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Titolo	Spectroscopic and Mechanistic Studies of Dinuclear Metallohydrolases and Their Biomimetic Complexes // by Lena Josefina Daumann
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Soggetti	Biochemical engineering Enzymology Spectrum analysis Biochemical Engineering Spectroscopy/Spectrometry
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Note generali	"Doctoral Thesis accepted by University of Queensland, Australia."
Nota di bibliografia	Includes bibliographical references at the end of each chapters.
Nota di contenuto	Introduction -- Experimental -- Understanding the Overall Structure of GpdQ and Metal Binding -- Structural and Mechanistic Studies of Zn(II) Complexes as Phosphoesterase Models -- Mechanistic Studies of Cd(II) Complexes as Phosphoesterase and Metallo--lactamase Models -- Spectroscopic and Mechanistic Studies of Co(II) Phosphoesterase and Metallo--lactamase Biomimetics -- Asymmetric Zn(II) Complexes as Structural and Functional Models for GpdQ -- Immobilization of GpdQ and Related Models for Bioremedial Applications -- Conclusion and Outlook.
Sommario/riassunto	Lena Daumann's thesis describes structural and functional studies of the enzyme Glycerophosphodiesterase (GpdQ) from <i>Enterobacter aerogenes</i> . It also examines the properties of small mimics of this enzyme and related binuclear metallohydrolases such as the metallo- β -lactamases to enhance our understanding of hydrolytic cleavage of important substrates like phosphoesters and -lactams. Overall, this project has led to a better understanding of the metal ion binding and active site structural features of the enzyme GpdQ. Daumann describes how she successfully immobilized phosphoesterase and related

biomimetics on solid supports for potential applications in the area of bioremediation of organophosphate pesticides. Analysis shows that both the enzyme and biomimetics can be stored on the solid support without loss of activity. Furthermore, the author spectroscopically and mechanistically characterized a number of Zn(II), Cd(II) and Co(II) complexes, some of which are among the most active biomimetics towards organophosphates reported to date. This thesis makes excellent reading for non-specialists because each chapter includes a short introduction section.
