCuO bulk by proton irradiation,

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Abstract:

The possibility of the post-manufacturing control of the macroscopic critical current density by the low-fluence high-energy proton irradiation was studied for cm sized bulk high temperature superconductor. The irradiations of 200 MeV protons on bulk DyBaCuO samples with the fluence of from $2.3 \times 10^{10}$ to $1.2 \times 10^{12}$ protons/cm$^2$ were performed. The maximum magnetic flux densities on the sample surfaces were increased by up to 80% after proton irradiation. This value of the increment is larger than the individual differences of the bulk high temperature superconductors just after the production. The macroscopic critical current densities seemed to be increased almost everywhere in the samples.

Keywords:

Bulk high temperature superconductor; Proton irradiation; Undulator

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