

# CONTENTS

<b>Preface</b> .....	ix
<b>Introduction</b> .....	1
S. P. Rowland and I. D. Kuntz, Jr.	
THE STRUCTURE OF WATER	
1. <b>Thermal Properties of Water in Restrictive Geometries</b> .....	
F. H. Stillinger	
2. <b>Solvation: A Molecular Dynamics Study of a Dipeptide in Water</b> ....	23
M. Karplus and P. J. Rossky	
3. <b>The Structure of Aqueous Systems and the Influence of Electrolytes</b> .	43
W. A. P. Luck	
PERSPECTIVE: MACRO- AND MICROINTERACTIONS OF WATER AND POLYMERS	
4. <b>Water and Proteins: Some History and Current Perspectives</b> .....	75
J. T. Edsall	
5. <b>The Water-Polymer Interface</b> .....	87
A. W. Adamson	
6. <b>Thermodynamic and Related Studies of Water Interacting with Proteins</b> .....	111
J. A. Rupley, P.-H. Yang, and G. Tollin	
PROTEINS: THE MOBILE WATER PHASE	
7. <b>The Structure of Water in Polymers</b> .....	135
C. A. J. Hoeve	
8. <b>Water-Protein Interactions: Nuclear Magnetic Resonance Results on Hydrated Lysozyme</b> .....	147
R. G. Bryant and W. M. Shirley	
9. <b>The Dynamics of Water-Protein Interactions: Results from Measurements of Nuclear Magnetic Relaxation Dispersion</b> .....	157
S. H. Koenig	
10. <b>Distribution of Water in Heterogeneous Food and Model Systems</b> ....	177
P. J. Lillford, A. H. Clark, and D. V. Jones	
PROTEINS: ORDERED WATER	
11. <b>Modeling Water-Protein Interactions in a Protein Crystal</b> .	199
J. Hermans and M. Vacatello	

12.	<b>The Determination of Structural Water by Neutron Protein Crystallography: An Analysis of the Carbon Monoxide Myoglobin Water Structure</b> .....	215
	B. P. Schoenborn and J. C. Hanson	
13.	<b>Density of the Elastin-Water System</b> .....	225
	M. Scandola and G. Pezzin	
14.	<b>Comparison of Weight and Energy Changes in the Absorption of Water by Collagen and Keratin</b> .....	235
	M. Escoubes and M. Pineri	

POLYSACCHARIDE INTERACTIONS WITH WATER

	<b>New Insights into the Crystal Structure Hydration of Polysaccharides</b> .	253
	T. Bluhm, Y. Deslandes, R. H. Marchessault, and P. R. Sundararajan	
16.	<b>Measurement of Bound (Nonfreezing) Water by Differential Scanning Calorimetry</b> .....	273
	S. Deodhar and P. Luner	
17.	<b>Water in Mucopolysaccharides</b> .....	287
	Y. Ikada, M. Suzuki, and H. Iwata	

PERMEATION, TRANSPORT, AND ION SELECTIVITY

18.	<b>Volume Changes During Water Binding to Hair Fibers</b> .....	309
	M. Breuer, E. M. Buras, Jr., and A. Fookson	
19.	<b>Relaxation Studies of Adsorbed Water on Porous Glass: Varying Temperature and Pore Size at Constant Coverages</b> .....	323
	G. Belfort and N. Sinai	
20.	<b>Solute Permeation Through Hydrogel Membranes: Hydrophilic vs. Hydrophobic Solutes</b> .....	347
	S. W. Kim, J. R. Cardinal, S. Wisniewski, and G. M. Zentner	
21.	<b>Water Binding in Regular Copolyoxamide Membranes</b> .....	361
	S. Grossman, D. Tirrell, and O. Vogl	
22.	<b>Diffusion of Water in Rubbers</b> .....	375
	E. Southern and A. G. Thomas	
23.	<b>Hydration Control of Ion Distribution in Polystyrene Sulfonate Gels and Resins</b> .....	387
	J. A. Marinsky, M. M. Reddy, and R. S. Baldwin	
24.	<b>Fluid Exudation and the Load-Deformation Properties of Articular Cartilage during Compression</b> .....	403
	H. Lipshitz	

SYNTHETIC POLYMERS: WATER INTERACTIONS

25.	<b>Water in Nylon</b> .....	433
	H. W. Starkweather, Jr.	
26.	<b>Clustering of Water in Polymers</b> .....	441
	G. L. Brown	

27.	<b>Water Sorption and Its Effect on a Polymer's Dielectric Behavior</b> G. E. Johnson, H. E. Bair, S. Matsuoka, E. W. Anderson, and J. E. Scott	451
28.	<b>Water Absorption in Acid Nafion Membranes</b> . . . . . R. Duplessix, M. Escoubes, B. Rodmacq, F. Volino, E. Roche, A. Eisenberg, and M. Pineri	469
29.	<b>Water Absorption in Neutralized Nafion Membranes</b> . . . . . B. Rodmacq, J. M. Coey, M. Escoubes, E. Roche, R. Duplessix, A. Eisenberg, and M. Pineri	487
SYNTHETIC POLYMERS: WATER AND POLYMER PERFORMANCE		
30.	<b>The Interactions of Water with Epoxy Resins</b> . . . . . P. Moy and F. E. Karasz	505
31.	<b>Glass Transition Temperature of Wet Fibers: Its Measurement and Significance</b> . . . . . J. F. Fuzek	515
32.	<b>Effect of Moisture on Fatigue Crack Propagation in Nylon 66</b> . . . . . P. E. Bretz, R. W. Hertzberg, J. A. Manson, and A. Ramirez	531
33.	<b>The Influence of Water Concentration on the Mechanical and Rheo-Optical Properties of Poly(methyl methacrylate)</b> . . . . . R. S. Moore and J. R. Flick	555
34.	<b>Water-Epoxy Interactions in Three Epoxy Resins and Their Composites</b> . . . . . J. L. Illinger and N. S. Schneider	571
	<b>Index</b>	585