

Preface

Over the past decades, nanomaterials are at the leading edge of the rapidly developing field of nanotechnology both in scientific knowledge and in commercial applications. Their unique size-dependent properties make these materials have enormous potential as novel probe candidates in biochemical analysis. Therefore, different types of nanomaterials have been engineered to assemble biomolecules to construct novel molecular probes, named as nano-bio probe. Nano-bio probe combines the advantages both: the specific recognition and catalytic properties of biomaterials and the unique optical, electronic, thermal, and catalytic functions of nanomaterials. In recent years, the nano-bio probe is becoming increasingly popular as a routine bioassay, which could have comparable or even better sensitivity and selectivity to conventional molecular probe, not only for developing analytical and monitoring devices, but also for molecular-scale bioreactors. As expected, it has extended the limits of current molecular probes in biochemical analysis. We wrote this book with two goals: first to provide the reader with a brief overview of nano-bio probe design and application from different aspects, and second to try to introduce our group's work in this exciting field. We wish this book will be helpful to those who with closely related with research interests.

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