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Effects of sintering temperature on properties of Ti-sheathed, SiC-doped MgB2 superconducting wires GAN LIANG, HUI FANG, Sam Houston State University, CAD HOYT, Cornell University, SAMARESH GUCHHAIT, JOHN MARKERT, University of Texas at Austin — Mono-core Ti-sheathed, silicon carbide (SiC) doped MgB_2 wires have been successfully fabricated by powder-in-tube method. The average size of the doped SiC nano particles is 20 nm and the doping level is 10 wt.%. The wires were sintered for 30 minutes at five temperatures from 650 ^{o}C to 800 ^{o}C. Effects of sintering temperature on the phase composition, microstructure, and critical current density (Jc) were studied by x-ray diffraction, scanning electron microscopy, and magnetization measurements. The results indicate that the Ti sheath does not react with the magnesium and boron, and the present wire rolling process can produce Ti-sheathed, SiC-doped MgB_2 wires with high critical current density. It is found that Jc peaks up at sintering temperature of 800 ^{o}C. This is in sharp contrast with the previously reported result (by other group) that the optimal Jc was achieved at sintering temperature 650 ^{o}C. The correlations between Jc and the structural properties of the wires are discussed.

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