
Contents

Preface.....	ix
The Author.....	xi
Chapter 1 Introduction to the Solution Chemistry of Proteins.....	1
Amino Groups.....	21
Tyrosine.....	39
Cystine.....	62
Methionine.....	65
Tryptophan.....	68
Arginine.....	72
Histidine.....	75
Carboxyl Groups.....	78
Chemical Cleavage of Peptide Chains.....	84
References.....	87
Chapter 2 Application of Solution Protein Chemistry to the Study of Biopharmaceutical Conformation.....	131
References.....	143
Chapter 3 Chemistry of the Attachment of Proteins and Peptides to Solid Surfaces.....	163
DNA and Protein Microarray.....	163
Solid-Phase Matrices (Including Beads) for Attachment of Protein Probes.....	165
Protein Interaction with Steel ^{100–108} and Titanium ^{109–115}	165
Chemistry for Attachment of Proteins and Peptides to Solid- Phase Matrices.....	168
References.....	178
Chapter 4 Protein Conjugates.....	195
Introduction.....	195
Protein Conjugates.....	198
Albumin Bioconjugates.....	204
Antibody–Protein Conjugates.....	209
Direct Labeling of Antibodies with Radioisotopes.....	213
Antibody–Drug.....	213
Antibody–Radiolabel.....	217
Protein–Carbohydrate Conjugates.....	217

	Polyethylene Glycol	220
	References	230
Chapter 5	Protein Hydrogels	251
	References	254
Chapter 6	Adhesives, Glues, and Sealants.....	281
	Tissue Soldering	283
	Proteins as Tissue Solder Material.....	285
	Collagen.....	285
	Albumin.....	286
	Fibrinogen.....	288
	Fibrin Sealant	289
	Gelatin–Resorcinol–Formaldehyde and Gelatin–Resorcinol– Formaldehyde–Glutaraldehyde	294
	BioGlue®.....	297
	Mussel Adhesive Protein	297
	End Notes	298
	References	299
Chapter 7	Protein Drug Delivery	327
	References	332
Chapter 8	Application of Solution Protein Chemistry to Proteomics	339
	References	368
Chapter 9	Use of Chemical Modification to Produce Biopharmaceutical Products.....	379
	Chemical Modification of Oligosaccharides/Polysaccharides to Produce Therapeutic Products	380
	Chemical Modification of Nucleic Acids	381
	Chemical Modification and the Manufacture of Therapeutic Proteins.....	385
	Chemical Glycosylation	385
	Allergoids	389
	Cross-Linkage	391
	Formaldehyde	394
	Active-Site Blocked Enzymes as Competitive Inhibitors	395
	Miscellaneous Chemical Modification of Proteins Having Therapeutic Value	397
	References	399

Contents	vii
Chapter 10 Food and Agricultural Chemistry	411
References	420