

## The Effect of SiO<sub>2</sub> Addition on the Formation and Superconducting Properties of Bi<sub>2</sub>Sr<sub>2</sub>CaCu<sub>2</sub>O<sub>8</sub>+D System

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**Abstract :** SiO<sub>2</sub> particles were inserted (added) into Bi<sub>2</sub>Sr<sub>2</sub>CaCu<sub>2</sub>O<sub>8</sub>+d precursor powders in various weight fractions. The influence of Si addition to the Bi<sub>2</sub>212 system on its phase formation, microstructure and transport properties is investigated. Samples are characterized by means of X ray diffraction analysis (XRD), scanning electron microscopy (SEM/EDX), magnetic AC susceptibility and resistivity measurements. For 1% of added Si, the results showed an increase of the apparent superconducting volume fraction. All the samples doped with Si contained a majority fraction of the high TC superconducting Bi<sub>2</sub>212 phase. SEM observation showed that the average grain size of the Si added samples increased more than that of the sample without Si. From resistivity measurement the T<sub>conset</sub> was found to be increased by 7 K for 1% and 5% of added Si compared to the pure sample.

**Keywords :** superconductors, Bi<sub>2</sub>212, doping, SiO<sub>2</sub> particles

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