Performance of hot stacked-sinter forged Bi2223 ceramics

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Dense Bi2223 superconductors have been successfully formed by hot Stacking-forging process (HSFP). The X-ray and neutron diffraction measurements were used to investigate the free surfaces and bulk textures of HSF-Bi2223 samples.

Transport critical current data of the textured superconductor samples were obtained using DC-measurements. According to current-voltage curves, the transition between the superconducting state and the flux-flow regime corresponds to a high transport critical current density (J_c) up to $2x10^4$ A/cm^2 at 77 K in a self field. In addition, J_c-values were measured at various temperatures and different applied magnetic fields. Several textured pieces were hot-stacked under various applied stresses. This procedure leads to an increase of both the sample thickness and the nominal engineering critical current (I_c), favourable hints for further ~~in order to~~ use of textured-Bi2223 in ~~for practical~~ power generation supplies.