



Contribution ID: 959

Type: **Regular 15 minutes Oral Presentation**

Superconducting HTS joints for connecting strong Bi2212 wires

Thursday 31 August 2017 12:30 (15 minutes)

A Bi2212-based rectangular wire approach has been developed, with up to 500 MPa stress tolerances and useful current densities for building compact solenoid coils that are more problematic to make with wide HTS tapes, and that need to operate beyond the field and temperature limits of low temperature superconductors. Until now, no method has been shown to achieve a superconducting joint between HTS tape ends in coils or wires. In this paper, we describe the development and validation of a first practical approach for producing high critical current superconducting joints between the ends of these strong 2212 wire ends. The joints are produced by applying the unique ability of the Bi2212 superconductor to be melt textured into high J_c , textured and interconnected forms, without the need for the deformation required for 1G-Bi2223, or the need for the flat, solid state epitaxial template required for 2G-ReBaCuO. Robust superconducting joints have been produced with I_c levels that exceed the I_c 's of the wires in the highest field sections of targeted insert coil designs, and that exhibit adequately high stress and axial load tolerances, for example exceeding 200 MPa.

Submitters Country

USA

Author: Dr OTTO, Alexander (Solid Material Solutions, LLC)

Presenter: Dr OTTO, Alexander (Solid Material Solutions, LLC)

Session Classification: Thu-Mo-Or32

Track Classification: F6 - Joints between Superconductors