

Book Review

MAGNETISM IN THE NINETIES

Edited by A.J. Freeman and K.A. Gschneidner, Jr.

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The book is available from Elsevier, P.O. Box 211, 1000 AE Amsterdam, The Netherlands, or in the USA/Canada from Elsevier Science Publishing Co., P.O. Box 882, Madison Square Station, New York.

Magnetism in the Nineties is a rather special book compiled to commemorate the appearance of the 100th volume of the *Journal of Magnetism and Magnetic Materials*. The aim was to provide a historical perspective, to identify the most important issues and to outline a perspective for developments in 1990's.

The book contains 32 papers that cover a wide spectrum of scientific and technical aspects of magnetism, such as permanent and semiconducting magnets, high- T_c superconductors, amorphous magnetic materials, rare-earth intermetallic phases and others.

The net effect is an interesting and comprehensive coverage of the field that usually appears in highly fragmented forms in a multitude of journals. It is an essential reading for those working in magnetic science and technology.

For the readers of this journal several papers represent a compulsory reading. The paper by K.J. Strnat and R.M.W. Strnat reviews the development of rare-earth cobalt-based permanent magnets, summarizes magnetic properties of these magnets and discusses practical aspects of Re-Co magnets such as magnetic and chemical stability and engineering properties. The manufacturing technology,

including machining, handling and magnetizing is also overviewed. The applications of Re-Co magnets, including bonded magnets, are also outlined.

Nd-Fe-B permanent magnets were reviewed by J.F. Herbst and J.J. Croat. Intrinsic characteristics of the $R_2Fe_{14}B$ compounds were described and the properties of practical NdFeB magnets prepared by the two methods in current commercial use, namely, the rapid solidification technique of melt spinning and the sintering approach, were discussed. This paper is thus the most recent review of NdFeB permanent magnets that revolutionized the miniaturization of devices in which the magnets were previously a major part of the volume and weight, and that extended the application of permanent magnetism to new branches of industry.

Magnetic properties of the high- T_c cuprate superconductors were discussed by D.C. Johnston. The evolution of the magnetism upon doping the insulating antiferromagnetic "parent" compound to form the high-temperature superconductors was described. L.J. Swartzendruber, in a lean but useful contribution reviewed the magnetic units and constants, gave a list of data, numbers and instructions for conversion between cgs and SI units.

The high standard of presentation is matched by a high level of usefulness and of physical attributes: excellent illustrations, high-quality paper, printing and binding. In summary, this is a historic publication which will be of great interest to anyone engaged in magnetism.

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