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Effects of nano SnO₂ substitution on the structural and superconducting properties of Y₃Ba₅Cu₈O_y system

Studies on addition and substitution of nano particles in conventional ceramic superconducting systems based on Yttrium and Bismuth compounds have shown an increased current density and variation of critical temperature. The addition or substitution of nano-sized particles could act as efficient pinning centers by creating effective links between the grains of the superconducting structures when the particle size is comparable to the superconducting coherence length. In this talk, I would like to give an overview of the substitution effects of nano SnO₂ particles in Y₃Ba₅Cu₈O_y superconductors and characterization using pXRD, SEM and EDS. By optimizing the amount of Sn in Y₃Ba₅Cu₈O_y superconductor, the diamagnetic property can be maximized without affecting the T_c, for practical applications.

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