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This unique handbook compiles and details cutting-edge research in nanomagnetism and its applications in spintronics, magnetoplasmonics, and nonlinear magneto-optics. Fundamental aspects of magnetism relevant to nanodevices and new spin-transfer torque random-access memory (STT-RAM), current-induced domain wall motion memory, and spin torque oscillators, as well as highly anisotropic materials and topics on magnetization damping are developed in detail in the book. New paradigms such as molecule-based magnets (MBMs), which are a promisingly adaptive class of solids poised to open new frontiers of exploration, are also covered.

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Rosa Alejandra Lukaszew has been working in experimental condensed matter physics since the mid-nineties. Her field of research comprises thin films and nanostructures, and aspects of her work have been devoted to magnetic thin films and nanostructures spanning magnetic anisotropy, multilayer engineering, spin-dependent tunneling, and magneto-plasmonics. She has secured significant funding from several US national agencies (DOE, DARPA, DTRA, and NSF) for her past and ongoing research projects. She has collaborated and continues to collaborate with leading experts in the field, many of whom are contributors to this book. She has also been an active member of the Magnetic Interfaces and Nanostructures Division of the American AVS. Dr. Lukaszew has published over 100 articles in peer-reviewed journals and has presented many invited talks at several international conferences.

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