Effect of Annealing Temperatures on Charcoal Doped MgB_2

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Carbon doping remains as one of the most promising techniques to significantly improve the superconducting properties of MgB_2 superconductor. In this study, a cheap and readily available charcoal powder (1~2 microns) was used as a means of a carbon source for doping. Bulk samples with a nominal composition of $Mg(B_{0.95}C_{0.05})_2$ were prepared and heat treated at temperatures between 650°C to 1000°C for 30 minutes. Enhancement of critical current density (J_c) at high magnetic fields of the charcoal doped samples was observed at all annealing temperatures.

Keyword: MgB_2 superconductivity, charcoal, carbon source, doping effect, critical current density

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