

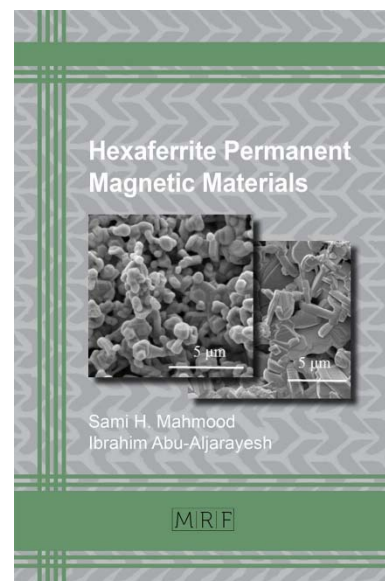
# Hexaferrite Permanent Magnetic Materials

Sami H. Mahmood, Ibrahim Abu-Aljarayesh

Handbook

This concise book is intended to provide an overview of the basic concepts of magnetism and magnetic properties pertinent to permanent magnetic materials. Emphasis is placed on hexaferrite materials for permanent magnet applications, with M-type ferrites as the focal point. The discussion is kept brief, in an attempt to provide a wide spectrum of knowledge for quick reference to specialized scientists and engineers in this ever increasing industry.

*Keyword:* Hexaferrite Permanent Magnetic Materials| Permanent Magnets| Ferrite Magnets| Sm-Co Magnets| Nd-Fe-B Magnets| Coercivity| Magnetic Dipole Moments| Magnetic Materials| Free Energies of a Ferromagnet| Domains| Hysteresis| M-Type Hexaferrite| Structural Properties| Magnetic Properties| Synthesis| Motor| Transducer| Microwave Absorption| Passive Microwave Devices| Hysteresis| Remanence| Coercivity| Thermal Stability| Recording processes



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Summary:

The relatively high metallicity of magnetic materials for practical applications imposes limitations for their efficient use due to their unfavorable characteristics. Accordingly, magnetic oxides with ferromagnetic properties emerged as the most widely used magnetic materials for practical applications, owing to their characteristic high resistivity and low eddy current losses, chemical stability, simplicity of production in mass quantities, and other favorable characteristics. An important class of these oxides is the class of hexagonal ferrites developed in the early 1950's, which dominated the world market of permanent magnet applications since the end of the 1980's. Among these ferrites, the magnetoplumbite (M-type) hexaferrite, is produced nowadays in large quantities at very competitive low prices, thus providing the permanent magnet market with probably the most cost-effective magnetic material.

This concise book is intended to provide an overview of the basic concepts of magnetism and magnetic properties pertinent to permanent magnetic materials, importance of these materials in terms of their market share and versatility of practical use, synthesis techniques, and routes adopted for the modification and tuning of their magnetic properties. Emphasis is placed on hexaferrite materials for permanent magnet applications, with M-type ferrites as the focal point. The discussion is kept brief, in an attempt to provide a wide spectrum of knowledge for quick reference to specialized scientists and engineers in this ever increasing industry.