(**Editors Note**: This paper was presented by Hans Schneider-Muntau of the NHMFL. Unfortunately, only the abstract is available since the text of the paper was not received by the time of publication of the proceedings.)

Progress in High Temperature Superconductivity for Magnet Applications

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Abstract

High temperature superconductors (HTS) have progressed greatly in the 10 years since their discoveries. Bi-Sr-Ca-Cu-O conductors are fabricated on long length-scales with transport critical current density (J_c) sufficient for technical applications. Recent breakthroughs with Y-Ba-Cu-O have led to incredibly large transport J_c in short lengths, which, if scaleable, would lead to a plethora of new applications. Hg-Ba-Ca-Cu-O materials have significantly larger critical temperature (T_c) than other HTS materials (up to 135K), and have the potential to be a significant second-generation conductor.

In this paper, the status of HTS conductor development is reviewed with a focus on applicability to practical magnet systems. Issues such as scale-up, mechanical properties, thermal properties (*i.e.*, stability and quench behavior), and intrinsic superconducting properties, are discussed. Progress on system applications of Bi-Sr-Ca-Cu-O conductors (*e.g.*, motors and high field solenoids) and on the latest developments with Y-Ba-Cu-O coated conductors are reviewed. Recent breakthroughs in the processing of Hg-Ba-Ca-Cu-O materials with metallic substrates or sheaths are also presented and the practicality of using a high-toxicity material in commercial systems is analyzed.