

CONTENTS

Preface.....	ix
Introduction.....	xiii

PART 1

MAGNETIC ENTITIES AND MATERIALS FOR BIOMEDICAL APPLICATIONS

Magnetic Biosensors—From Molecule to System.....	9
M. W. J. Prins	
The In-flow Capture of Superparamagnetic Nanoparticles for Targeting of Gene Therapeutics.....	20
N. J. Darton, B. Hallmark, X. Han, S. Palit, M. R. Mackley, D. Darling, F. Farzaneh, and N. K. H. Slater	
Progress in Using Magnetic Nanoobjects for Biomedical Diagnostics.....	28
N. Kataeva, J. Schotter, A. Shoshi, R. Heer, M. Eggeling, O. Bethge, C. Nöhhammer, and H. Brückl	
Templated Growth and Selective Functionalization of Magnetic Nanowires.....	34
F. van Belle, J. J. Palfreyman, W. S. Lew, T. Mitrelias, and J. A. C. Bland	
Controlled Manipulation of Nanoentities in Suspension.....	44
D. L. Fan, R. C. Cammarata, and C. L. Chien	
Digitally Encoded Exchange Biased Multilayers.....	52
M. Barbagallo, F. van Belle, A. Ionescu, and J. A. C. Bland	
Magnetic Microtags and Magnetic Encoding for Applications in Biotechnology.....	60
T. Mitrelias, T. Trypiniotis, F. van Belle, K. P. Kopper, S. J. Steinmuller, J. A. C. Bland, and P. A. Robertson	
High Throughput Biological Analysis Using Multi-bit Magnetic Digital Planar Tags.....	74
B. Hong, J.-R. Jeong, J. Llandro, T. J. Hayward, A. Ionescu, T. Trypiniotis, T. Mitrelias, K. P. Kopper, S. J. Steinmuller, and J. A. C. Bland	
Magnetically Controlled Shape Memory Behaviour—Materials and Applications.....	82
A. P. Gandy, A. Sheikh, K. Neumann, K.-U. Neumann, D. Pooley, and K. R. A. Ziebeck	

PART 2

MAGNETIC BIOSENSORS AND DETECTION SYSTEMS

Giant Magnetoresistive Biochips for Biomarker Detection and Genotyping: An Overview	101
S. X. Wang	
Towards Magnetic Suspension Assay Technology	111
T. J. Hayward, J. Llandro, K. P. Kopper, T. Trypiniotis, T. Mitrelias, J. A. C. Bland, and C. H. W. Barnes	
Detection of Magnetic-based Biomolecules Using MR Sensors	125
M. Volmer and M. Avram	
Giant Magnetoimpedance for Biosensing in Drug Delivery	131
V. Fal-Miyar, A. Kumar, S. Mohapatra, S. Shirley, N. A. Frey, J. M. Barandiarán, and G. V. Kurllyandskaya	
Residence Times Difference Fluxgate Magnetometer for Magnetic Biosensing	139
B. Andò, A. Ascia, S. Baglio, A. R. Bulsara, V. In, N. Pitrone, and C. Trigona	
Integrated Spintronic Platforms for Biomolecular Recognition Detection	150
V. C. Martins, F. A. Cardoso, J. Loureiro, M. Mercier, J. Germano, S. Cardoso, R. Ferreira, L. P. Fonesca, L. Sousa, M. S. Piedade, and P. P. Freitas	
Moment Selective Digital Detection of Single Magnetic Beads for Multiplexed Bioassays	176
J. Llandro, T. J. Hayward, J. A. C. Bland, D. Morecroft, F. J. Castaño, I. A. Colin, and C. A. Ross	
Advanced Magnetoresistance Sensing of Rotation Rate for Biomedical Applications	186
M. Avram, M. Volmer, and A. Avram	
Author Index	195