



MT 26
International Conference
on Magnet Technology
Vancouver, Canada | 2019

Contribution ID: 798

Type: **Poster Presentation**

Thu-Mo-Po4.01-07 [6]: Properties of Selected High-strength Composite Conductors

Thursday, 26 September 2019 08:45 (2 hours)

Cu-Ag and Cu-Nb composites, which have been successfully used in high field magnets, reach their most desirable strength level when their interface spacing is below 100 nanometers. The usual fabrication methods for these composites are either cold rolling or cold drawing, both of which refine interface spacing and create anisotropy. These methods may also introduce shear-bands into the microstructure. Understanding both anisotropy and shear-bands helps to understand the deformation mechanisms of these composites under magnetic force. The goal of our research is to relate microstructural anisotropy to the mechanical and physical properties of these composites in various geometries. Our current work is shedding new light on the detailed correlation between microstructure and properties. This paper describes microstructure in different orientations, with emphasis on the impact of anisotropy and shear-band on properties.

This work was performed at the National High Magnetic Field Laboratory, which is supported by the National Science Foundation Cooperative Agreement No. DMR-1644779 and the State of Florida

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Session Classification: Thu-Mo-Po4.01 - Associated Technology II