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Enhanced superconducting properties of Bi2Sr2CaCu2O8+δ thin films by incorporating Iridates nanoparticles JONGHYUN SONG, JEFFREY VERO, INWOONG HWANG, Chungnam Natl Univ, A.C.L SANTIGO, University of Philipine, JEONGWON JANG, Korea University, JINHEE KIM, Korea Institute of Science and Standards, R.V. SARMAGO, University of Philipine — We incorporated $CaIrO_3$ (Ca-iridate) nanoparticles at the interface of $Bi_2Sr_2CaCu_2O_{8+\delta}$ (Bi-2212) thin films and substrates by pulsed laser deposition and post-growth *ex situ* annealing. The density of incorporated Ca-iridate strongly affected the superconducting properties and microstructure of the Bi-2212 thin films. For the incorporation of low density Ca-iridate (450 laser pulses) in the Bi-2212, its superconducting properties enhanced ($T_{c-onset}$ = 97 K, T_{c-zero} = 84 K) over those of pure Bi-2212 ($T_{c-onset}$ = 94 K, T_{c-zero} = 80 K). However, incorporating a higher density (1,800 pulses) significantly reduced T_{c-zero} to ≈57 K. Incorporating a low density of Ca-iridate also decreased the *c*-axis lattice constant. Films with incorporated Ca-iridate exhibited greater critical current density, J_c(B), than the pure Bi-2212 film. These results indicate that incorporating low densities of Ca-iridate nanoparticles into Bi-2212 can improve its superconducting properties.

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