

---

# Contents

<i>Preface</i> .....	<i>v</i>
<i>Contributors</i> .....	<i>ix</i>
1 Advances in Research on Metalloproteins.....	1
<i>Perry A. Frey</i>	
2 Purification of O <sub>2</sub> -Sensitive Metalloproteins.....	5
<i>Carlos Echavarri-Erasun, Simon Arragain, and Luis M. Rubio</i>	
3 Expression and Purification of NifB Proteins from Aerobic and Anaerobic Sources.....	19
<i>Carlos Echavarri-Erasun, Simon Arragain, Alessandro A. Scandurra, and Luis M. Rubio</i>	
4 Techniques for the Production, Isolation, and Analysis of Iron–Sulfur Proteins.....	33
<i>Jason C. Crack, Jeffrey Green, Andrew J. Thomson, and Nick E. Le Brun</i>	
5 Cell-Free Synthesis of the H-Cluster: A Model for the In Vitro Assembly of Metalloprotein Metal Centers.....	49
<i>Jon M. Kuchenreuther, Stacey A. Shiigi, and James R. Swartz</i>	
6 Electrochemistry of Metalloproteins: Protein Film Electrochemistry for the Study of <i>E. coli</i> [NiFe]-Hydrogenase-1.....	73
<i>Rhiannon M. Evans and Fraser A. Armstrong</i>	
7 FTIR Spectroscopy of Metalloproteins.....	95
<i>Oscar Gutiérrez-Sanz, Olaf Rüdiger, and Antonio L. De Lacey</i>	
8 Characterizing Millisecond Intermediates in Hemoproteins Using Rapid-Freeze-Quench Resonance Raman Spectroscopy.....	107
<i>Hirotoshi Matsumura and Pierre Moënne-Loccoz</i>	
9 A Practical Guide for Nuclear Resonance Vibrational Spectroscopy (NRVS) of Biochemical Samples and Model Compounds.....	125
<i>Hongxin Wang, Esen Ercan Alp, Yoshitaka Yoda, and Stephen P. Cramer</i>	
10 Study of Metalloproteins Using Continuous Wave Electron Paramagnetic Resonance (EPR).....	139
<i>Serge Gambarelli and Vincent Maurel</i>	
11 Mössbauer Spectroscopy.....	153
<i>Martin Clémancey, Geneviève Blondin, Jean-Marc Latour, and Ricardo Garcia-Serres</i>	
12 X-Ray Absorption Spectroscopy of Metalloproteins.....	171
<i>Jesse Ward, Emily Ollmann, Evan Maxey, and Lydia A. Finney</i>	
13 X-Ray Crystallographic Studies of Metalloproteins.....	189
<i>Anne Volbeda</i>	

14	Quantum Mechanical Methods for the Investigation of Metalloproteins and Related Bioinorganic Compounds . . . . .	207
	<i>Luca Bertini, Maurizio Bruschi, Ugo Cosentino, Claudio Greco, Giorgio Moro, Giuseppe Zampella, and Luca De Gioia</i>	
15	Density Functional Theory–Broken Symmetry (DFT–BS) Methodology Applied to Electronic and Magnetic Properties of Bioinorganic Prosthetic Groups. . . . .	269
	<i>Jean-Marie Monesca</i>	
	<i>Index</i> . . . . .	297

Metalloproteins

Methods and Protocols

Fontecilla-Camps, J.C.; Nicolet, Y. (Eds.)

2014, X, 299 p. 89 illus., 57 illus. in color., Hardcover

ISBN: 978-1-62703-793-8

A product of Humana Press