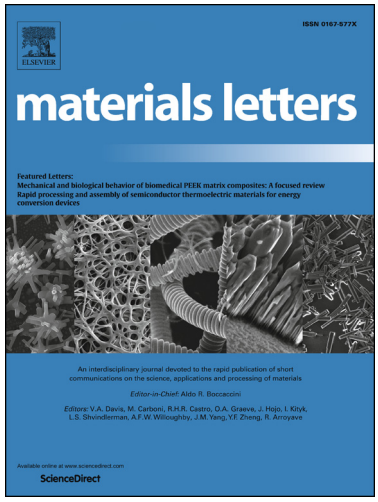

From nanosized precursors to high performance ceramics: The case of $Bi_2Ca_2Co_{1.7}O_x$

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From nanosized precursors to high performance ceramics: The case of $Bi_2Ca_2Co_{1.7}O_x$

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Abstract

$Bi_2Ca_2Co_{1.7}O_x$ thermoelectric ceramics were prepared by four different synthesis routes: coprecipitation with ammonium carbonate or oxalic acid, attrition milling, and solid state (as reference). Microstructure showed that coprecipitation and attrition milling produced sintered materials with less porosity and smaller particle sizes than the solid state ones. Thermoelectric properties reflect the microstructure, leading to materials with lower electrical resistivity and higher Seebeck coefficient, when compared with the solid state ones. In spite of an increase in thermal conductivity in these samples due to their lower porosity, the maximum estimated Figure-of-Merit is higher than in sintered materials.

Keywords: Electroceramics; Sintering; Electrical properties; Microstructure.

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