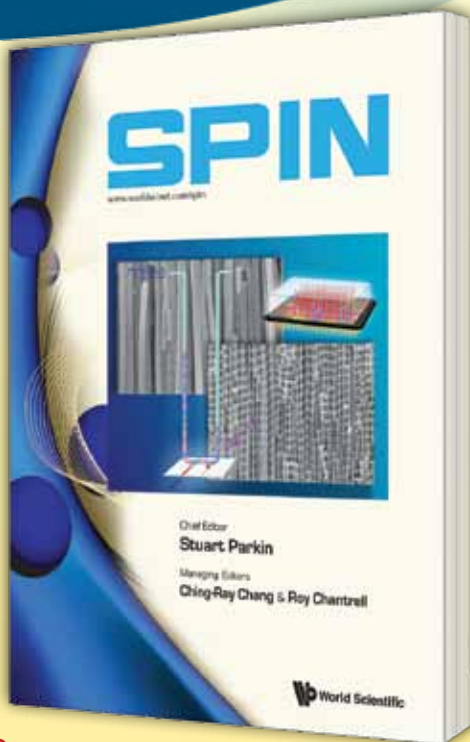


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## Aims and Scope

Spin electronics is a rapidly emerging field which is based on taking advantage of the unique properties of the spin of the electron, the nucleus and other fundamental particles, as well as that of the photon. Spin electronics has special importance as conventional electronics reaches its physical limitations. Novel sensing, memory and logic devices, which rely on generating, manipulating and detecting the electron's spin, as well as using currents of spin-polarized electrons to manipulate magnetization in the form of magnetic nanoelements and magnetic domain walls, have emerged in recent years. Spin electronic devices in the form of highly sensitive read sensors for magnetic recording have been a key component of high capacity magnetic disk drives for more than a decade: they enabled a vast increase in the storage capacity of disk drives by several orders of magnitude and are key to today's information age. Solid state memory devices such as Magnetic Random Access Memory (MRAM) have recently entered the market. Other exciting possibilities relate to very dense and high performance memory-storage devices such as Racetrack Memory, as well as low power magnetic logic, and applications of spintronic sensing devices such as diagnostic biomagnetic lab-on-a-chip devices. Many of these applications require the integration of magnetic and semiconducting materials and a fundamental understanding of both magnetic and semiconductor physics and technology: this is especially important if spin electronics is to become the electronics of the future. Spin electronics encompasses a multidisciplinary research effort involving magnetism, semiconductor electronics, materials science, chemistry and biology. *SPIN* aims to provide a forum for the presentation of research and review articles of interest to all researchers in the field.

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### The Many Faces of Organic Magnetoresistance

W. Wagemans, P. Janssen, A. J. Schellekens, F. L. Bloom, P. A. Bobbert and B. Koopmans  
(Eindhoven University of Technology, The Netherlands)

### Growth of Quantum Well Films of Topological Insulator $\text{Bi}_2\text{Se}_3$ on Insulating Substrate

Cui-Zu Chang, Ke He, Li-Li Wang and Xu-Cun Ma (Chinese Academy of Sciences, China), Min-Hao Liu, Zuo-Cheng Zhang, Xi Chen, Ya-Yu Wang and Qi-Kun Xue (Tsinghua University, China)

### Synchronization of Spin Torque Nano-Oscillators from an Induced Corrugated Attractor

HaoHsuan Chen, JuiHang Chang and ChingRay Chang  
(National Taiwan University, Taiwan)

### Optimization and Integration of Magnetoresistive Sensors

Paulo P. Freitas, Susana Cardoso, Ricardo Ferreira, Verónica R. Martins, André Guedes, Filipe Cardoso, Joana Loureiro, Rita Macedo, Rui C. Chaves and José Pedro Amaral (Instituto de Sistemas e Computadores-Microsistemas e Nanotecnologias (INESC-MN) and Institute for Nanosciences and Nanotechnologies, Portugal)

### Interface Magnetism in Ferromagnetic Metal-Compound Semiconductor Hybrid Structures

Aidan T. Hindmarch (University of Nottingham, UK)

### Refractive Index and Snell's Law for Dipole-Exchange Spin Waves in Restricted Geometry

Dae-Eun Jeong, Dong-Soo Han and Sang-Koog Kim  
(Seoul National University, Korea)

### Topological Insulator and the Dirac Equation

Shun-Qing Shen, Wen-Yu Shan and Hai-Zhou Lu  
(The University of Hong Kong, Hong Kong)

### Patterned Nano-Scale Magnetic Tunnel Junctions with Different Geometrical Structures

Z. C. Wen, Y. Wang, G. Q. Yu, H. X. Wei, B. S. Zhang, K. Xu and X. F. Han (Chinese Academy of Science, China)

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