

Preface

The first edition of *Physical Biochemistry: Principles and Applications* set out to describe the physical basis and some examples of applications of key physically-based techniques used in Biochemistry and other areas of molecular life science research. In the last decade there has been a noticeable renaissance in some traditional techniques such as X-ray diffraction, ultracentrifugation and electrophoresis in a variety of formats. In the same time-frame 'hyphenated' techniques (e.g. LC-tandem MS) have become much more mainstream and some instrumentation has become available in desktop formats making quite sophisticated analysis possible even in the nonspecialist lab. The emphasis was on a largely nonmathematical treatment at a level appropriate to students in the penultimate year of a Biochemistry course with a view to making these techniques comprehensible and accessible to a level intermediate between a general Biochemistry textbook and a specialist text. The feedback I have had from many readers is that this goal was largely achieved.

My task with this second edition was to retain as much as possible of the description of physical principles whilst updating and integrating new material into a reasonably compact volume. The first edition was strongly influenced by the effects of the then-recent completion of the Human and other large-scale genome sequencing projects. At the time Proteomics and other '-omics' technologies were still relatively new paradigms and bioinformatics approaches largely the province of the specialist. It is remarkable how quickly these technologies have now become embedded in many areas of biochemical research so that they are now perceived as part of the mainstream. In the second edition I have dedicated new chapters to proteomics and bioinformatics, respectively, to reflect this changed situation and to emphasize how interconnected physical and computational techniques have now become.

The second edition required choices to be made and these are inevitably influenced by one's perception of what is needed and useful for students to know at the start of their scientific journey into molecular life science. In making these choices I have continued to be guided by what I perceive to be the most generally-used and helpful techniques but I accept that specialists in one or more technique may disagree.

In preparing this second edition I had help from many of the colleagues listed in the preface to the First Edition. In addition, I must thank Dr Rebecca Green, School of Pharmaceutical Sciences, University of Nottingham, UK, for her invaluable comments on surface plasmon resonance (Chapter 3). I am also indebted to the excellent staff at Wiley's especially my editors, Celia Carden and Fiona Woods for their unfailing encouragement and understanding. However, any errors in the text are my own. I earnestly hope that the reader will find something interesting and thought-provoking in this volume and be encouraged to explore these very powerful approaches in their work.

Prof David Sheehan
University College Cork
June 2008