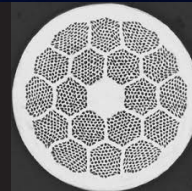


Ross Group Distinguished Speaker



*School of Materials Science
and Engineering
Oklahoma State University*

Superconducting Wires



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**Wednesday, October 9, 2019
11:00–12:00 Noon
Room 153, Helmerich Research
Center Oklahoma State University
526 North Elgin Ave, Tulsa, OK 74106**

ABSTRACT

There are several thousand superconducting materials but only a hand full are fabricated into wires and used for practical applications. In 1911 Onnes discovered that first superconducting materials, which have zero resistance below their superconducting transition temperature. He immediately recognized that these materials could carry enormous electrical current. However, these early hopes were dashed because the current in the wire generates a magnetic field that kills the superconductivity. The first practical superconductors were Nb-based Nb-Ti and Nb₃Sn, the so-called low temperature superconductors, although they were not called low-temperature superconductors when they were discovered. The high-temperature superconductors were discovered in 1986, and the first of these materials vaulted the superconducting transition temperature from 23 K, where it had been stuck for many years, to 35 K – thus the name. This talk with review Nb-based low-temperature superconductors and the high-temperature superconductors, and it will end with a review of on-going work on Bi-2212 (Bi₂Sr₂CaCu₂O₈) wire for high-field magnet applications.

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SPEAKER



Eric Hellstrom did his BS in Materials Science and Engineering at the University of Utah, and his MS and PhD in Materials Science and Engineering at Stanford University studying electronic ceramic materials. He was a postdoctoral fellow in the Netherlands and then worked at Sandia National

Laboratories in Albuquerque. He moved from Sandia to the University of Wisconsin-Madison in the Department of Materials Science and Engineering. There he became part of the Applied Superconductivity Center (ASC) and began working on high temperature superconductors from the time they were discovered. He moved with ASC to the National High Magnetic Field Laboratory at Florida State University in 2006 where he continues to work on high-temperature superconductors for the next generation of high-field magnets. Eric Hellstrom can be reached at hellstrom@asc.magnet.fsu.edu

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