DESCRIPTION

A comprehensive coverage of the physical properties and real-world applications of magnetic nanostructures

This book discusses how the important properties of materials such as the cohesive energy, and the electronic and vibrational structures are affected when materials have at least one length in the nanometer range. The author uses relatively simple models of the solid state to explain why these changes in the size and dimension in the nanometer regime occur. The text also reviews the physics of magnetism and experimental methods of measuring magnetic properties necessary to understanding how nanosizing affects magnetism. Various kinds of magnetic structures are presented by the author in order to explain how nanosizing influences their magnetic properties. The book also presents potential and actual applications of nanomaterials in the fields of medicine and computer data storage.

Physics of Magnetic Nanostructures:

• Covers the magnetism in carbon and born nitride nanostructures, bulk nanostructured magnetic materials, nanostructured magnetic semiconductors, and the fabrication of magnetic nanostructures

• Discusses emerging applications of nanomaterials such as targeted delivery of drugs, enhancement of images in MRI, ferrofluids, and magnetic computer data storage

• Includes end-of-chapter exercises and five appendices
Physics of Magnetic Nanostructures is written for senior undergraduate and graduate students in physics and nanotechnology, material scientists, chemists, and physicists.

ABOUT THE AUTHOR

Frank J. Owens, PhD., is a research professor in the Department of Physics at Hunter College and member of the graduate faculty at City University of New York. From 1990 until 2008, Dr. Owens was a senior research physicist for the US Army Armament Research Engineering and Development Center (ARDEC). Dr. Owens is the author of more than six books and more than 180 journal publications. He is a Fellow of the American Physical Society.

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