

What's New in the World of Superconductivity (October)

Power

Nexans (October 5, 2004)

Nexans has announced that it will coordinate a European project for the development of an HTS power cable using second-generation coated conductors. The project will be called "Super3C" (**S**uper **C**oated **C**onductor **C**able) and will attempt to develop a complete HTS coated conductor cable in addition to manufacturing and testing a one-phase, 30-meter long, 10 kV, 1 kA cable model. The European Community within the Sixth Framework Programme for research and technical development commissioned the Super3C project and will fund approximately half the cost of the three-year project, which started on June 1, 2004. In addition to Nexans, the project team includes members from Germany (European High Temperature Superconductors, E.ON Energie, E.ON Engineering, and the Center for Functional Materials [ZFW]), Spain (Barcelona Institute of Materials Sciences [CSIC] and Labein), Finland (Tampere University of Technology), France (Air Liquide), and Slovakia (Bratislava Institute of Electrical Engineering). Nexans will be responsible for the assembly of the cable model and will contribute to the fabrication of the coated conductor HTS tape layers using a metal-organic deposition process.

Source:

"Nexans coordinates the first European project on second generation superconducting cable"
Nexans press release (October 5, 2004)

<http://www.nexans.fr/internet/Content.nx?f=h&contentId=1945>

American Superconductor Corporation and Northrop Grumman Corporation (October 7, 2004)

American Superconductor Corporation (AMSC) and Northrop Grumman Marine Systems, a unit of the Electronic Systems sector of Northrop Grumman Corporation, have announced the formation of a strategic alliance to develop, market, and sell products using HTS wire to the U.S. military. Initially, the joint sales and marketing effort will focus on HTS electric propulsion systems to be sold to the U.S. Navy. However, the alliance will also cover the development of HTS propulsion systems, energy storage and conversion, transformers, and pulse-power applications and the sale of all these products to different branches of the U.S. military. The two companies are presently collaborating on the development of a 36.5-MW HTS ship propulsion motor under contract to the U.S. Navy's Office of Naval Research and hope to qualify this advanced motor design as an alternative to conventional and other advanced motor designs for U.S. Navy applications around 2008. Commented Greg Yurek, Chief Executive Officer of AMSC, "Together, AMSC and Northrop Grumman provide a respected, innovative, and leading edge capability for military customers pursuing transformational HTS technology. This new strategic business alliance adds considerable strength to our sales, marketing and development of current and future HTS-based solutions for all branches of the U.S. military." The initial term of the alliance is six years.

Source:

“American Superconductor and Northrop Grumman Form Strategic Alliance to Develop and Market High Temperature Superconductor Products for U.S. Military”

American Superconductor Corporation press release (October 7, 2004)

http://phx.corporate-ir.net/phoenix.zhtml?c=86422&p=irol-newsArticle_Print&ID=627643&highlight

Magnet

Oxford Instruments plc and Varian, Inc. (October 11, 2004)

Oxford Instruments plc has signed a new contract with Varian Inc. for the continued supply of NMR products, including superconducting magnets, for Varian's NMR instruments. The three-year contract builds on a long-standing supplier agreement between the two companies and specifies the minimum volume of business until March 2006 and provides a framework for supply in the following two years. The demand from the NMR instrument market is expected to continue at the present levels.

Source:

“Contract Extension signed with Varian Inc.”

Oxford Instruments plc press release (October 11, 2004)

<http://www.oxinst.com/OIGNWP740.htm>

Varian, Inc. (October 11, 2004)

Varian, Inc. announced a definitive agreement to acquire Magnex Scientific Limited (Oxford, U.K.) for US \$32 million in cash and assumed net debt, subject to certain net asset adjustments. Magnex designs and manufactures magnetic resonance (MR) imaging magnets and is a major supplier of vertical high-resolution NMR magnets, superconducting magnets for Fourier Transform mass spectroscopy (FTMS), and MR microscopy gradients. The transaction will include the possibility of additional purchase price payments over three years, depending on performance relative to certain financial targets. Varian expects the acquisition to generate external revenues of \$15-18 million in the first year, excluding internal magnet shipments for existing NMR and MR imaging product lines. Magnex currently supplies Varian with about \$10 million in products annually. Magnex will be operated as a wholly owned subsidiary of Varian, Inc. and will continue to offer its complete range of MR imaging, NMR and FTMS magnets to its existing customer base.

Source:

“Varian, Inc. to Acquire Magnex Scientific Ltd.”

Varian, Inc. press release (October 11, 2004)

http://www.corporate-ir.net/ireye/ir_site.zhtml?ticker=VARI&script=410&layout=-6&item_id=628624

Communication

ISCO International, Inc. (October 25, 2004)

ISCO International, Inc. has reported its financial results for the third quarter ending September 30, 2004. Consolidated net revenues increased to US \$707,000 from \$378,000 for the same period in the previous fiscal year. The consolidated net loss was \$1,714,000 for the quarter, compared to \$1,573,000 for the same period in the previous fiscal year. The gross margin increased from 35% for the first nine months of 2003 to 38% for the first nine months of 2004.

Source:

“ISCO INTERNATIONAL REPORTS QUARTERLY RESULTS AND OTHER NEWS”

ISCO International, Inc. press release (October 25, 2004)

<http://www.iscointl.com/>

Basic

Brookhaven National Laboratory (October 27, 2004)

Researchers at the U.S. Department of Energy's Brookhaven National Laboratory have found evidence of a rarely seen “hole crystal”. A hole crystal is a rigid, ordered arrangement of holes (locations where electrons are absent). The discovery was made in a cuprate compound composed of strontium, copper, and oxygen (SCO) using x-rays from the National Synchrotron Light Source. Lead researcher Peter Abbamonte commented, “A hole crystal is a very unusual phenomenon. Its existence is a direct result of the correlations between holes, which are believed to produce superconductivity in other cuprates... the hole crystal in SCO may be a 'low-dimensional' precursor to stripes, meaning it exists only along the copper-oxide ladders, rather than in an entire copper-oxide plane.” The researchers plan to continue their research by varying the chemical composition of SCO to see if this changes the hole crystal and to examine other cuprates to determine whether stripes are related to the hole crystal. The group's research results appeared in the October 28, 2004, issue of *Nature*.

Source:

“Research on 'holes' may unearth causes of superconductivity”

Brookhaven National Laboratory press release (October 27, 2004)

http://www.bnl.gov/bnlweb/pubaf/pr/PR_display.asp?prID=04-94

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