

## STEFANO CIURLI

Résumé - September 2014



**Date of Birth:** May 11, 1960  
**Home address:** Via Giuseppe Bentivogli 74/5 - 40138 Bologna, Italy  
**Work Address:** Laboratory of Bioinorganic Chemistry  
Department of Pharmacy and Biotechnology  
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### Education:

October 1979 - December 1984

*University of Pisa*, Faculty of Sciences (Italy)  
Chemistry Department

Major in Inorganic and Physical Chemistry

January 1985 - June 1986

*Columbia University*, New York, NY (USA)

Chemistry Department

Research Assistant

July 1986

*University of Pisa*, Faculty of Sciences (Italy)

Chemistry Department

Laurea 110/110 cum laude

"Synthesis, reactivity and structural characterization of metal complexes with macrocyclic ligands"

September 1986 – September 1990

*Harvard University*, Cambridge, MA (USA)

Chemistry Department

Ph.D. in Inorganic Chemistry – Tutor: Prof. Richard H. Holm

"Synthesis and properties of subsite-differentiated cubane clusters  $MFe_3S_4$ "

September 1990 – September 1992

*University of Bologna* post-doctoral fellowship

NMR spectroscopy and study of the electronic structure of iron-sulfur centers in proteins

### Academic Career:

October 1992 – September 2001

*University of Bologna* – Faculty of Agriculture

Associate Professor of Agricultural chemistry

October 2001 - present

*University of Bologna* – Faculty of Agriculture

Professor of General and Inorganic Chemistry

October 2004 - present

*Free University of Bolzano* – Faculty of Science and Technology

Professor of General and Inorganic Chemistry

January 2013 – June 2015

*Universidade Federal do Rio Grande do Sul (Porto Alegre, Brazil)* – Center for Biotechnology

Visiting Professor in the framework of the Science without Borders program

### Honors

Nominated by the Rector of the University of Bologna for the *excellent teaching quality in the course on Agricultural Biochemistry* (academic year 2002-2003)

Nominated by the Rector of the University of Bologna for the *excellent teaching quality in the course on General and Inorganic Chemistry* (academic year 2004-2005)

Nominated by the Rector of the University of Bologna as Member of the Institute for Advanced Studies, University of Bologna (2006-2012)

Member of the Board of the Institute of Superior Studies of the University of Bologna (2009-2012)

## Lecturer for the following courses

Academic year	Course	Faculty
1992-1993	Soil fertility and plant nutrition	Agriculture
1993-1994	General and inorganic chemistry Chemistry and biochemistry of pesticides	Agriculture
1994-1995	Soil fertility and plant nutrition Chemistry and biochemistry of pesticides	Agriculture
1995-1996	Spectroscopic chemical analysis Chemistry and biochemistry of pesticides	Agriculture
1996-1997	Physical methods in inorganic chemistry Chemistry and biochemistry of pesticides	Agriculture
1997-1998	Agricultural biochemistry Chemistry and biochemistry of pesticides	Biotechnology
1998-1999	General and inorganic chemistry	Agriculture
1999-2000	Agricultural biochemistry General and inorganic chemistry Bioinorganic chemistry	Biotechnology Agriculture Biotechnology
2000-2001	Bioinorganic chemistry Agricultural biochemistry	Biotechnology Biotechnology
2001-2002	General and inorganic chemistry Agricultural biochemistry	Agriculture Biotechnology
2002-2003	General and inorganic chemistry Agricultural biochemistry	Agriculture Biotechnology
2003-2004	General and inorganic chemistry	Agriculture
2004-2005	General and inorganic chemistry Biomolecular NMR spectroscopy General and inorganic chemistry	Agriculture Mathematical, physical, and natural sciences University of Bolzano
2005-2006	General and inorganic chemistry Biomolecular NMR spectroscopy General and inorganic chemistry	Agriculture Mathematical, physical, and natural sciences University of Bolzano
2006-2007	General and inorganic chemistry Biomolecular NMR spectroscopy General and inorganic chemistry Water Chemistry	Agriculture Mathematical, physical, and natural sciences University of Bolzano Master in Land and water conservation
2007-2008	General and inorganic chemistry Biomolecular NMR spectroscopy General and inorganic chemistry Water Chemistry	Agriculture Mathematical, physical, and natural sciences University of Bolzano Master in Land and water conservation
2008-2013	General and inorganic chemistry Biomolecular NMR spectroscopy General and inorganic chemistry Water Chemistry	Agriculture Mathematical, physical, and natural sciences University of Bolzano Master in Land and water conservation
2013-2015	General and inorganic chemistry Biomolecular NMR spectroscopy General and inorganic chemistry General and inorganic chemistry	Agriculture Mathematical, physical, and natural sciences University of Bolzano Pharmaceutical Chemistry and Technology

## Course Content

The scope of the course in General Chemistry is to provide the basic knowledge of the structure of matter and thermodynamic and kinetic principles that govern its transformation, with particular attention to chemical reactions occurring in the environmental biosphere, through the study of structural and functional properties of small molecules involved in the cycles of nutrients. This description is built starting from the electronic structure of atoms and molecules, describing the nature of the chemical bond and the processes of its formation and breaking, also using

computational methods. The equilibria in homogeneous and heterogeneous phases are described with special focus on the treatment of acid-base and redox reactions. The course always includes a section on the role of metal ions in biological systems. The lectures in Bioinorganic chemistry, Agricultural Biochemistry and Soil Biochemistry contained references and concepts typical of the chemistry of metal ions in biological systems. The syllabus of Biomolecular Magnetic Resonance Spectroscopy involves the application of NMR spectroscopy to the structures of proteins and metallo-proteins in solution.

## Tutor for the following Laurea theses

- 1. Sofia Cei, Laurea in Scienze Agrarie**  
Academic year 1995-1996  
"Proteine Fe-S e citocromi coinvolte nel ciclo fotosintetico dei batteri Rps. viridis e Rf. fermentans. Caratterizzazione biochimica, spettroscopica, e funzionale"
- 2. Matteo Lamborghini, Laurea in Scienze Agrarie**  
Academic year 1995-1996  
"Proprietà biochimiche, spettroscopiche e funzionali di ureasi, citocromo c-553 e flavoemoproteina (FHP) isolate da un batterio alcalofilo del suolo, Bacillus pasteurii"
- 3. Silvia Miletti, Laurea in Scienze Agrarie**  
Academic year 1995-1996  
"Adsorbimento di ureasi su fosfati di calcio: un modello per l'idrolisi dell'urea nel suolo"
- 4. Afro Stecchezzini, Laurea in Chimica**  
Academic year 1996-1997  
"Studio del trasferimento elettronico foto-indotto in batteri fotosintetici implicati in processi ambientali biodegradativi"
- 5. Michela Marabini, Laurea in Scienze e Tecnologie Alimentari**  
Academic year 1997-1998  
"Spettroscopia SNIF-NMR applicata al settore agroalimentare"
- 6. Giuliano Sciara, Laurea in Scienze Biologiche**  
Academic year 1998-1999  
"Struttura in soluzione del citocromo c-553 ossidato da Bacillus pasteurii tramite spettroscopia NMR"
- 7. Massimo Strocchi, Laurea in Scienze Agrarie**  
Academic year 1999-2000  
"Purificazione del centro di reazione fotosintetico da Chromatium vinosum: studi cinetici di trasferimento elettronico fotoindotto utilizzando proteine mutate in siti specifici"
- 8. Massimiliano Stola, Laurea in Biotecnologie Industriali**  
Academic year 1999-2000  
"Analisi teorica del meccanismo catalitico delle metallo-fosfatasi acide: implicazioni nel drug design"
- 9. Luca Lotito, Laurea in Biotecnologie Industriali**  
Academic year 1999-2000  
"Espressione eterologa e purificazione di fosfatasi acida e UreG, proteine coinvolte nei cicli biochimici di fosforo e azoto"
- 10. Francesca Malerba, Laurea in Biotecnologie Industriali**  
Academic year 1999-2000  
"Espressione eterologa, purificazione e caratterizzazione di una nichel-chaperonina: UreE da Bacillus pasteurii"
- 11. Manuela Dezi, Laurea in Biotecnologie Agrario-Vegetali**  
Academic year 2001-2002  
"Accumulo di cadmio in Skeletonema costatum: studi chimici e biochimici"
- 12. Barbara Zambelli, Laurea in Biotecnologie Industriali**  
Academic year 2001-2002  
"Espressione eterologa, purificazione, caratterizzazione e studi di modellistica molecolare di nichel-chaperonine"
- 13. Giovanni Guarguaglini, Laurea in Biotecnologie Agrario-Vegetali**  
Academic year 2001-2002  
"Isolamento e purificazione di una proteina responsabile dell'accumulo di Cd<sup>2+</sup> in Cylindrotheca fusiformis"

- 14. Cristina Baia, Laurea in Biotecnologie Agrario-Vegetali**  
Academic year 2002-2003  
"UreD, una chaperonina coinvolta nell'introduzione del nichel nel sito attivo dell'ureasi"
- 15. Stefano Torti, Laurea in Biotecnologie Industriali**  
Academic year 2003-2004  
"Espressione, purificazione e cristallizzazione di UreE da *Bacillus pasteurii*: studi strutturali su una nichel-chaperonina"
- 16. Matteo Savini, Laurea in Biotecnologie Agrario-Vegetali**  
Academic year 2004-2005  
"UreG e UreD: approccio molecolare e computazionale per lo studio di proteine accessorie dell'ureasi"
- 17. Marco Salomone, Laurea in Scienze Biologiche**  
Academic year 2004-2005  
"Sulla biologia del nichel: un approccio biochimico e bioinformatico all'ureasi ed alle sue proteine accessorie"
- 18. Matteo Bellucci, Laurea in Biotecnologie Molecolari e Industriali**  
Academic year 2005-2006  
"NikR di *Helicobacter pylori*: un regolatore trascrizionale nichel-dipendente"
- 19. Fabio Martignani, Laurea in Biotecnologie Molecolari e Industriali**  
Academic year 2006-2007  
"Struttura e funzione di *Helicobacter pylori* UreG, una chaperonina nel metabolismo del nichel"
- 20. Alice Soragni, Laurea in Biotecnologie Molecolari e Industriali**  
Academic year 2006-2007  
"Towards a structural characterization of Tau: Cu(II) toxic conformers"
- 21. Rosanna Clima, Laurea in Scienze Biologiche**  
Academic year 2008-2009  
"Clonaggio ed espressione di UreD da *Helicobacter pylori*, una nichel-chaperonina dell'enzima ureasi"
- 22. Andrea Raspadori, Laurea in Biologia Molecolare**  
Academic year 2009-2010  
"Studi biochimici e strutturali di HypB da *Helicobacter pylori*: una metallo chaperonina della [Ni,Fe]-idrogenasi"
- 23. Federico Agostini, Laurea in Biotecnologie Molecolari e Industriali**  
Academic year 2009-2010  
"Spettroscopia NMR di UreE da *Bacillus pasteurii*: struttura e dinamica di una nichel-chaperonina"
- 24. Andrea Berardi, Laurea in Biotecnologie Molecolari e Industriali**  
Academic year 2009-2010  
"Espressione, purificazione e caratterizzazione di HpUreF: una metallo-chaperonina coinvolta nel meccanismo di attivazione e maturazione dell'ureasi di *H. pylori*"
- 25. Luca Mazzei, Laurea in Biotecnologie Molecolari e Industriali**  
Academic year 2010-2011  
"Studi biochimici e strutturali su NikR da *Helicobacter pylori*, un regolatore trascrizionale nichel-dipendente"
- 26. Cristian del Campo, Laurea in Biotecnologie Molecolari e Industriali**  
Academic year 2010-2011  
"Studi biochimici e strutturali su Fur da *Helicobacter pylori*, un fattore di trascrizione ferro-dipendente"
- 27. Francesco Biagi, Laurea in Biologia Molecolare**  
Academic year 2011-2012  
"Un approccio teorico-strutturale al metabolismo del nichel in *Helicobacter pylori*: modelli e interazioni proteina-proteina nell'attivazione di ureasi"

- 28. Manfredi Miraula, Laurea in Biotecnologie Molecolari e Industriali**  
Academic year 2011-2012  
"Struttura e funzione di UreG e RcnR, due proteine coinvolte nell'omeostasi e nel metabolismo del nichel nei batteri"
- 28. Cinzia Tarsia, Laurea in Biotecnologie Molecolari e Industriali**  
Academic year 2012-2013  
"Interazioni proteina-proteina in cellula: il trasporto del nichel nell'attivazione dell'ureasi di *Helicobacter pylori*"
- 28. Lucia Crisci, Laurea in Biotecnologie Molecolari e Industriali**  
Academic year 2012-2013  
"To be determined"

#### Tutor for the following Ph.D. theses

- 1) Silvia Miletto**  
Doctorate in Crop production  
University of Udine, 1997-1999  
"Studio delle relazioni struttura-funzione dell'ureasi e delle proteine accessorie necessarie per l'assemblaggio del sito attivo contenente nichel"
- 2) Massimiliano Stola**  
Doctorate in Functional biology of cellular and molecular systems  
University of Bologna, 2001-2003  
"Caratterizzazione della metallo-chaperonina UreE: una proteina accessoria dell'ureasi"
- 3) Barbara Zambelli**  
Doctorate in Functional biology of cellular and molecular systems  
University of Bologna, 2002-2005  
"Caratterizzazione molecolare delle nichel-chaperonine UreG, UreF, e UreD: proteine proteina accessoria dell'ureasi"
- 4) Matteo Bellucci**  
Doctorate in Cellular, Molecular and Industrial Biology  
University of Bologna, 2007-2009  
"Molecular interactions: metal ions and protein chaperones in the urease system from *Helicobacter pylori*"
- 5) Anna Merloni**  
Doctorate in Cellular, Molecular and Industrial Biology  
University of Bologna, 2011-2013  
"Structural and biochemical studies of *Sporosarcina pasteurii* UreE: a nickel-chaperone involved in the urease activation process"

#### Other academic and research activities

- Coordinator of the ERASMUS/SOCRATES network in Agricultural Chemistry and Biochemistry with the Universities of Bologna, Kent, Rennes, Newcastle, Nottingham, Lleida, Cordova, Siviglia, Gottingen, Pisa (**1993-1998**)
- Board member of the research doctorate in "Crop productivity", University of Bologna and Udine (**1993-1999**)
- Board member of the Interuniversity Consortium on Magnetic Resonance of Paramagnetic Metallo-Proteins (CIRMMP), University of Firenze, Bologna and Siena (**1997-**)
- Board member of the Interdepartmental Consortium for Biotechnological Research (CIRB), University of Bologna (**1997-**)
- Board member of the Ph.D. program in "Functional biology of cellular and molecular systems", University of Bologna (**2000-**)
- Member of the Editorial Board of Chem. Tracts – Inorganic Chemistry (**2001-2003**)  
Editor: Harry Gray, California Institute of Technology

- Elected Board member of the Council of the Division of Chemistry of Biological Systems of the Italian Chemical Society (**2000–2002** and **2012-2014**)
- Member of the Editorial Board of J. Biol. Inorg. Chem. (**2000–2002**)  
Editor: Larry Que, Jr., Department of Chemistry, University of Minnesota
- Member of the Editorial Board of J. Biol. Inorg. Chem. (**2004–2006**)  
Editor: Larry Que, Jr., Department of Chemistry, University of Minnesota
- Board member of the Institute for Advanced Studies, University of Bologna, **2007-2012**
- Member of the evaluation committee of the Research School in "Metal Ions in Biological Systems – MIBS), Department of Life Sciences, University of Copenhagen – **2009**
- Member of the Editorial Board of J. Biol. Inorg. Chem. (**2011–present**)  
Editor: Larry Que, Jr., Department of Chemistry, University of Minnesota
- Associate Editor for the Encyclopedia of Metalloproteins (Co, Ni, Cu), Springer, **2010-2012.**
- Member of the Editorial Board of PeerJ, **2012-present.**

**Referee for international scientific journals:**

J. Am. Chem. Soc.	ChemBioChem	J. Molecular Evolution	J. Mol. Graphics and
Biochemistry	Biochimie	FEBS Letters	Modeling
Eur. J. Inorg. Chem.	J. Inorg. Biochem.	J. Biol. Chem.	J. Mol. Biol.
J. Biol. Chem.	Arch. Biochem.	Inorg. Chem.	RSC Chem. Commun.
J. Biol. Inorg. Chem.	Biophys.	Acta Crystallographica	J. Bacteriol.
Coord. Chem. Rev.	Eur. J. Biochem.	Microbiology	
BBA Proteins Proteom.	J. Mass Spectrometry	Biochemical Journal	
Inorg. Chimica Acta	J. Phys. Chem.		

## Research Interests:

The main interest of my research activity is the elucidation of the role of metals found in biomolecules. The final goal is the identification of the molecular structure of the active site of metallo-enzymes, and the elucidation of structure-function relationships. The objective is to determine how the chemistry of the metal ion is modulated by the protein matrix, and thus to determine the mode of interaction with the substrate or with other proteins.

Proteins from bacteria living in waters and soils are purified, and their biochemical characterization is performed. Then, by applying sophisticated physical methods such as mono- and multidimensional NMR spectroscopy, EPR, Mössbauer, circular dichroism, magnetic susceptibility, bioelectrochemistry, X-ray spectroscopy (EXAFS), Raman and crystallography the structure of the active site is elucidated at the molecular level. Subsequently, mechanistic studies of the protein-substrate or protein-protein interactions are carried out using classic kinetic measurements or, for the photosynthesis-related projects, laser-induced rapid transient kinetics. Molecular mechanics and dynamics are used to model protein-substrate and protein-protein interactions.

In particular, on-going research projects involve i) biochemistry of metallo-enzymes involved in the nitrogen, phosphorous and sulfur cycles in the environment, ii) biochemistry of photosynthesis.

## Research grants:

### 1993 – 1997 (L. 55,000,000)

National Research Council (CNR): "Indagine sulla relazione struttura-funzione dell'ureasi, un enzima del suolo importante per la nutrizione delle piante: utilizzo di tecnologie avanzate per lo studio dell'interazione enzima-inibitori"

### 1997 – 1999 (L. 210,000,000)

Contract NMR with Ministero delle Politiche Agricole

"Applicazione del metodo SNIF-NMR per la determinazione del rapporto isotopico  $^2\text{D}/^1\text{H}$  in matrici biologiche"

### 1997 – 1999 (L. 335,000,000)

Research program of national interest – PRIN

"NMR di metallo-biomolecole paramagnetiche".

### 1997-2000 (L. 40,000,000)

NATO Linkage Grant

"Molecular Studies on Photosynthetic Redox Proteins Alternative to Cytochromes  $c_2$ "

### 1998 -2000 (L. 260,000,000)

European Project Biotech-II

"Iron Containing Phosphatases: Structure and Function"

### 1998-2001 (L. 7,000,000)

European Project INTAS

"Biomimetic model complexes for dinuclear active sites of metalloproteins"

### 1999 -2000 (L. 244,000,000)

Research program of national interest – PRIN

"Il ruolo del cofattore metallico nella biologia strutturale inorganica"

### 2001-2005 (€ 7,500)

European Project Marie Curie Training Site

"Metals in biological systems"

### 2001-2003 (€ 22,500)

NATO Linkage Grant

"The development of biosensor technology for monitoring antioxidant activity of beverages"

### 2001 - 2003 (€ 90,000)

European Project INTAS

" Monitoring of total antioxidant activity in different beverages using biosensors technology "

2002 - 2004 (€ 81,000)

European Project INTAS

"EPR and electrometric study of the photosynthetic pigment-protein complexes in chloroplasts and hybrid model systems"

2001 - 2003 (€ 116,200)

Research program of national interest – PRIN

"Biologia strutturale inorganica nell'era post-genomica: metodologie e targeting".

2003 - 2005 (€ 55,800)

Research program of national interest – PRIN

"Il ruolo degli ioni metallici nei processi metabolici"

2005 - 2007 (€ 48,000)

Research program of national interest – PRIN

"Genomica strutturale di metalloproteine e delle loro interazioni funzionali"

2006 - 2007 (€ 45,000)

Progetto Strategico UniBO – in collaborazione con il Prof. Vincenzo Scarlato

"Molecular mechanisms governing essential urease and hydrogenase activity in the human gastric pathogen *Helicobacter pylori*"

2007 - 2009 (€ 37,000)

Research program of national interest – PRIN

"Gli ioni metallici nelle interazioni proteina-proteina"

2009 - 2011 (€ 16,000)

Research program of national interest – PRIN

"Biologia strutturale meccanicistica: avanzamenti metodologici e biologici"

2010 - 2014 (€ 425,000)

Research grant from Specialty Fertilizer Products

"The role of polysaccharides in the efficiency of soil nitrogen fertilization with urea".

2013-2015 (€ 55,400)

Research program Science without borders – CAPES Foundation, Government of Brazil

"Estrutura tridimensional e potencial biotecnológico de peptídeos derivados de ureases"

### **Membership of societies:**

American Chemical Society

Italian Chemical Society

Society of Bio-Inorganic Chemistry

Biochemical Society

International Biometals Society

Harvard Club of Italy

### **Invited speaker at National Academic Institutions**

- University of Firenze, Department of Chemistry, December **1989**
- University of Udine, Department of Plant Production, October **1994**
- University of Firenze, Department of Chemistry, May **1997**
- University of Udine, Department of Plant Production, May **1997**
- International School for Advanced Studies, Trieste, February **1998**
- University of Pisa, Department of Chemistry, April **2002**
- University of Bologna, Department of Agro-Environmental Science and Technology, February **2004**
- University of Bologna, Department of Agronomy, June **2004**
- University of Bologna, Department of Pharmacy and Biotechnology, November **2012**
- University of Trento, Centre for Integrative Biology, February **2014**

### **Invited speaker at Foreign Academic Institutions**

- University di Hamburg (Germany), Department of Chemistry, April **1991**
- New College of the University of South Florida (USA) April **1995**
- University of California Santa Cruz (USA) Department of Chemistry, April **1996**



- University of Lund (Sweden), Department of Inorganic Chemistry, September **1996**
- University of Copenhagen (Denmark) Department of Chemistry, September **1996**
- University of Lund (Sweden), Department of Inorganic Chemistry, August **1997**
- European Molecular Biology Laboratory, Hamburg Outstation (Germany) January **1997**
- Università di Hamburg, (Germany) Department of Chemistry, June **1999**
- Università di Gent, (Belgium) Department of Protein Biochemistry, February **2003**
- Moscow State University, (Russia) Department of Biological Chemistry, February **2003**
- University of Trondheim (Norway), Department of Biotechnology, July **2005**
- University of Lund (Sweden), Department of Chemical Physics, June **2006**
- Dartmouth College (USA), Department of Chemistry, April **2008**
- University of Lund (Sweden), Department of Chemistry, November **2008**
- University of Trondheim (Norway), Department of Biotechnology, June **2009**
- German Research School for Simulation Sciences GmbH, Jülich (Germany) July **2010**
- University of Massachusetts at Amherst (USA), Department of Chemistry, March **2011**
- Universidade Federal do Rio Grande do Sul, Center for Biotechnology, Porto Alegre (Brazil), January **2013**
- University Federal do Rio de Janeiro, Medical Biochemistry Institute, Rio de Janeiro (Brazil), June **2013**

### Invited speaker at National Scientific Meetings

- National Congress of the Agricultural Chemistry Society (SICA), Piacenza, September **1994**
- National Congress of the Interdivisional Group of Magnetic Resonance of the Italian Chemical Society, Rimini, October **1996**
- Division of Chemistry of Biological Systems, Italian Chemical Society meeting, Parma, December **1997**
- Division of Inorganic Chemistry, Italian Chemical Society meeting, Maratea, June **1998**
- Division of Chemistry of Biological Systems, Italian Chemical Society meeting, Rimini, June **2000**
- School for Ph.D. students in Inorganic Chemistry "Bioinorganic Chemistry", S. Miniato, June **2002**
- Magnetic Resonance Group, Italian Chemical Society meeting, Porto Conte, September **2004**
- National Congress of the Italian Society of Biochemistry, Riccione, September **2005**
- Division of Chemistry of Biological Systems, Italian Chemical Society meeting, Sorrento, July **2009**
- Ph.D School in Bioinorganic Chemistry, Pontignano, Siena (Italy), July **2011**
- Division of Inorganic Chemistry, Italian Chemical Society meeting, Lecce, September **2011**

### Invited speaker at International Scientific Meetings

- Workshop on Transition Metal Clusters in Biology, Medizinische Universität, Lubeca, Germany, April **1991**
- American Chemical Society Congress, Denver (USA), April **1993**
- Third Greek-Italian-Portuguese-Spanish Meeting in Inorganic Chemistry, Senigallia, June **1995**
- NATO Advanced Research Workshop "New Trends In Biosensor Development" Kiev, Ukraine, March **1998**
- XXXIII International Conference Coordination Chemistry (ICCC) Firenze, August **1998**
- 2<sup>nd</sup> International Workshop on "Structural Characterization of Proteins by NMR, X-Ray Diffraction, and Computational Methods", University of Verona, February **1999**
- 5<sup>th</sup> International Symposium on Applied Bioinorganic Chemistry Corfu, Greece, April **1999**
- 9<sup>th</sup> International Conference of Bioinorganic Chemistry (ICBIC-9), Minneapolis (USA), June **1999**.
- Symposium on Bioinorganic Chemistry, Chemical Center, University of Lund, June **2000**.
- Biotechnology Winter School on Biomolecular Docking in Silico, Bologna, February **2001**
- 20<sup>th</sup> European Crystallographic Meeting (ECM20) Krakow, Poland, August **2001**
- 3<sup>rd</sup> International Workshop on "Structural Characterization of Proteins by NMR, X-Ray Diffraction, and Computational Methods", S. Vito di Cadore, Italy, September **2001**
- Indo-Italian meeting on "NMR of Biological Systems" Lucknow, India, January **2002**
- Meeting on Metal in Biology, Autrans/Grenoble, France, March **2002**
- 6<sup>th</sup> European Conference on Bioinorganic Chemistry (EUROBIC-6), Copenhagen/Lund, July **2002**
- 7<sup>th</sup> FIGIPS, Meeting in Inorganic Chemistry, Lisbon (Portugal) June **2003**
- 11<sup>th</sup> International Conference of Bioinorganic Chemistry (ICBIC-11), Cairns (Australia), July **2003**
- COST meeting D21 on Metalloenzymes and chemical biomimetics, Thessaloniki (Greece), September **2003**
- First International Meeting on Metal Omeostasis, Institute of Metals in Biology of Grenoble, Villard de Lans (France), September **2004**
- COST meeting D21 on Metalloenzymes and chemical biomimetics, Rome (Italy), May **2005**
- International Conference on Biocatalysis, Nordforsk Research Training Course on High-Speed NMR Protein Structure Analysis, Moscow - S. Petersburg (Russia), June **2007**
- 13<sup>th</sup> International Conference of Bioinorganic Chemistry (ICBIC-13), Vienna (Austria), July **2007**.
- 235<sup>th</sup> Congress of the American Chemical Society, New Orleans (USA), April **2008**.
- Graduate Summer School in Metal Ions in Biological Systems, Holbæk (Denmark), June **2008**
- 9<sup>th</sup> European Conference on Bioinorganic Chemistry (EUROBIC-9), Wroklaw, (Poland), September **2008**
- 237<sup>th</sup> Congress of the American Chemical Society, Salt Lake City (USA), March **2009**

- NordForsk Research Course on "Macromolecular Interactions – Biology and Emerging Tools, Riccione (Italy) September **2009**.
- 239th Congress of the American Chemical Society, San Francisco (USA), March **2010**
- 240th Congress of the American Chemical Society, Boston (USA), August **2010**
- 241th Congress of the American Chemical Society, Anaheim (USA), March **2011**
- 15th International Conference of Bioinorganic Chemistry (ICBIC-15), Vancouver (Canada), August **2011**.
- 243th Congress of the American Chemical Society, San Diego (USA), March **2012**
- 245th Congress of the American Chemical Society, New Orleans (USA), April **2013**
- Zing Conference on Bioinorganic Chemistry, Lanzarote (Spain), February **2013**
- 16th International Conference of Bioinorganic Chemistry (ICBIC-16), Grenoble (France), July **2013**.

## Research Experience

My research curriculum reflects an evolution from basic coordination and organometallic chemistry to model bio-inorganic chemistry, and finally to inorganic biochemistry. This evolution has allowed me to build on chemical grounds a level and breadth of knowledge extremely useful to understand the role of metals in biological processes. Furthermore, the application of a large variety of physical methods to model compounds has been a learning bench for further applications of the same techniques to more complex biomolecules. I believe that a complementary role of both model chemistry and biochemistry is fundamental for the understanding of the interaction of bio-molecules with metal ions.

### 1985-1986

Functionalization of late transition metal (Fe, Co, Ni, Cu) porphyrino-type complexes, with the goal of study low oxidation states of the metals in ionic pair form with alkali ions. Synthesis of complexes between early transition metals (Ti, Zr, V, Nb) and highly sterically flexible macrocycles to obtain cis-coordination sites possibly available for catalysis. The techniques used involved Schlenk-line manipulation of highly air-sensitive compounds. Instrumentation used included IR, UV-vis, and 1D  $^1\text{H}$  and  $^{13}\text{C}$  NMR spectroscopies. Some knowledge of X-ray crystallography of small molecules was also gained.

### 1986-1990

Synthesis of metal-sulfur clusters as models for metallo-proteins and metallo-enzymes. The properties of subsite-differentiated cubane-type clusters of the type  $\text{MFe}_3\text{S}_4$  (M=Fe, V, Mo, Re, Co, and Ni) were investigated. In the case of M=Fe, subsite differentiation was achieved by the use of a complex organic ligand, binding the cluster to three Fe sites and leaving the fourth Fe ion available for modulation of reactivity, and of structural and spectroscopic properties significant for the biological involvement of the  $\text{Fe}_4\text{S}_4$  cluster in enzymatic catalysis. In the case of V and Mo, the reactivity of the heteroatom in the cluster was studied spectroscopically. In the case of Re, Ni, and Co, new routes for the synthesis of the corresponding heteroatom cluster were developed, and the structures and properties of the resulting complexes were studied both spectroscopically and using X-ray crystallography. The techniques used involved Schlenk-line and dry-boxes manipulation of air-sensitive compounds, organic synthesis, UV-vis spectroscopy, 1D and 2D NMR spectroscopy, electrochemistry (cyclic voltammetry, differential pulse polarography, coulometry), X-ray crystallography, Mossbauer spectroscopy, EPR spectroscopy, magnetic susceptibility measurements using NMR and SQUID. Acquaintance with EXAFS spectroscopy was also gained.

### 1990-1992

NMR spectroscopy of iron-sulfur proteins. Relationships between structural and magnetic, Mossbauer, NMR, and EPR spectroscopic parameters in iron-sulfur proteins. Theoretical models of magnetic exchange. Molecular mechanics and dynamics of iron-sulfur proteins. Relationships between structure and redox potential in iron-sulfur proteins.

### 1992-present

Isolation, purification, and physical characterization of soluble and membrane-bound proteins involved in bacterial photosynthesis. Studies of electron-transfer processes between soluble and membrane-bound electron carriers using rapid light-induced time-resolved kinetic spectrophotometry.

Isolation, purification, and physical characterization of bacterial nickel proteins. Structural studies using XAS spectroscopy. Protein crystallization and X-ray structure determination of bacterial urease. Applications of high resolution nuclear magnetic resonance (NMR) spectroscopy to the determination of the structure of metallo-biomolecule.

Molecular mechanics and dynamics of metallo-biomolecules.

Computer assisted rational drug design of inhibitors for metallo-enzymes.

Structural biology and biochemistry of nickel trafficking proteins.

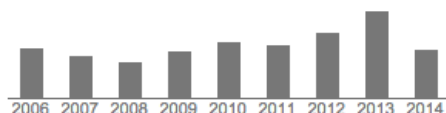
Nickel-dependent transcription factors in soil and pathogenic bacteria.

### **Research activities abroad**

<u>March 1995</u>	Department of Biochemistry, University of Tucson, Arizona (USA)
<u>June-August 1995</u>	New College of the University of South Florida, Division of Natural Sciences (USA)
<u>November 1995</u>	European Molecular Biology Laboratory, Heidelberg (Germany)
<u>June-August 1997</u>	Department of Inorganic Chemistry, Lund University (Sweden)
<u>June 1999</u>	European Molecular Biology Laboratory, Hamburg (Germany)
<u>June-July 2006</u>	Department of Inorganic Chemistry, Lund University (Sweden)
<u>June 2009</u>	Department of Biotechnology, University of Science and Technology, Trondheim (Norway)
<u>Jan. 2013-Dec. 2015</u>	Center for Biotechnology, Universidade Federal do Rio Grande do Sul, Porto Alegre (Brazil)

**STEFANO LUCIANO CIURLI**  
*Publication list – September 2014*

Citation indices	All	Since 2009
Citations	3513	1423
h-index	37	22
i10-index	78	47



## Articles in International Refereed Journals

- #109 A. D'Urso; C. Santambrogio; R. Grandori; S. Ciurli; B. Zambelli\*  
"The conformational response to Zn(II) and Ni(II) binding of *Sporosarcina pasteurii* UreG, an intrinsically disordered GTPase"  
*J. Biol. Inorg. Chem.* **2014**, in press  
IF=3.289
- #106 S. Benini; M. Cianci; L. Mazzei; S. Ciurli\*  
"Fluoride inhibition of *Sporosarcina pasteurii* urease: structure and thermodynamics"  
*J. Biol. Inorg. Chem.* **2014**, in press  
IF=3.289
- #107 A. Merloni; O. Dobrovolska; B. Zambelli; F. Agostini; M. Bazzani; F. Musiani; S. Ciurli\*  
"Molecular landscape of the interaction between the urease accessory proteins UreE and UreG"  
*BBA-Proteins Proteom.* **2014**, 1844, 1662-1674  
IF=3.733
- #105 H. Lebrette ; C. Brochier-Armanet ; B. Zambelli; H. de Reuse; E. Borezée-Durant; S. Ciurli\*; C. Cavazza\*  
"Promiscuous nickel import in human pathogens: structure, thermodynamics and evolution of extracytoplasmic nickel-binding proteins"  
*Structure* **2014**, in press  
IF=5.994
- #104 B. Zambelli\*; L. Mazzei; S. Ciurli  
"Hot biological catalysis: isothermal titration calorimetry to characterize enzymatic reactions"  
*J. of Vis. Exp.* **2014**, e51487, doi:10.3791/51487  
<http://www.jove.com/video/51487/hot-biological-catalysis-isothermal-titration-calorimetry-to>  
IF=1.190
- #103 M. J. Maroney; S. Ciurli\*  
"Non-redox nickel enzymes"  
*Chem. Rev.* **2014**, 114, 4206-4228  
IF=41.298
- #102 F. Agriesti; D. Roncarati; F. Musiani; C. Del Campo; M. Iurlaro; F. Sparla; S. Ciurli; A. Danielli; V. Scarlato\*  
"FeON-FeOFF: the *Helicobacter pylori* Fur regulator commutates iron-responsive transcription by discriminative readout of opposed DNA grooves"  
*Nucl. Acids Res.* **2014**, 42, 3138-3151  
IF=8.278
- #101 B. Zambelli; A. Berardi; V. Martin-Diaconescu; L. Mazzei; F. Musiani; M. J. Maroney; S. Ciurli\*  
"Metal binding properties of *Helicobacter pylori* UreF, an accessory protein in the nickel-based activation of urease"  
*J. Biol. Inorg. Chem.* **2014**, 19, 319-334  
IF=3.289
- #100 B. Zambelli; S. Ciurli  
"Nickel and human health"  
*Met. Ions Life Sci.* **2013**, 13, 321-357

- #99 K. Banaszak; A. Merloni; B. Zambelli; A. Kiliszek; W.R. Rypniewski; S. Ciurli\*  
 "Selectivity of Ni(II) and Zn(II) binding to *Sporosarcina pasteurii* UreE, a metallo-chaperone in the urease assembly: a calorimetric and crystallographic study"  
*J. Biol. Inorg. Chem.* **2013**, *18*, 1005-1017  
 IF=3.289
- #98 F. Biagi; F. Musiani; \* S. Ciurli\*  
 "Structure of the UreD-UreF-UreG-UreE complex in *Helicobacter pylori*: a model study"  
*J. Biol. Inorg. Chem.*, **2013**, *18*, 571-577  
 IF=3.289
- #97 F. Musiani; E. Ippoliti; C. Micheletti; P. Carloni; S. Ciurli\*  
 "Conformational fluctuations of UreG, an intrinsically disordered enzyme"  
*Biochemistry*, **2013**, *52*, 2949-2954  
 IF=3.422
- #96 S. Benini; P. Kosikowska; M. Cianci; L. Mazzei; L. Berlicki; S. Ciurli\*  
 "The crystal structure of *Sporosarcina pasteurii* urease in a complex with citrate provides new hints for inhibitor design"  
*J. Biol. Inorg. Chem.*, **2013**, *18*, 391-399  
 IF=3.289
- #95 J.T. DeJong, J.T.; K.S. Soga; E. Kavazanjian; S. Burns; L. van Paassen; R. Fragaszy; A. Al Qabany; A. Aydilek; S.S. Bang; M. Burbank; L. Caslake; C.Y. Chen; X. Cheng; J. Chu; S. Ciurli; S. Fauriel; A.E. Filet; N. Hamdan; T. Hata; Y. Inagaki; S. Jefferis; M. Kuo; J. Larrahondo; D. Manning; B. Martinez; B. Mortensen; D. Nelson; A. Palomino; P. Renforth; J.C. Santamarina; E.A. Seagren; B. Tanyu; M. Tsesarsky; T. Weaver  
 "Biogeochemical Processes and Geotechnical Applications: Progress, Opportunities, and Challenges"  
*Geotechnique*, **2013**, *63*, 287-301  
 IF = 1.461
- #94 T.E. Bergdale, R.J. Pinkelman, S.R. Hughes, B. Zambelli, S. Ciurli,\* S.S. Bang  
 "Engineered biosealant strains producing inorganic and organic biopolymers"  
*J. Biotechnology*, **2012**, *161*, 181-189  
 IF = 3.045
- #93 R. Real-Guerra; F. Staniscuaski; B. Zambelli; F. Musiani; S. Ciurli; C. Carlini\*  
 "Biochemical and structural studies on native and recombinant *Glycine max* UreG: a detailed characterization of a plant urease accessory protein"  
*Plant Mol. Biol.* **2012**, *78*, 461-475  
 IF=4.150
- #92 V. Martin-Diaconescu; M. Bellucci; F. Musiani; S. Ciurli;\* M. Maroney\*  
 "Unraveling the *H. pylori* UreG zinc binding site using X-ray absorption spectroscopy (XAS) and structural modeling"  
*J. Biol. Inorg. Chem.* **2012**, *17*, 353-361  
 IF=3.289
- #91 B. Zambelli; F. Musiani, S. Ciurli  
 "Metal ion-mediated DNA-protein interactions"  
*Met. Ions Life Sci.* **2012**, *10*, 135-170.
- #90 K. Banaszak; V. Martin-Diaconescu; M. Bellucci; W.R. Rypniewski; M. Maroney; S. Ciurli\*  
 "The structures of *Helicobacter pylori* UreE bound to Ni(II) and Zn(II) reveal the role of the C-terminal disordered arm in protein-protein interaction and metal trafficking"  
*Biochem. J.* **2012**, *441*, 1017-1026  
 IF=4.897
- #89 B. Zambelli\*; N. Cremades; P. Neyroz; P. Turano; V. Uverski; S. Ciurli  
 "Insights in the (un)structural organization of *Bacillus pasteurii* UreG, an intrinsically disordered GTPase enzyme"  
*Mol. BioSyst.* **2012**, *8*, 220-228  
 IF=3.534
- #88 S. Benini; M. Cianci; S. Ciurli\*  
 "Holo-Ni<sup>2+</sup> *Helicobacter pylori* NikR contains four square-planar nickel-binding sites at physiological pH"  
*Dalton Trans.* **2011**, *40*, 7831-7833  
 IF=3.838

- #87 F. Musiani; M. Bellucci; S. Ciurli\*  
 "Model structures of *Helicobacter pylori* UreD(H) domains: a putative molecular recognition platform"  
*J. Chem. Inf. Model.* **2011**, *51*, 1513-1520  
 IF=4.675
- #86 B. Zambelli; F. Musiani; S. Benini; S. Ciurli\*  
 "Chemistry of Ni<sup>2+</sup> in urease: sensing, trafficking and catalysis"  
*Acc. Chem. Res.* **2011**, *44*, 520-530  
 IF=21.640
- #85 D.-W. Lee; Y. El Khoury; F. Francia; B. Zambelli; S. Ciurli; G. Venturoli; P. Hellwig; F. Daldal\*  
 "Zinc inhibition of bacterial cytochrome bc<sub>1</sub> reveals the role of E295 in proton release at the Qo site"  
*Biochemistry* **2011**, *50*, 4263-4272  
 IF=3.422
- #84 F. Musiani; A. Dikiy;\* S. Ciurli\*  
 "Interaction of selenoprotein W with 14-3-3 proteins: a computational approach"  
*J. Proteome Res.* **2011**, *10*, 968-976  
 IF=5.113
- #83 F. Musiani; B. Bertosa; A. Magistrato; B. Zambelli; P. Turano; V. Losasso; C. Micheletti; S. Ciurli\*; P. Carloni  
 "A computational study of the DNA-binding protein *Helicobacter pylori* NikR: the role of Ni<sup>2+</sup>"  
*J. Chem. Theory Comp.* **2010**, *6*, 3503-3515  
 IF=5.215
- #82 P. Zubini; B. Zambelli; F. Musiani; S. Ciurli; P. Bertolini; E. Baraldi\*  
 "The RNA hydrolysis and the cytokinin binding activities of PR-10 proteins are differently performed by two isoforms of the Pru p 1 peach major allergen and are possibly functionally related"  
*Plant Physiology*, **2009**, *150*, 1235-1247  
 IF=6.535
- #81 M. Bellucci; B. Zambelli; F. Musiani, P. Turano, S. Ciurli\*  
 "*Helicobacter pylori* UreE, a urease accessory protein: specific Ni<sup>2+</sup> and Zn<sup>2+</sup> binding properties and interaction with its cognate UreG"  
*Biochem. J.*, **2009**, *422*, 91-100  
 IF=4.897
- #80 B. Zambelli; P. Turano; F. Musiani; P. Neyroz; S. Ciurli\*  
 "Zn<sup>2+</sup>-linked dimerization of UreG from *Helicobacter pylori*, a chaperone involved in nickel trafficking and urease activation"  
*Proteins: Structure, Function, Bioinformatics* **2009**, *74*, 222-239  
 IF=3.392
- #79 A. Soragni; B. Zambelli; M. D. Mukrasch; J. Biernat; C. Griesinger; S. Ciurli; E. Mandelkow; M. Zweckstetter\*  
 "Structural characterization of binding of Cu(II) to Tau protein"  
*Biochemistry* **2008**, *47*, 10841-10851  
 IF=3.422
- #78 B. Zambelli; A. Danielli; S. Romagnoli, P. Neyroz; V. Scarlato; S. Ciurli\*  
 "High-affinity Ni<sup>2+</sup> binding selectively promotes binding of *Helicobacter pylori* NikR to its target urease promoter"  
*J. Mol. Biol.* **2008**, *383*, 1129-1143  
 IF=4.001
- #77 S. Benini; W.R. Rypniewski; K.S. Wilson; S. Ciurli\*  
 "High resolution crystal structure of *Rubrivivax gelatinosus* cytochrome c"  
*J. Inorg. Biochem.* **2008**, *102*, 1322-1328  
 IF=3.354
- #76 S. Ciurli  
 "Urease. Recent insights in the role of nickel"  
*Met. Ions Life Sci.*, **2007**, *2*, 241-278
- #75 B. Zambelli; M. Bellucci; A. Danielli; V. Scarlato; S. Ciurli\*  
 "The Ni<sup>2+</sup>-binding properties of *Helicobacter pylori* NikR"  
*Chem. Commun.* **2007**, *35*, 3649-3651  
 IF=6.169

- #74 M. Salomone-Stagni; B. Zambelli; F. Musiani; S. Ciurli\*  
 "A model-based proposal for the role of UreF as a GTPase activating protein in the urease active site biosynthesis"  
*Proteins: Struct. Funct. Bioinform.* **2007**, *68*, 749-761  
 IF=3.392
- #73 B. Zambelli; F. Musiani; M. Savini; P. Tucker; S. Ciurli\*  
 "Biochemical studies on *Mycobacterium tuberculosis* UreG and comparative modeling reveal structural and functional conservation among the bacterial UreG family"  
*Biochemistry*, **2007**, *46*, 3171-3182  
 IF=3.422
- #72 P. Neyroz; B. Zambelli; S. Ciurli\*  
 "The intrinsically disordered structure of *Bacillus pasteurii* UreG as revealed by steady-state and time-resolved fluorescence spectroscopy"  
*Biochemistry*, **2006**, *45*, 8918-8930  
 IF=3.422
- #71 M. Stola; F. Musiani; S. Mangani; P. Turano; N. Safarov; B. Zambelli; S. Ciurli\*  
 "The nickel site of *Bacillus pasteurii* UreE, a urease metallo-chaperone, as revealed by metal-binding studies and X-ray absorption spectroscopy"  
*Biochemistry*, **2006**, *45*, 6495-6509  
 IF=3.422
- #70 G. Zoppellaro; T. Teschner; E. Harbtiz; V. Schunemann; S. Karlsen; D. M. Arciero; S. Ciurli; A. X. Trautwein; A. B. Hooper; K. K. Andersson\*  
 "Low temperature EPR and Mossbauer spectroscopic of two cytochromes with His-Met axial coordination exhibiting HALS signals"  
*ChemPhysChem* **2006**, *7*, 1258-1267  
 IF=3.412
- #69 F. Arnesano; L. Banci; I. Bertini\*; F. Capozzi; S. Ciurli; C. Luchinat; S. Mangani; S. Ciofi-Baffoni; A. Rosato; P. Turano; M. S. Viezzoli  
 "An Italian contribution to structural genomics: understanding metalloproteins"  
*Coord. Chem. Rev.* **2006**, *250*, 1419-1450  
 IF=12.110
- #68 B. Krajewska\*; S. Ciurli  
 "Jack bean (*Canavalia ensiformis*) urease. Probing acid-base groups of the active site by pH-variation"  
*Plant Physiology and Biochemistry*, **2005**, *43*, 651-658  
 IF=2.838
- #67 S. Ciurli\*; F. Musiani  
 "High potential iron-sulfur proteins and their role as soluble electron carriers in bacterial photosynthesis: tale of a discovery"  
*Photosynthesis Res.* **2005**, *85*, 115-131  
 IF=2.243
- #66 F. Musiani; A. Dikiy; A.Y. Semenov; S. Ciurli\*  
 "Structure of the intermolecular complex between plastocyanin and cytochrome f from spinach"  
*J. Biol. Chem.* **2005** *280*, 18833-18841  
 IF=4.773
- #65 B. Zambelli; M. Stola; F. Musiani; K. De Vriendt; B. Samyn; B. Devreese; J. Van Beeumen; P. Turano; A. Dikiy; D.A. Bryant; S. Ciurli\*  
 "UreG, a chaperone in the urease assembly process, is an intrinsically unstructured GTPase that specifically binds Zn<sup>2+</sup>"  
*J. Biol. Chem.* **2005**, *280*, 4684-4695  
 IF=4.773
- #64 F. Musiani; P. Carloni\*; S. Ciurli\*  
 "The Asn38-Cys84 H-bond in plastocyanin"  
*J. Phys. Chem. Sect. B* **2004**, *108*, 7495-7499  
 IF=3.696

- #63 E. S. Ryabova; A. Dikiy; A. Eversole, M.J. Bjerrum, S. Ciurli; E. Nordlander\*  
 "Preparation and reactivity studies of synthetic microperoxidases containing b-type heme"  
*J. Biol. Inorg. Chem.* **2004**, *9*, 385-395  
 IF=3.289
- #62 S. Benini; W. R. Rypniewsky; K. S. Wilson, S. Mangani, S. Ciurli\*  
 "Molecular details of urease inhibition by boric acid: insights into the catalytic mechanism"  
*J. Am. Chem. Soc.* **2004**, *126*, 3714-3715  
 IF=9.907
- #61 F. Musiani; B. Zambelli; M. Stola; S. Ciurli\*  
 "Nickel trafficking: Insights into the fold and function of UreE, a urease metallochaperone"  
*J. Inorg. Biochem.* **2004**, *98*, 803-813  
 IF=3.354
- #60 G. Venturoli; M.D. Mamedov; S.S. Mansy; F. Musiani; M. Strocchi; F. Francia; A.Y. Semenov; J.A. Cowan; S. Ciurli\*  
 "Electron transfer from HiPIP to the photo-oxidized tetraheme cytochrome subunit of *Allochromatium vinosum* reaction center. New insights from site-directed mutagenesis and computational studies"  
*Biochemistry* **2004**, *43*, 437-445  
 IF=3.422
- #59 A. Gonzalez; S. Benini; S. Ciurli\*  
 "Crystal structure of *Rhodospirillum rubrum* high potential iron-sulfur protein solved by MAD"  
*Acta Crystallogr. Sect. D* **2003**, *59*, 1582-1588  
 IF=12.619
- #58 A. Dikiy; W. Carpentier; I. Vandenberghe; M. Borsari; N. Safarov; E. Dikaia; J. J. Van Beeumen\*; S. Ciurli\*  
 "Structural basis for the molecular properties of cytochrome  $c_6$ "  
*Biochemistry* **2002**, *41*, 14689-14699  
 IF=3.422
- #57 A. Dikiy; R. Funhoff; B. A. Averill\*; S. Ciurli\*  
 "New insights into the mechanism of purple acid phosphatase through  $^1\text{H}$  NMR spectroscopy"  
*J. Am. Chem. Soc.* **2002**, *124*, 13974-13975  
 IF=9.907
- #56 S. Ciurli\*; N. Safarov; S. Miletti; A. Dikiy; S.K. Christensen; K. Kornetzky; D.A. Bryant; I. Vandenberghe; B. Devreese; B. Samyn; H. Remaut; J. Van Beeumen  
 "Molecular characterization of *Bacillus pasteurii* UreE, a metal-binding chaperone for the assembly of the urease active site"  
*J. Biol. Inorg. Chem.* **2002**, *7*, 623-631  
 IF=3.289
- #55 I. Bertini;\* L. Banci; S. Ciurli; A. Dikiy; J. Dittmer; A. Rosato; G. Sciara; A. Thompsett  
 "NMR solution structure, backbone mobility and homology modeling of c-type cytochromes from Gram-positive bacteria"  
*ChemBiochem* **2002**, *3*, 299-310  
 IF=3.944
- #54 H. Remaut, N. Safarov; S. Ciurli\*; J. J. Van Beeumen\*  
 "Structural basis for Ni transport and assembly of the urease active site by the metallo-chaperone UreE from *Bacillus pasteurii*"  
*J. Biol. Chem.* **2001**, *276*, 49365-49370  
 IF=4.773
- #53 I. Bertini; D.A. Bryant; S. Ciurli\*; A. Dikiy; C. Fernández; C. Luchinat; N. Safarov; A. J. Vila; J. Zhao  
 "Backbone dynamics of plastocyanin in both oxidation states. Solution structure of the reduced form and comparison with the oxidized state"  
*J. Biol. Chem.* **2001**, *276*, 47217-47226  
 IF=4.773
- #52 S. Benini; W. R. Rypniewski; K. S. Wilson; S. Ciurli\*; S. Mangani\*  
 "Structure-based rationalization of urease inhibition by phosphate: novel insights into the enzyme mechanism"  
*J. Biol. Inorg. Chem.* **2001**, *6*, 778-790  
 IF=3.289



- #51 F. Musiani; E. Arnofi; R. Casadio; S. Ciurli\*  
 "Structure-based computational study of the catalytic and inhibition mechanisms of urease"  
*J. Biol. Inorg. Chem.* **2001**, *3*, 300-314  
 IF=3.289
- #50 I. Bertini\*; S. Ciurli; A. Dikiy; C. Fernández; C. Luchinat; N. Safarov; S. Shumilin; A. J. Vila  
 "The first solution structure of an oxidized paramagnetic copper(II) protein: the case of plastocyanin from the cyanobacterium *Synechocystis* PCC 6803"  
*J. Am. Chem. Soc.* **2001**, *123*, 2405-2413  
 IF=9.907
- #49 S. Benini, A. González, W. R. Rypniewski, \* K. S. Wilson, J. J. Van Beeumen, S. Ciurli\*  
 "Crystal structure of oxidized *Bacillus pasteurii* cytochrome  $c_{553}$  at 0.97 Å resolution"  
*Biochemistry*, **2000**, *39*, 13115-13126  
 IF=3.422
- #48 S. Benini; W. R. Rypniewski; K. S. Wilson; S. Miletti; S. Ciurli\*; S. Mangani\*  
 "The complex of *Bacillus pasteurii* urease with acetohydroxamic acid from X-ray data at 1.55 Å resolution"  
*J. Biol. Inorg. Chem.*, **2000**, *5*, 110-118  
 IF=3.289
- #47 I. H. M. Vanderberghe; Y. Guisez; S. Ciurli; S. Benini; J. J. Van Beeumen\*  
 "Cytochrome  $c_{553}$  from the alkaliphilic bacterium *Bacillus pasteurii* has the primary structure characteristics of a lipoprotein"  
*Biochem. Biophys. Res. Commun.*, **1999**, *264*, 380-387  
 IF=2.484
- #46 S. Ciurli\*; S. Benini, W. R. Rypniewski; K.S. Wilson; S. Miletti; S. Mangani  
 "Structural properties of the nickel ions in urease: novel insights into the catalytic and inhibition mechanisms"  
*Coord. Chem. Rev.* **1999**, 190-192, 331-355  
 IF=12.110
- #45 I. Bertini\*; S. Ciurli; A. Dikiy; R. Gasanov; C. Luchinat; G. Martini; N. Safarov  
 "High-field NMR studies of oxidized blue copper proteins: the case of spinach plastocyanin"  
*J. Am. Chem. Soc.* **1999**, *121*, 2037-2046  
 IF=9.907
- #44 R. Kappl; S. Ciurli; C. Luchinat; J. Hutterman\*  
 "Probing structural and electronic properties of the oxidized  $[Fe_4S_4]^{3+}$  cluster of *Ectothiorhodospira halophila* HiPIP iso-II by ENDOR spectroscopy"  
*J. Am. Chem. Soc.* **1999**, *121*, 1925-1935  
 IF=9.907
- #43 S. Benini; W. R. Rypniewski; K. S. Wilson; S. Miletti; S. Ciurli\*; S. Mangani\*  
 "A new proposal for urease mechanism based on the crystal structures of the native and inhibited enzyme from *Bacillus pasteurii*: why urea hydrolysis costs two nickels"  
*Structure* **1999**, *7*, 205-216  
 IF=6.347
- #42 P. Bonora; I. Principi; S. Ciurli; D. Zannoni; A. Hochkoeppler\*  
 "On the role of high-potential iron-sulfur proteins and cytochromes in the respiratory chain of two facultative phototrophs"  
*Biochim. Biophys. Acta (Bioenergetics)* **1999**, *1410*, 51-60  
 IF=4.843
- #41 S. Ciurli\*; S. Benini; M. Borsari; A. Dikiy, M. Lamborghini  
 "Modulation of *Bacillus pasteurii* cytochrome  $c_{553}$  reduction potential by structural and solution parameters"  
*J. Biol. Inorg. Chem.* **1998**, *3*, 371-382  
 IF=3.289
- #40 C. Marzadori; S. Miletti; C. Gessa; S. Ciurli\*  
 "Immobilization of jack bean urease on hydroxyapatite. A model for soil enzymes"  
*Soil Biol. Biochem.* **1998**, *30*, 1485-1490  
 IF=3.504

- #39 C. Marzadori; C. Gessa; S. Ciurli\*  
 "Kinetic properties and stability of potato acid phosphatase immobilized on Ca-polygalacturonate"  
*Biol. Fertil. Soil.* **1998**, *27*, 97-103  
 IF=2.319
- #38 S. Benini; W.R. Rypniewski; K.S. Wilson; S. Ciurli\*; S. Mangani\*  
 "The complex of *Bacillus pasteurii* urease with  $\beta$ -mercaptoethanol from X-ray data at 1.65 Å resolution"  
*J. Biol. Inorg. Chem.* **1998**, *3*, 268-273  
 IF=3.289
- #37 S. Benini; S. Ciurli\*; W.R. Rypniewski; K.S. Wilson; S. Mangani\*  
 "Crystallization and preliminary high resolution X-ray diffraction analysis of native and  $\beta$ -mercaptoethanol-inhibited urease from *Bacillus pasteurii*"  
*Acta Crystallogr., Sect. D.* **1998** *D54*, 409-412  
 IF=12.619
- #36 S. Benini; W.R. Rypniewski; K.S. Wilson; S. Ciurli\*  
 "Crystallization and preliminary X-ray diffraction analysis of cytochrome c' from *Rubrivivax gelatinosus* at 1.3 Å Resolution"  
*Acta Crystallogr. Sect. D* **1998** *D54*, 284-287  
 IF=12.619
- #35 F. Capozzi; S. Ciurli; C. Luchinat\*  
 "Coordination sphere versus protein environment as determinants of electronic and functional properties of iron-sulfur proteins"  
*Struct. Bonding*, **1998** *90*, 127-160  
 IF=3.475
- #34 A. Hochkoeppler; S. Ciurli; P. Kofod; G. Venturoli; D. Zannoni\*  
 "On the role of cytochrome  $c_8$  in photosynthetic electron transfer of the purple non-sulfur bacterium *Rhodospirillum rubrum*"  
*Photosynth. Res.* **1997** *53*, 13-21  
 IF=2.243
- #33 M. Borsari; S. Benini; D. Marchesi; S. Ciurli\*  
 "Cyclic voltammetry and spectroelectrochemistry of cytochrome  $c_8$  from *Rubrivivax gelatinosus*. Implications for its role in photosynthetic electron transfer"  
*Inorg. Chim. Acta* **1997** *263*, 379-384  
 IF=1.846
- #32 S. Benini; S. Ciurli\*; W. Rypniewski; K.S. Wilson  
 "Crystals of cytochrome c-553 from *Bacillus pasteurii* show diffraction to 0.97 Å resolution"  
*Proteins: Structure, Function, Bioinformatics* **1997**, *28*, 580-585  
 IF=3.392
- #31 C. Gessa\*; S. Deiana; A. Premoli; S. Ciurli  
 "Iron mobilization from a PGA network: a model of iron transfer at the soil-root interface"  
*Plant and Soil* **1997**, *190*, 289-299  
 IF=2.733
- #30 G. Van Driessche; S. Ciurli; A. Hochkoeppler; J. Van Beeumen\*  
 "The primary structure of *Rhodospirillum rubrum* high potential iron-sulfur protein, an electron donor to the photosynthetic reaction center"  
*Eur. J. Biochem. (FEBS Journal)* **1997**, *244*, 371-377  
 IF=3.790
- #29 A. Hochkoeppler; D. Zannoni; S. Ciurli\*; T.E. Meyer; M.A. Cusanovich; G. Tollin  
 "Kinetics of photoinduced electron transfer from high potential iron-sulfur protein (HiPIP) to the photosynthetic reaction center of the purple phototroph *Rhodospirillum rubrum*"  
*Proc. Natl. Acad. Sci. U.S.A.* **1996**, *93*, 6998-7002  
 IF=9.681
- #28 S. Benini; S. Ciurli\*; H. Nolting; S. Mangani\*  
 "X-ray absorption spectroscopy study of native and phenylphosphorodiamidate-inhibited *Bacillus pasteurii* urease"  
*Eur. J. Biochem. (FEBS Journal)* **1996**, *239*, 61-66  
 IF=3.790

- #27 S. Ciurli\*; C. Marzadori; S. Benini; S. Deiana; C. Gessa  
"Urease from the soil bacterium *Bacillus pasteurii*. Immobilization on Ca-polygalacturonate"  
*Soil Biol. Biochem.* **1996**, *28*, 811-817  
IF=3.504
- #26 S. Benini; C. Gessa; S. Ciurli\*  
"*Bacillus pasteurii* urease: a heteropolymeric enzyme with a binuclear nickel active site"  
*Soil Biol. Biochem.* **1996**, *28*, 819-821  
IF=3.504
- #25 S. Ciurli; M.A. Cremonini; P. Kofod; C. Luchinat\*  
"<sup>1</sup>H NMR of high potential iron-sulfur protein from the purple non-sulfur bacterium *Rhodospirillum rubrum*"  
*Eur. J. Biochem. (FEBS Journal)* **1996**, *236*, 405-411  
IF=3.790
- #24 A. Hochkoeppler; P. Kofod; G. Ferro; S. Ciurli\*  
"Isolation, characterization, and functional role of the high potential iron-sulfur protein (HiPIP) from *Rhodospirillum rubrum*"  
*Arch. Biochem. Biophys.* **1995** *322*, 313-318  
IF=2.935
- #23 A. Hochkoeppler; S. Ciurli; G. Venturoli; D. Zannoni\*  
"The high-potential iron-sulfur protein (HiPIP) from *Rhodospirillum rubrum* is competent in photosynthetic electron transfer"  
*FEBS Letters*, **1995**, *357*, 70-74  
IF= 3.538
- #22 S. Benini; S. Ciurli; C. Luchinat\*  
"Oxidized and reduced [Fe<sub>2</sub>Q<sub>2</sub>] (Q=S, Se) cores of spinach ferredoxin: a comparative study using <sup>1</sup>H NMR spectroscopy"  
*Inorg. Chem.* **1995**, *34*, 417-420  
IF=4.601
- #21 I. Bertini\*; S. Ciurli; C. Luchinat  
"The electronic structure of FeS centers in proteins and models. A contribution to the understanding of their electron transfer properties".  
*Struct. Bonding*, **1995**, *83*, 1-53  
IF=3.475
- #20 L. Banci; I. Bertini\*; S. Ciurli; C. Luchinat; R. Pierattelli  
"Rationalization of the redox potential within the series of the high potential iron-sulfur proteins"  
*Inorg. Chim. Acta* **1995**, *240*, 251-256  
IF=1.846
- #19 I. Bertini\*; S. Ciurli; A. Dikij; C. Luchinat  
"Electronic structure of the [Fe<sub>4</sub>Se<sub>4</sub>]<sup>3+</sup> clusters in *C. vinosum* HiPIP and *E. halophila* HiPIP II through NMR and EPR studies"  
*J. Am. Chem. Soc.* **1993**, *115*, 12020-12028  
IF=9.907
- #18 L. Banci; I. Bertini\*; S. Ciurli; S. Ferretti; C. Luchinat; M. Piccioli  
"The electronic structure of the [Fe<sub>4</sub>S<sub>4</sub>]<sup>3+</sup> cluster: an investigation of the oxidized high-potential iron-sulfur protein II from *Ectothiorhodospira vacuolata*"  
*Biochemistry* **1993**, *32*, 9387-9397  
IF=3.422
- #17 L. Banci; I. Bertini\*; F. Capozzi; P. Carloni; S. Ciurli; C. Luchinat; M. Piccioli  
"The iron-sulfur cluster in the oxidized high-potential iron protein from *Ectothiorhodospira halophila*"  
*J. Am. Chem. Soc.* **1993** *115*, 3431-3440  
IF=9.907
- #16 I. Bertini\*; F. Capozzi; S. Ciurli; C. Luchinat; L. Messori; M. Piccioli  
"Identification of the iron ions of HiPIP from *Chromatium vinosum* within the protein frame through two-dimensional NMR experiments"  
*J. Am. Chem. Soc.* **1992**, *114*, 3332-3340  
IF=9.907

- #15 G. O. Tan; S. A. Ensign; S. Ciurli; M. J. Scott; B. Hedman; R. H. Holm\*; P. W. Ludden; Z. R. Korszun; P. J. Stephens; K. O. Hodgson\*  
 "On the structure of the nickel-iron-sulfur center of the carbon monoxide dehydrogenase from *Rhodospirillum rubrum*: an X-ray absorption spectroscopic study"  
*Proc. Natl. Acad. Sci. U.S.A.* **1992**, *89*, 4427-4431  
 IF=9.681
- #14 S. Ciurli; P. K. Ross; M. J. Scott; S.-B. Yu; R. H. Holm\*  
 "Synthetic nickel-containing heterometal cubane-type clusters with NiFe<sub>3</sub>Q<sub>4</sub> Cores (Q=S,Se)"  
*J. Am. Chem. Soc.* **1992**, *114*, 5415-5423  
 IF=9.907
- #13 S. Ciurli; R. H. Holm\*  
 "Heterometal cubane-type clusters: a ReFe<sub>3</sub>S<sub>4</sub> single cubane cluster by cleavage of an iron-bridged double cubane and the site-voided cubane [Fe<sub>3</sub>S<sub>4</sub>] as a cluster-ligand"  
*Inorg. Chem.* **1991**, *30*, 743-750  
 IF=4.601
- #12 R. H. Holm\*; S. Ciurli; J. A. Weigel  
 "Subsite-specific structures and reactions in native and synthetic [4Fe-4S] cubane-type clusters"  
*Progr. Inorg. Chem.* **1990**, *38*, 1-73  
 IF=9.333
- #11 S. Ciurli; S.-B. Yu; R. H. Holm\*; K. K. P. Srivastava; E. Munck  
 "Synthetic NiFe<sub>3</sub>Q<sub>4</sub> cubane-type clusters (S=3/2) by reductive rearrangement of linear [Fe<sub>3</sub>Q<sub>4</sub>(SEt)<sub>4</sub>]<sup>3-</sup> (Q=S, Se)"  
*J. Am. Chem. Soc.* **1990**, *112*, 8169-8171  
 IF=9.907
- #10 S. Ciurli; M. Carrié; R. H. Holm\*  
 "Clusters containing the [ReFe<sub>3</sub>(μ-S)<sub>4</sub>] core: an expansion of the heterometal cubane-type cluster series MFe<sub>3</sub>S<sub>4</sub>"  
*Inorg. Chem.* **1990**, *29*, 3493-3501  
 IF=4.601
- #9 S. Ciurli; M. Carrié; J. A. Weigel; M. J. Carney; T. D. P. Stack; G. C. Papaefthymiou; R. H. Holm\*  
 "Subsite-differentiated analogues of native [4Fe-4S]<sup>2+</sup> clusters: preparation of clusters with five- and six-coordinate subsites and modulation of redox potentials and charge distribution"  
*J. Am. Chem. Soc.* **1990**, *112*, 2654-2664  
 IF=9.907
- #8 S. Ciurli; M. J. Carney; R. H. Holm\*; G. C. Papaefthymiou  
 "Stability range of heterometal cubane-type clusters MFe<sub>3</sub>S<sub>4</sub>: assembly of double-cubane clusters with the ReFe<sub>3</sub>S<sub>4</sub> Core"  
*Inorg. Chem.* **1989**, *28*, 2696-2698  
 IF=4.601
- #7 S. Ciurli; R. H. Holm\*  
 "Insertion of [VFe<sub>3</sub>S<sub>4</sub>]<sup>2+</sup> and [MoFe<sub>3</sub>S<sub>4</sub>]<sup>3+</sup> cores into a semirigid trithiolate cavitand ligand: regiospecific reactions at a vanadium site similar to that of nitrogenase"  
*Inorg. Chem.* **1989**, *28*, 1685-1690  
 IF=4.601
- #6 F. Corazza; C. Floriani\*; A. Chiesi-Villa; C. Guastini; S. Ciurli  
 "Five coordinated magnesium complexes: synthesis and structure of quadridentate schiff-base derivatives"  
*Dalton Trans.* **1988**, 2341-2345  
 IF=3.838
- #5 C. Floriani\*; M. Mazzanti; S. Ciurli; A. Chiesi-Villa; C. Guastini  
 "*cis* and *trans* dichloro chelate complexes of niobium(IV): synthesis and structure of *trans*-dichloro- [N,N'-ethylenebis-(acetylacetonylidene-iminato) (2-)]niobium(IV) and *cis*-dichloro-[7,6-dihydro-6,8,15,17-tetramethyldibenzo[b,i][1,4,8,11]tetraazacyclotetradecinato(2-)] niobium(IV)-acetonitrile(1/2)"  
*Dalton Trans.* **1988**, 1361-1365  
 IF=3.838

#4 S. Ciurli; E. M. Meyer; C. Floriani\*; A. Chiesi-Villa; C. Guastini  
"Ion pair complexes from the reduction of metal(II) dibenzotetramethyl-tetraaza[14]annulene complexes"  
*Chem. Commun.* **1987**, 281-283  
IF=6.169

#3 C. Floriani\*; S. Ciurli; A. Chiesi-Villa; C. Guastini  
"A new class of organozirconium(IV) compounds: alkyl derivatives of tetramethyltetraazadibenzo[14]-annuleneato-zirconium(IV)"  
*Angew. Chem. Int. Ed. Engl.* **1987**, 26, 70-72  
IF=13.455

#2 S. Ciurli; C. Floriani\*; A. Chiesi-Villa; C. Guastini  
" $\sigma$  and  $\pi$  organometallic derivatives of titanium(III) and vanadium(III) bonded to the dibenzotetramethyltetraaza[14]annulene Ligand"  
*Chem. Commun.* **1986**, 1401-1403  
IF=6.169

#1 S. Ciurli; S. Gambarotta; C. Floriani\*; A. Chiesi-Villa; C. Guastini  
"Reduced cobalt-meso-tetraphenylporphyrin complexes: synthesis and structure of [Na(thf)<sub>3</sub>]<sub>2</sub>[Co(TPP)]"  
*Angew. Chem. Int. Ed. Engl.* **1986**, 25, 553-554  
IF=13.455

## Books and book chapters

#14 S. Benini; F. Musiani; S. Ciurli  
"Urease"  
*Encyclopedia of Metalloproteins* **2013**, Kretsinger R. H., Uversky V. N., Permyakov E.A. (eds). Springer, New York, pp. 2287-2292.

#13 P. Neyroz; S. Ciurli; V. Uverski  
"Denaturant-induced unfolding in intrinsically disordered proteins"  
*Methods Mol. Biol.* **2012**, 896, 197-213

#12 P. Neyroz; S. Ciurli  
"Intrinsic fluorescence of intrinsically disordered proteins"  
*Methods Mol. Biol.* **2012**, 895, 435-440

#11 B. Zambelli; S. Ciurli  
"Nickel Enzymes/Models (Biological and Biomimetic)"  
*Encyclopedia of Catalysis – Second Edition* **2010**; John Wiley & Sons, Inc.; New York, USA; DOI: 10.1002/0471227617.eoc154.pub2

#10 S. Ciurli  
"Urease"  
*Biological Inorganic Chemistry: Structure and Reactivity*, Chapter III: "Metal-ion containing biological systems", section B: "Hydrolytic and water chemistry"; (I. Bertini, H. B. Gray, and J. S. Valentine, Eds.); University Science Books, California, USA, **2007**; pp. 198-208

#9 S. Ciurli  
"Nickel Enzymes/Models (Biological and Biomimetic)"  
*Encyclopedia of Catalysis* (I. T. Horvath, E. Iglesia, M. T. Klein, J. A. Lercher, A. J. Russell, and E. I. Stiefel, Eds); John Wiley & Sons, Inc.; New York, USA, **2003**, Vol. 5, pp. 582-589

#8 S. Ciurli; S. Mangani  
"Nickel-containing enzymes"  
*Handbook of Metalloproteins* (I. Bertini, A. Sigel, and H. Sigel, Eds.); Marcel Dekker, New York, USA, **2001**, pp. 669-708

#7 A. Hochkoepler; I. Principi; P. Bonora; S. Ciurli; D. Zannoni  
"On the role of soluble redox carriers alternative to cytochrome c<sub>2</sub> as donors to tetraheme-type reaction centers and cytochrome oxidases"  
*The Phototrophic Prokaryotes*  
(G.A. Pescek, W. Löffelhardt, G. Schmetterer, Eds)  
Kluwer Academic/Plenum Publisher, New York, USA, **1999**, 293-302

- #6 M. A. Cremonini, O. Francioso, S. Benini and S. Ciurli  
 "Quantification of *Bacillus pasteurii* urease secondary structure by factor analysis of FT-IR spectra"  
*Spectroscopy of Biological Molecules: Modern Trends*  
 (P. Carmona, R. Navarro, and A. Hernanz Eds.)  
 Kluwer Academic Publisher, **1997**, pp. 173-175
- #5 A. Hochkoepler; S. Ciurli; G. Venturoli, D. Zannoni  
 "The HiPIP from *Rhodospirillum rubrum* rapidly reduces the cytochrome  $c_{556}$  associated with the photochemical reaction center"  
*Photosynthesis: From Light to Biosphere*  
 (P. Mathis, Ed.)  
 Kluwer Academic Publishers, The Netherlands, **1995** Vol. II, pp. 733-735.
- #4 S. Ciurli; C. Luchinat; A. Scozzafava  
 "Iron-sulfur proteins: part II. Valence-specific assignment in oxidized HiPIP through  $^1\text{H}$  NMR spectroscopy"  
*Properties and Chemistry of Biomolecular Systems*  
 (N. Russo, J. Anastassopoulou, and G. Barone, Eds)  
 Kluwer, Dordrecht, **1994**, p. 143-157
- #3 C. Luchinat; S. Ciurli  
 "NMR of polymetallic systems in proteins"  
*Biological Magnetic Resonance*  
 (Berliner, L.J. and Reuben, J. Eds.)  
 Plenum Press, New York, **1993**, p. 357-420
- #2 C. Luchinat; S. Ciurli; F. Capozzi  
 "Towards an understanding of the electronic structure of  $\text{Fe}_4\text{S}_4$  high-potential iron-sulfur proteins"  
*Perspectives in Coordination Chemistry*  
 (A. F. Williams, C. Floriani, and A.E. Merbach Eds.)  
 VCH, Basel, **1992**, pp. 245-270
- #1 S. Ciurli  
 "Synthesis and properties of subsite-differentiated cubane clusters  $\text{MFe}_3\text{S}_4$ "  
 Ph.D. Thesis, Harvard University, **1990**

## Articles in National Journals

- #3 F. Capozzi; S. Ciurli; C. Luchinat  
 "Applicazioni della spettroscopia NMR in agricoltura"  
*Agricoltura e Ricerca* **1993**, 149, 3-22
- #2 P. Sequi; S. Ciurli; M. De Nobili, G. Mecella; G. Petruzzelli; N. Senesi; S. Silva  
 "Il Suolo"  
*La Protezione dell'Ambiente in Italia*  
 (I. Bertini, R. Cipollini, P. Tundo Eds.)  
 Società Chimica Italiana, Roma, **1995**, pp. 265-320.
- #1 F. Capozzi; S. Ciurli; C. Luchinat  
 "Applications of NMR spectroscopy to agricultural and food sciences"  
*La Chimica e l'Industria* **1995**, 4, 235-245