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Effect of BN-Added Precursors on Phase Formation and Transport Properties of (Bi,Pb)-2223 HTS

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Abstract

(Bi,Pb)-2223 HTSs (high temperature superconductors) were synthesized from nominally pure (reference) and BN-added $Bi_{1.7}Pb_{0.3}Ca_2Sr_2Cu_3O_y(BN)_x$ precursors (x=0,0.10,0.15, and 0.20) by the solid state reaction method using alumina crucibles. The influence of boron nitride addition on the phase formation kinetics and transport properties of (Bi,Pb)-2223 HTSs was studied using X-ray diffraction (XRD), resistivity and critical current density measurements. BN-added compounds reveal a significant enhancement in both the high-T_c 2223 phase formation and critical current density compared to the reference specimen.

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