T_cSUH Special Seminar

Texas Center for Superconductivity at the University of Houston

Alexis P. Malozemoff

2004-2005 Distinguished Lecturer of the IEEE Council on Superconductivity, Executive Vice President and Chief Technical Officer of American Superconductor Corporation, Westborough, MA

"The New Generation of Superconductor Electric Power Equipment"

Monday, May 23, 2005

Room 102, University of Houston Science Center
4:30 p.m. - 5:30 p.m.

Abstract

Rising energy demands, driven by population and economic growth, face an increasing clash with resource, land use and other environmental limits. Amidst the fierce debate over general energy policy priorities, there is broad consensus on the urgent need to modernize and strengthen the electric power grid. High Temperature Superconductor (HTS) wire is one of the keys to achieving these goals. Superconductivity is the amazing property of certain materials to conduct electricity with no resistive loss and high current density, enabling a new generation of electrical power equipment that is efficient, compact and very low in environmental impact. This vision has been enabled by the successful development and commercialization of robust, long-length, high performance HTS wires.

Examples of HTS applications, all in an advanced prototype stage, include:

- High-capacity, controllable HTS cables, which offer increased delivery capacity, essentially zero local environmental impact and the ability to offload overburdened sections of the grid;
- Dynamic HTS synchronous condensers offer large amounts of rapidly adjusted reactive power to improve grid stability and efficiency;
- Utility generators that produce more electricity for every unit of fuel consumed; and
- Fault current limiters and transformers that enable more reliable, lower cost operation of the grid.

This presentation will describe these applications, along with the superconductor wire that underlies them, and will assess their potential impact on the major grid challenges our society faces today.

Bio

Dr. Malozemoff is Executive Vice President and Chief Technical Officer of American Superconductor Corporation. He is responsible for R&D strategy, advanced conductor development and the intellectual property portfolio. Before joining AMSC in 1991, Dr. Malozemoff served for 19 years as staff scientist, manager and senior manager in magnetism, superconductivity and condensed matter physics at IBM Research, Yorktown Heights NY. Beginning in 1987, he acted as IBM Research Division Coordinator for High Temperature Superconductivity.
He has more than 30 years of experience in superconducting materials and systems, as well as in magnetic materials and devices, and has numerous publications and patents. Recognized for his pioneering work in the field of superconductivity, Dr.Malozemoff is a co-discoverer of "giant flux creep." This phenomenon is a factor in determining the maximum amount of current a superconductor can carry, and is a key element in the development of applications with superconducting materials. He is also well known for his work on magnetic materials and his discoveries related to magnetic bubble technologies.

A graduate of Harvard and Stanford Universities, Dr. Malozemoff is a Fellow of the American Physical Society and Senior Member of IEEE. He has been active in the magnetism and superconductivity technical community as chairman of the Conference on Magnetism and Magnetic Materials, and through a variety of national committees and centers of hightemperature- superconductivity research and development.

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

TcSUH

TEXAS CENTER FOR SUPERCONDUCTIVITY
AT THE UNIVERSITY OF HOUSTON