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Microstructure and Critical Current of Hot-Pressed YBCO Ceramics

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Abstract: The effect of hot-pressing (HPing) on the densification and the superconducting properties of YBCO were investigated. The phases and microstructure were analysed by XRD and SEM and transport properties were studied by I-V and AC susceptibility measurements. Relative density up to 93% and critical current density of 509 A/cm^2 at 77 K were achieved through uniaxial HPing at 800°C under 325 kg/cm^2 pressure for 4 hours. HPing raised the J_c from 80 A/cm^2 to 509 A/cm^2. These results and AC susceptibility measurements reveal that the weak links or pinning forces were improved by increasing HPing pressure.

Key Words: A. High temperature superconductors; B. Hot pressing; C. YBCO; D. I-V; E. AC susceptibility.

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