Abstract Submitted for the TSF10 Meeting of The American Physical Society

Study of texturing in Bi-2212 powder for wire development¹ FENG LU, KYLE DAMBORSKY, NATHANIEL POGUE, PETER MCINTYRE, Magnet Lab, Department of Physics, Texas A&M University, College Station, TX 77843, MAGNET LAB, DEPARTMENT OF PHYSICS, TEXAS A&M UNIVERSITY, COLLEGE STATION, TX 77843 TEAM — High angle grain boundaries (HAGBs) result in weak links in the current flow in high temperature superconductors. Commercially available Bi-2212 round wires do not have a macroscopical texture due to formation of HAGBs during the Partial-melt processing. In this study, we developed two methods by which to align the particles of Bi-2212 powder in thin layers. The first utilizes magnetic fields and the second is uniaxial compression. Both methods generate highly textured Bi-2212 powder layers having a-b plane in the flat dimension, which is preferable to the following wire fabrication that can preserve the texture. The influence of the different applied fields and compression on the texture and microstructure is reported.

¹This work was supported in part by DOE under grant DE-FG03-95ER40924. FE-SEM acquisition was supported in part by NSF grant DBI-0116835.

Feng Lu Magnet Lab, Department of Physics, Texas A&M University, College Station, TX 77843

Date submitted: 24 Sep 2010 Electronic form version 1.4