

Abstract Submitted
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Studies of Porosity, Connectivity, and Parasitic Phases in Textured Bi-2212/Ag after Non-Melt Sintering.¹ FENG LU, KYLE DAMBORSKY, PETER MCINTYRE, AL MCINTURFF, NATHANIEL POGUE, KLAUS SMIT, Department of Physics and Astronomy, Texas A&M University, ACCELERATOR RESEARCH LABORATORY TEAM — High-angle grain boundaries (HAGBs) result in weak links that limit current transport in high temperature superconductors. The powder filling in commercially available Bi-2212 round wires has random orientation of the grains, and as a result HAGBs are formed during the partial-melt processing. We have developed an alternative method in which Bi-2212 fine powder is roll-processed to produce a continuous ribbon with a high degree of texture. In this study textured Bi-2212 pellets were subjected to sintering to investigate the impact of sintering on texture, density, connectivity, and microstructure. A regime of non-melt sintering parameters were identified which produce near-solid density, improved texture, extensive growth of the Bi-2212 phase, and no significant growth of parasitic phases. We are now applying the process to develop continuous ribbons of textured Bi-2212/Ag green wire in our “Textured Powder Jelly-Roll” process.

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