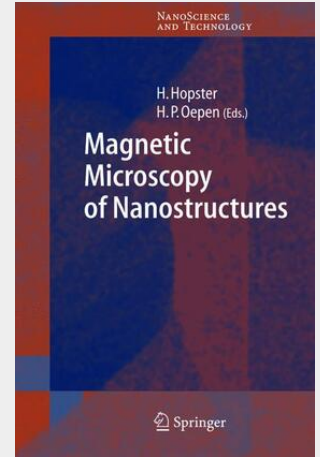


Magnetic Microscopy of Nanostructures

In recent years, a new field in science has been growing tremendously, i. e., the research on nanostructures. In the early beginning, impetus came from different disciplines, like physics, chemistry, and biology, that proposed the possibility of producing structures in the sub-micron range. The worldwide operating electronic companies realized that this would open up new fields of application, and they proposed very challenging projects for the near future. Particularly, nanomagnetism became the focus of new concepts and funding programs, like spintronics or magnetoelectronics. These new concepts created a strong impact on the research field of fabricating nanoscaled magnetic structures. Simultaneously, a demand for appropriate analyzing tools with high spatial resolution arose. Since then, the development of new techniques and the improvement of existing techniques that have the potential of analyzing magnetic properties with high spatial resolution have undergone a renaissance. Aiming at systems in the range of some 10 nm means that the analyzing techniques have to go beyond that scale in their resolving power. In parallel to the efforts in the commercial sector, a new branch has been established in basic research, i. e., nanomagnetism, that is concerned with the underlying physics of the fabrication, analyzing techniques, and nano-scaled structures. The progress in one of these fields is inherently coupled with better knowledge or understanding and, hence, success in the other fields. The imaging technique – as a synonym for spatial resolution – plays a key role in this triangle. In this book, we bring together the state-of-the-art techniques of magnetic imaging.

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