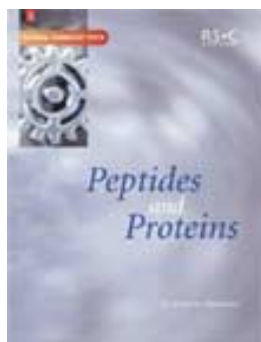


A Short and Peppy Text

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Peptides and Proteins

Shawn Doonan

RSC, Cambridge

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Peptide and protein chemistry is a vast discipline, and introductory texts that do justice to the field are rare. While there are numerous texts that cover this discipline from a biochemical perspective, there are precious few introductory texts that effectively span the field from a chemist's viewpoint whilst not oversimplifying the biological content. This text does an outstanding job.

Peptides and Proteins assumes only a basic knowledge of organic chemistry. The first chapter is introductory and lays out groundwork about amino acids and peptides and their nomenclature and properties. Chapter 2 discusses methods for the chemical synthesis of peptides, including an introduction to common protecting groups, methods for the formation of the peptide bond, and solid-phase peptide synthesis. The author has chosen to include information of the practical concerns of peptide synthesis, such as methods for purifying the peptide product and the occurrence of racemization during synthesis, real-world concerns that point to the difficulties of this deceptively simple process.

Chapter 3 discusses methods for purification of proteins including various forms of chromatography. This chapter provides a very useful introduction to an area that is rarely covered in most introductory text books and difficult for novices to master. The author also includes some information about molecular biological methods for recombinant protein production. Given the importance of recombinant methods for protein production more detail in this area would have been warranted. Chapter 4 deals with methods for the determination of peptide and protein sequences including enzymatic methods, *N*-terminal sequence analysis, amino acid analysis, and mass spectrometry. A clear outline of the chemistry involved in each of these methods is systematically covered.

Chapter 5 deals with the three-dimensional protein structure. A well-paced introduction to elements of secondary structure is discussed in the context of the structure of a small protein, crambin. A short introduction is given to the

methods for determination of protein stability. This chapter then concludes with several examples that relate structure to function. In this regard it is disappointing that the author chose to propagate the original, and increasingly untenable, Phillips–Vernon catalytic mechanism of action of hen egg-white lysozyme rather than the recently revised mechanism that proceeds through a covalent intermediate. However, the efforts made to put the ‘chemistry’ into a biological perspective are appreciated and should serve to stimulate the interests of students.

Chapter 6, the final chapter, strikes a contemporary pose and presents a discussion of bioinformatics and the use of online databases to extract peptide/protein sequence data and structural information. As with the previous chapters, this includes a series of tutorial problems, which in this case are performed online using public domain software and databases. This final chapter is unusual for inclusion in a textbook but is most welcome, given the increasing importance of computational, *in silico*, approaches to the study of peptides and proteins.

Peptides and Proteins does a commendable job of covering the field while remaining an easy-to-read and accessible text. It would form an excellent basis for an undergraduate course and is reasonably priced. One minor point is the choice of cover art, which draws on an image from the RSC ‘visual elements’ project. While of little direct relevance to the quality of the content of the book, I am mystified as to why the source image representing beryllium was chosen! There are well-crafted problem sets throughout with worked solutions, and each chapter ends with a series of well-chosen references to the primary literature, as well as suggestions for further reading. The authors obvious enthusiasm for the subject is evident and a great asset. Potential buyers should be aware that depth of coverage has been sacrificed at the expense of breadth, and so this text would be most useful alongside another recent introductory text, *Aminoacid and Peptide Chemistry*, published by Oxford University Press, especially if to be used as course material for third-year students. *Peptides and Proteins* is most suitable as an introductory teaching text and would be worthwhile for any undergraduate in either chemistry or biochemistry who wishes to learn more about the subject. I also heartily recommend it as a valuable addition to any university library.

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