MSE SEMINAR

February 16, 2018
113 McBryde Hall
3:30 – 4:30 PM
Refreshments at 3:00 PM

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"Advanced Characterization of Materials for Superconducting Radiofrequency Accelerator Cavities"

ABSTRACT

Superconducting radiofrequency accelerators are a key tool of frontier science. Moving SRF accelerator technology forward requires, among other things, higher particle energies, increased beam current and reduced cost per unit of performance. Accelerator performance is chiefly controlled by the superconducting niobium cavities at their heart. Historically, many advances in SRF cavities have come empirically, through the iterative procedure of modifying processing and then performance testing. However, material structure is directly responsible for performance. Understanding, the link between processing, structure, and performance will streamline and accelerate the research process. In order to connect processing, structure, and performance, accurate and robust materials characterization methods are needed. Here several examples are presented, showing how two methods in particular, SIMS and EBSD, are being used to further understanding of materials based SRF technologies.

BIOSKETCH

Jay Tuggle is a PhD student advised by Dr. Michael Kelley. He received his undergraduate degree in chemistry from Radford University and currently works at the ICTAS nanoscale characterization and fabrication laboratory. His research focuses on the characterization of materials used for SRF cavities.