



Contribution ID: 483

Type: **Presentation**

Recent progress on iron-based superconductors: potentials for high-field applications

Thursday 27 June 2019 15:00 (15 minutes)

Iron-based superconductors (IBS) since their discovery appeared very promising for applications at 4.2K and high fields. Two technologies are advancing towards realistic applications, namely Powder-In-Tube (PIT) and Coated Conductors (CCs). PIT tapes of the 122 family attained critical current densities J_c of 105A/cm² at 15T with hot pressing, while CCs on commercially available IBAD and RABiTS templates showed J_c up to 105A/cm² at 30T for both 122 and 11 families. Current efforts are focused on the development of scalable techniques for PIT conductors and the identification of simpler substrate architectures for CC. On the other hand, IBS continue to attract research interest because of their rich structural variety. In particular, the recently discovered CaAF_e4As₄ phase (1144) could be a promising candidate for superconducting wires and tapes.

In this talk, the state of the art of IBS will be reviewed.

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Session Classification: Magnets

Track Classification: Superconducting magnets & associated technologies