Contribution ID: **1039** Type: **Poster Presentation**

M2Po2C-02 [38]: Improvement of stability of commercial Nb3Sn RRP wires by increasing specific heat

Tuesday, July 23, 2019 1:30 PM (2 hours)

Introducing materials with high specific heat (C) to Nb3Sn composite wires is a promising technique to suppress the intrinsic instability in high-Jc wires and also improve their stability with respect to external perturbations, which might help to reduce the long training of Nb3Sn magnets. Experiments on prototype wires have demonstrated its capability to improve conductor stability in transport voltage-current tests and tripling of minimum quench energy. A collaboration between Fermilab and Bruker EST has started to industrialize this approach by fabricating a long-length composite wire based on RRP technology and high-C subelements. This project is comprised of two stages. The first stage involves development and optimization of the high-C subelements such as the Cu/Gd2O3 ratio. The second stage involves fabrication of a 61-restack RRP wire with the final diameter of 0.7 and 1.0 mm using the optimized high-C subelements. The fabrication and measurement results of the high-C subelements and the final wires as well as the following steps for this project are reported and discussed.

Primary authors: XU, Xingchen (Fermi National Accelerator Lab); BUEHLER, Carl (Bruker EST); FIELD, Michael (Bruker OST); SAILER, Bernd (Bruker EAS GmbH); MIAO, Hanping (Bruker-Oxford Superconducting Technology); WANIOR, Matheus (Bruker EAS); BARZI, emanuela (Fermilab); Dr ZLOBIN, Alexander (Fermilab)

Presenter: XU, Xingchen (Fermi National Accelerator Lab)

Session Classification: M2Po2C - Nb Properties and A15 Conductor