

Preface

Within a short time frame, diagnostic nanomedicine has emerged as a multidisciplinary field that promises to deliver a more specific and sensitive detection of early disease processes. Nanoparticles (particles measuring approximately 1–100 nm) allow incorporation of a high number of detectable tracers or molecules through which they can amplify changes in signal intensity. This book contains 23 chapters dedicated to the use of nanoparticles in biomedical imaging, covering all aspects including the chemistry of nanoparticle synthesis, the physics of contrast and signal-generating mechanisms, the biological and pharmacokinetic profiles, and their use in pre-clinical animal models as well as humans. Experts throughout the world have made contributions for five major imaging modalities, namely the use of nanoparticles in magnetic resonance imaging, nuclear medicine, ultrasound imaging, computed tomography imaging, and optical imaging. We hope that this book may form a foundation for further advances in the field of nanomedicine and diagnostics.

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