

High- T_c Bulk and Coated Conductors and The Applications

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YBCO coated conductors and bulk superconductors have been developed for the electrical powder and levitation applications. The YBCO coated conductors is the second generation superconducting wire which can replace BSCCO wires. The YBCO has high current-carrying capacity even at high magnetic fields as well as the high magnetic levitation force. Long-length YBCO coated conductor tapes are now developing in many countries and the promising results are reported. 30 meter long length YBCO coated conductors was fabricated by a pulsed laser deposition method using IBAD(Ion beam assisted deposition)-processed buffered substrates. Also, the RABiTS(Rolling assisted biaxially textured substrates) process was developed and is now widely used to make long length coated conductors. Many researchers are trying to find a cost-effective way. Some chemical processes like metal organic chemical vapor deposition (MOCVD) and metal organic deposition (MOD) are a promising one. In addition to the coated conductor development, directionally grown YBCO bulk superconductor has been developed for the levitation applications such as low friction bearings, superconductor magnets, current leads, fault current materials and so on. Some of the bulk applications are now possible and others will be come true in near future. In the review paper, we will discuss the present state of the fabrication technologies and the applications of the YBCO coated conductors and bulk superconductors.

Keywords: coated conductors, bulk superconductors, applications

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