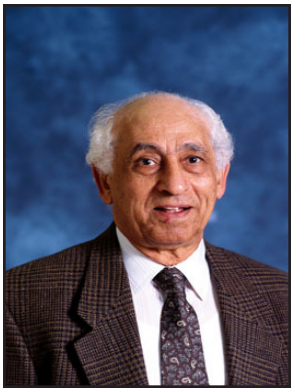
T_cSAM Bi-Weekly Brown Bag Seminar

Texas Center for Superconductivity and Advanced Materials



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"The Promise of MgB_2 Superconductor for Electric Power Applications"

Friday, May 7, 2004

Room 102, University of Houston Science Center
12:00 p.m. – 1:00 p.m.

Abstract

Since the discovery of its superconductivity in early 2001, Magnesium Diboride (MgB_2) has drawn a great deal of worldwide research interest. This new high temperature superconductor has a critical temperature of 39.4 K, an upper critical field of 29 Tesla, and a relatively long coherence length of about 5 nm. In addition, MgB_2 exhibits no intrinsic current blockage by grain boundaries and comparatively weak anisotropy and thermal fluctuations. Research on MgB_2 at T_cSAM demonstrates promising results of high current carrying capability sustained to applied magnetic field in the temperature range of liquid hydrogen and liquid neon. Thirty-meter long Fe-sheathed MgB_2 wires and tapes have been fabricated using the powder-in-tube method with ultra-fine starting precursors. High critical current density of 3×10^5 A/cm^2 at 20 K and self-field has been obtained. Coils wound from MgB_2 wires also possess superior superconducting properties. These results reveal the promise of MgB_2 for electric power applications at 20-5 K.

Persons with disabilities who require special accommodations in attending this lecture should call (713) 743-8210 as soon as possible.

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