

Superconductors in Applications; Some Practical Aspects

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Abstract— The first blush of success in the search for a new superconductor is usually a high transition temperature, T_c . However, all power applications of superconductors and most other applications requires good current carrying capacity, usually characterized by a critical current I_c , within substantial magnetic fields, usually characterized by a critical magnetic field H_c . Furthermore, a number of other characteristics must be satisfied before commercial success can be obtained, such as acceptable cost, mechanical strength, stabilizers, and appropriate insulation materials. I examine a number of superconductors, starting with the workhorse $NbTi_x$, and look at the hard road to success for the successful commercialization of a new superconductor. I also review the applications, potential and actual, in which superconductors might be used.

Index Terms — superconducting materials, superconducting devices, high-temperature superconductors, reviews

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