

# Contents

<b>FOREWORD</b>	vii
<i>Stephen J. Lippard</i>	
<b>PREFACE</b>	xiii
<b>CONTRIBUTORS</b>	xix
<b>Part I From Fundamentals to Applications</b>	<b>1</b>
<b>1. Let's Get Physical</b>	<b>3</b>
<i>Marye Anne Fox</i>	
<b>2. In Silico: An Alternate Approach to Chemistry and Biology</b>	<b>19</b>
<i>David A. Case</i>	
<b>3. The Purple Planet: A Short Tour of Porphyrins and Related Macrocycles</b>	<b>33</b>
<i>Abhik Ghosh</i>	
<b>4. Anesthesia: Don't Forget Your Chemistry</b>	<b>51</b>
<i>Jonathan L. Sessler and Daniel I. Sessler</i>	
<b>5. The Green Evolution</b>	<b>77</b>
<i>Terrence J. Collins</i>	
<b>Part II Chemistry and the Life Sciences</b>	<b>95</b>
<b>6. Thinking Like an Enzyme</b>	<b>97</b>
<i>Judith P. Klinman</i>	

<b>7. Making Sense of Oxygen</b>	<b>109</b>
<i>Marie-Alda Gilles-Gonzalez</i>	
<b>8. Let's Visualize Biology: Chemistry and Cellular Imaging</b>	<b>119</b>
<i>Elizabeth M. Nolan</i>	
<b>9. Bioinorganic Chemistry: Show Your Mettle by Meddling with Metals</b>	<b>137</b>
<i>Kara L. Bren</i>	
<b>10. Better Than Sliced Bread</b>	<b>155</b>
<i>Chaitan Khosla</i>	
<b>11. Choreographing DNA</b>	<b>165</b>
<i>Cynthia J. Burrows</i>	
<b>Part III Functional Materials</b>	<b>177</b>
<b>12. Supramolecules to the Rescue!</b>	<b>179</b>
<i>Seth M. Cohen</i>	
<b>13. Biomaterials at the Beach: How Marine Biology Uses Chemistry to Make Materials</b>	<b>197</b>
<i>Jonathan J. Wilker</i>	
<b>14. The Advantage of Being Small: Nanotechnology</b>	<b>217</b>
<i>Michael J. Sailor</i>	
<b>Part IV Chemistry and Energy</b>	<b>239</b>
<b>15. Happy Campers: Chemists' Solutions to Energy Problems</b>	<b>241</b>
<i>Penelope J. Brothers</i>	
<b>16. Clean Electrons and Molecules Will Save the World</b>	<b>261</b>
<i>Carl C. Wamser</i>	
<b>17. Metals, Microbes, and Solar Fuel</b>	<b>279</b>
<i>Harry B. Gray and John S. Magyar</i>	
<b>INDEX</b>	<b>291</b>