
Table of Contents

Foreword.....	vii
Preface.....	ix
Editor Bios.....	xi
List of Contributors.....	xiii

Chapter 1 Introduction to Biomedical Applications of Magnetic Nanoparticles.....	1
---	---

SECTION I Magnetic Particle Fundamentals

Chapter 2 A Conceptual Introduction to the Fundamentals of Magnetic Fields, Magnetic Materials, and Magnetic Particles for Biomedical Applications.....	9
Chapter 3 Magnetic Forces and Torques: Separation, Tweezing, and Materials Assembly in Biology	33
Chapter 4 Colloidal Interactions of Magnetic Nanoparticles	59
Chapter 5 Magnetic Characterization: Instruments and Methods	83

SECTION II Magnetic Particle Applications

Chapter 6 Synthesis and Functionalization of Magnetic Particles.....	123
Chapter 7 Nanomagnetic Actuation: Controlling Cell Behavior with Magnetic Nanoparticles.....	159
Chapter 8 Magnetic Nanoparticles: Challenges and Opportunities in Drug Delivery	177
Chapter 9 Magnetic Particle Biosensors	197
Chapter 10 Magnetic Contrast Imaging: Magnetic Nanoparticles as Probes in Living Systems.....	241
Chapter 11 Energy Dissipation by Magnetic Nanoparticles: Basic Principles for Biomedical Applications	275
Chapter 12 Toxicology of Magnetic Nanoparticles	305
Index	345