

## JOSHUA TELSER

### CURRICULUM VITAE

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#### EDUCATION:

Northwestern University, Evanston, IL; USPHS/NIH Postdoctoral Fellow, September 1984 – September 1986. Postdoctoral advisor: Prof. Brian M. Hoffman.

University of Florida, Gainesville, FL; Ph.D. in Inorganic Chemistry, December 1984. University of Illinois, Urbana, IL; graduate student in Inorganic Chemistry, 1980 – 1983. Thesis advisor: Prof. Russell S. Drago (deceased).

Cornell University, Ithaca, NY; A.B. in Chemistry (with distinction), May 1980.

#### WORK EXPERIENCE:

9/95 – present: Associate Professor of Chemistry, Roosevelt University, Chicago/Schaumburg, IL; Chemistry Program Coordinator, 1998 – 2000. Assistant Chair, Department of Biological, Chemical and Physical Sciences, 2005 – 2012; 2016 – present.

9/90 – 9/95: Assistant Professor of Chemistry.

Taught General Chemistry I and II (CHEM 201, 202), Inorganic Chemistry (CHEM 341/441), Organometallic Chemistry (CHEM 319/419), Bioinorganic Chemistry (BCHM/CHEM 344/444), and Analytical, Organic, Inorganic, and Physical Chemistry Laboratory courses (CHEM 203, 210, 347, 325), Chemistry Seminar (CHEM 393/493). Research in paramagnetic resonance and magnetic properties of inorganic and biological systems.

9/89 – 9/90: Research Associate, Department of Biochemistry, University of Chicago, Chicago, IL. Research on enzyme catalysis using nitroxide spin-labeled substrates and vanadyl-nucleotide complexes.

4/88 – 9/89: Research Investigator, Contrast Media Department, Squibb Institute for Medical Research, New Brunswick, NJ. Research and development of metal chelate complexes for use as magnetic resonance imaging (MRI) contrast agents including *in vitro* and *in vivo* chemical, biological, and MRI studies.

9/86 – 4/88: Temporary Research Chemist, Photon Processes Group, Amoco Corporation, Naperville, IL. Research on oligonucleotide-based diagnostic agents including thermodynamic and spectroscopic studies on synthetic DNA oligomers with covalently attached organic and inorganic labels.

9/84 – 9/86: Postdoctoral Fellow, Department of Chemistry, Northwestern University, Evanston, IL. Research on metalloenzyme structure and catalytic function using electron paramagnetic resonance (EPR) and ENDOR spectroscopy.

8/83 – 9/84: Graduate Research Assistant, Department of Chemistry, University of Florida, Gainesville, FL.

8/80 – 8/83: Graduate Teaching Assistant, Department of Chemistry, University of Illinois, Urbana, IL. Research on synthesis and spectroscopy of transition metal carboxylate dimers to understand metal-metal and metal-ligand interactions in potentially catalytically relevant complexes. Teaching assistant in General Chemistry and Physical Chemistry Laboratory courses.

Summer 1979: Dreyfus Foundation Summer Scholar, Department of Chemistry, University of Chicago, Chicago, IL.

Research in organometallic chemistry of lanthanide elements. Advisor: Prof. William J. Evans.

Part-Time 1976 – 1980: Guide-Lecturer, Museum of Science and Industry, Chicago, IL.

Gave guided tours of exhibits and basic science demonstrations.

## PROFESSIONAL PUBLICATIONS:

### Research Articles:

1. Bajaj, A.G.; Dev, S.; Tagle, B.; Telser, J.; Clardy, J. "The Stereochemistry of Allohimachalol"; *Tetrahedron Lett.* **1980**, *21*, 325-326.
2. Telser, J.; Drago, R.S. "Action of Strong Acids on  $M_2(O_2CR)_4$  Species"; *Inorg. Chem.* **1984**, *23*, 1798-1803.
3. Telser, J.; Drago, R.S. "Reactions of Rhodium Trifluoroacetate with Various Lewis Bases: Formation of 4:1 Complexes with Pyridine and *tert*-Butyl Isocyanide and Rhodium-Rhodium Bond Cleavage with Phosphorus Donors"; *Inorg. Chem.* **1984**, *23*, 2599-2606.
4. Telser, J.; Drago, R.S. "Reinvestigation of the Electronic and Magnetic Properties of Ruthenium Butyrate Chloride"; *Inorg. Chem.* **1984**, *23*, 3114-3120. Addition and Correction: *Inorg. Chem.* **1985**, *24*, 4765.
5. Drago, R.S.; Cosmano, R.; Telser, J. "EPR Spectra and Bonding in the 2:1 Base Adducts of  $Rh_2(carboxylate)_4^{+}$ "; *Inorg. Chem.* **1984**, *23*, 3120-3124.
6. Drago, R.S.; Cosmano, R.; Telser, J. "Quantitative Studies on the Coordination Chemistry of Tetrakis(*n*-Butyrato)diruthenium Chloride"; *Inorg. Chem.* **1984**, *23*, 4514-4518.

7. Hamilton, D.E.; Drago, R.S.; Telser, J. "Spin-Trapping of a Cobalt-Dioxygen Complex"; *J. Am. Chem. Soc.* **1984**, *106*, 5353-5355.
8. Telser, J.; Drago, R.S. "Solution Chemistry of Rhodium Trifluoroacetate in the Presence of Phosphorus Donors"; *Inorg. Chem.* **1986**, *25*, 2989-2992.
9. Telser, J.; Emptage, M.H.; Merkle, H.; Kennedy, M.C.; Beinert, H.; Hoffman, B.M. "<sup>17</sup>O ENDOR Characterization of Substrate Binding to the [4Fe-4S]<sup>1+</sup> Cluster of Reduced Active Aconitase" *J. Biol. Chem.* **1986**, *261*, 4840-4846.
10. Telser, J.; Benecky, M.J.; Adams, M.W.W.; Mortenson, L.E.; Hoffman, B.M. "EPR and ENDOR Investigation of Carbon Monoxide Binding to Oxidized Hydrogenase I (Bidirectional) from *Clostridium Pasteurianum* W5"; *J. Biol. Chem.* **1986**, *261*, 13536-13541.
11. Telser, J.; Benecky, M.J.; Adams, M.W.W.; Mortenson, L.E.; Hoffman, B.M. "EPR and ENDOR Investigation of Oxidized Hydrogenase II (Uptake) from *Clostridium Pasteurianum* W5: Effects of Carbon Monoxide Binding"; *J. Biol. Chem.* **1987**, *262*, 6589-6594.
12. Telser, J.; Hoffman, B.M.; LoBrutto, R.; Ohnishi, T.; Tsai, A.-L.; Palmer, G. "Evidence for N Coordination to Fe in the [2Fe-2S] Center in Yeast Mitochondrial Complex III"; *FEBS Lett.* **1987**, *214*, 117-121.
13. Kennedy, M.C.; Werst, M.M.; Telser, J.; Emptage, M.H.; Beinert, H.; Hoffman, B.M. "Mode of Substrate Carboxyl Binding to the [4Fe-4S]<sup>1+</sup> Cluster of Reduced Active Aconitase as Studied by <sup>17</sup>O and <sup>13</sup>C ENDOR Spectroscopy"; *Proc. Natl. Acad. Sci. USA* **1987**, *84*, 8854-8858.
14. Telser, J.; Cruickshank, K.A.; Morrison, L.E.; Netzel, T.L. "Synthesis and Characterization of DNA Oligomers and Duplexes Containing Covalently Attached Molecular Labels: Comparison of Biotin, Fluorescein, and Pyrene Labels by Thermodynamic and Optical Spectroscopic Measurements"; *J. Am. Chem. Soc.* **1989**, *111*, 6966-6976.
15. Telser, J.; Cruickshank, K.A.; Netzel, T.L.; Schanze, K.S. "Oligonucleotides Containing Covalently Attached Derivatives of Tris(2,2'-Bipyridine)Ruthenium(II): Synthesis and Characterization by Thermodynamic and Optical Spectroscopic Measurements"; *J. Am. Chem. Soc.* **1989**, *111*, 7221-7226.
16. Telser, J.; Cruickshank, K.A.; Morrison, L.E.; Netzel, T.L.; Chan, C.-K. "DNA Duplexes Covalently Labeled at Dual Sites: Synthesis and Characterization by Steady-State and Time-Resolved Optical Spectroscopies"; *J. Am. Chem. Soc.* **1989**, *111*, 7226-7232.
17. Taylor, J.-S.; Garrett, D.S.; Brockie, I.R.; Svoboda, D.L.; Telser, J. "<sup>1</sup>H NMR Assignment and Melting Temperature Study of Cis-Syn and Trans-Syn Thymine Dimer Containing Duplexes of d(CGTATTATGC): d(GCATAATACG)"; *Biochemistry* **1990**, *29*, 8858-8866.

18. Chang, C.A.; Brittain, H.G.; Telser, J.; Tweedle, M.F. "pH Dependence of Relaxivities and Hydration Numbers of Gadolinium(III) Complexes of Linear Amino Carboxylates"; *Inorg. Chem.* **1990**, *29*, 4468-4473.
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20. Wedeking, P.; Sotak, C.H.; Telser, J.; Kumar, K.; Chang, C.A.; Tweedle, M.F. "Quantitative Dependence of MR Signal Intensity on Tissue Concentration of Gd(HP-DO3A) in the Nephrectomized Rat"; *Magn. Reson. Imaging* **1992**, *10*, 97-108.
21. Mustafi, D.; Telser, J.; Makinen, M.W. "Vanadyl Complexes with Adenine Nucleotides: Investigation by EPR and ENDOR Spectroscopy"; *J. Am. Chem. Soc.* **1992**, *114*, 6219-6226.
22. Zhang, X.; Chang, C.A.; Brittain, H.G.; Garrison, J.M.; Telser, J.; Tweedle, M.F. "pH Dependence of Relaxivities and Hydration Numbers of Gadolinium(III) Complexes of Macrocyclic Amino Carboxylates"; *Inorg. Chem.* **1992**, *31*, 5997-5600.
23. Fu, W.; Telser, J.; Hoffman, B.M.; Smith, E.T.; Adams, M.W.W.; Finnegan, M.G.; Conover, R.C.; Johnson, M.K. "Interaction of  $Tl^+$  and  $Cs^+$  with the  $[Fe_3S_4]$  Cluster of *Pyrococcus furiosus* Ferredoxin: Investigation by Resonance Raman, MCD, EPR, and ENDOR Spectroscopy"; *J. Am. Chem. Soc.* **1994**, *116*, 5722-5729.
24. Eichhorn, D.M.; Telser, J.; Stern, C.L.; Hoffman, B.M. "Influence of Zero-Field Splitting and State Mixing on Ferromagnetic Exchange in the Integrated-Stack Charge-Transfer Salt  $[Cp^*_2Fe]^+[Co(HMPA-B)]^-$ "; *Inorg. Chem.* **1994**, *33*, 3533-3537.
25. Telser, J.; Smith, E.T.; Adams, M.W.W.; Conover, R.C.; Johnson, M.K.; Hoffman, B.M. "Cyanide Binding to the Novel 4Fe Ferredoxin from *Pyrococcus furiosus*: Investigation by EPR and ENDOR Spectroscopy"; *J. Am. Chem. Soc.* **1995**, *117*, 5133-5140.
26. Goldberg, D.P.; Telser, J.; Bastos, C.M.; Lippard, S.J. "Ferromagnetic versus Antiferromagnetic Exchange in Five Structurally Analogous Carboxylate-Bridged Trinuclear Ferrous Complexes"; *Inorg. Chem.* **1995**, *34*, 3011-3024.
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29. Telser, J.; Huang, H.; Lee, H.-I.; Adams, M.W.W.; Hoffman, B.M. "Site Valencies and Spin Coupling in the 3Fe and 4Fe ( $S = 1/2$ ) Clusters of *Pyrococcus furiosus* Ferredoxin by  $^{57}\text{Fe}$  ENDOR"; *J. Am. Chem. Soc.* **1998**, *120*, 861-870.
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31. Telser, J.; Lee, H.-I.; Smith, E.T.; Huang, H.; Brereton, P.; Adams, M.W.W.; Conover, R.C.; Johnson, M.K.; Hoffman, B.M. "Investigation by EPR and ENDOR Spectroscopy of the Novel 4Fe Ferredoxin from *Pyrococcus furiosus*"; *Appl. Magn. Reson.* **1998**, *14*, 305-321.
32. DeRose, V.J.; Telser, J.; Anderson, M.E.; Lindahl, P.A.; Hoffman, B.M. "A Multinuclear ENDOR Study of the C-Cluster in CO Dehydrogenase from *Clostridium thermoaceticum*: Evidence for  $\text{H}_2\text{O}$  and Histidine Coordination to the  $[\text{Fe}_4\text{S}_4]$  Cluster"; *J. Am. Chem. Soc.* **1998**, *120*, 8767-8776.
33. Telser, J.; Pardi, L.A.; Krzystek, J.; Brunel, L.-C. "EPR Spectra from 'EPR-Silent' Species: High-Field EPR Spectroscopy of Aqueous Chromium(II)"; *Inorg. Chem.* **1998**, *37*, 5769-5775. Addition and Correction: *Inorg. Chem.* **2000**, *39*, 1834.
34. Valko, M.; Morris, H.; Mazúr, M.; Telser, J.; McInnes, E.J.L; Mabbs, F.E. "High-Affinity Binding Site for Copper(II) in Human and Dog Serum Albumins (an EPR Study)"; *J. Phys. Chem. B* **1999**, *103*, 5591-5597.
35. Telser, J.; Davydov, R.; Kim, C.-H.; Adams, M.W.W.; Hoffman, B.M. "Investigation of the Unusual Electronic Structure of *Pyrococcus furiosus* 4Fe Ferredoxin by EPR Spectroscopy of Protein Reduced at Ambient and Cryogenic Temperatures"; *Inorg. Chem.* **1999**, *38*, 3550-3553.
36. Krzystek, J.; Telser, J.; Pardi, L.A.; Goldberg, D.P; Hoffman; B.M.; Brunel, L.-C.; "High-Frequency and -Field Electron Paramagnetic Resonance of High-Spin Manganese(III) in Porphyrinic Complexes"; *Inorg. Chem.* **1999**, *38*, 6121-6129.
37. Heo, J.; Staples, C.R.; Telser, J.; Ludden, P.W.; "*Rhodospirillum rubrum* CO-Dehydrogenase. Part 2. Spectroscopic Investigation and Assignment of Spin-Spin Coupling Signals"; *J. Am. Chem. Soc.* **1999**, *121*, 11045-11057.
38. Telser, J.; Horng, Y.-C.; Becker, D.F.; Hoffman, B.M.; Ragsdale, S.W.; "On the Assignment of Nickel Oxidation States of the Ox1, Ox2 Forms of Methyl-Coenzyme M Reductase"; *J. Am. Chem. Soc.* **2000**, *122*, 182-183.
39. Telser, J. Lee, H.-I.; Hoffman, B.M.; "Investigation of Exchange Couplings in  $[\text{Fe}_3\text{S}_4]^+$  Clusters by Electron Spin-Lattice Relaxation"; *J. Biol. Inorg. Chem.* **2000**, *5*, 369-380.

40. Howard, T.; Telser, J.; DeRose, V.J.; An Electron Paramagnetic Resonance Study of  $\text{Mn}_2(\text{H}_2\text{O})(\text{OAc})_4(\text{tmeda})_2$  (tmeda = *N,N,N',N'*-Tetramethylethylenediamine): A Model for Dinuclear Manganese Enzyme Active Sites"; *Inorg. Chem.* **2000**, *39*, 3379-3385.
41. Pardi, L.A.; Krzystek, J.; Telser, J.; Brunel, L.-C.; "Multifrequency EPR Spectra of Molecular Oxygen in Solid Air"; *J. Magn. Reson.* **2000**, *146*, 375-378.
42. Telser, J.; Davydov, R.; Horng, Y.-C.; Becker, D.F.; Ragsdale, S.W.; Hoffman, B.M.; "Cryoreduction of Methyl-Coenzyme M Reductase: EPR Characterization of Forms,  $\text{MCR}_{\text{ox1}}$  and  $\text{MCR}_{\text{red1}}$ "; *J. Am. Chem. Soc.* **2001**, *123*, 5853-5860.
43. Krzystek, J.; Telser, J.; Hoffman, B.M.; Brunel, L.-C.; Licoccia, S. "High-Frequency and Field EPR Investigation of (8,12-Diethyl-2,3,7,13,17,18-hexamethylcorrolato)manganese(III)"; *J. Am. Chem. Soc.* **2001**, *123*, 7890-7897.
44. Krzystek, J.; Telser, J.; Knapp, M.J.; Hendrickson, D.N.; Aromí, G.; Christou, G.; Angerhofer, A.; Brunel, L.-C. "High-Frequency and -Field Electron Paramagnetic Resonance of High-Spin Manganese(III) in Axially Symmetric Coordination Complexes"; *Appl. Magn. Reson.* **2001**, *21*, 571-585.
45. Carepo, M.; Tierney, D.L.; Brondino, C.D.; Yang, T.C.; Pamplona, A.; Telser, J.; Moura, I.; Moura, J.J.G.; Hoffman, B.M. " $^{17}\text{O}$  ENDOR Detection of a Solvent-Derived Ni-(OH<sub>x</sub>)-Fe Bridge That Is Lost upon Activation of the Hydrogenase from *Desulfovibrio gigas*"; *J. Am. Chem. Soc.* **2002**, *124*, 281-286.
46. Smoukov, S.K.; Telser, J.; Bernat, B.A.; Rife, C.L.; Armstrong, R.N.; Hoffman, B.M. "EPR Study of Substrate Binding to the Mn(II) Active Site of the Bacterial Antibiotic Resistance Enzyme, FosA: A Better Way to Examine Mn(II)"; *J. Am. Chem. Soc.* **2002**, *124*, 2318-2326.
47. Krzystek, J.; Pardi, L.A.; Brunel, L.-C.; Goldberg, D.P.; Hoffman, B.M.; Licoccia, S.; Telser, J. "High-Frequency and -Field Electron Paramagnetic Resonance of High-Spin Manganese(III) in Tetrapyrrole Complexes"; *Spectrochim. Acta, Part A* **2002**, *58*, 1113-1127.
48. Krzystek, J.; Park, J.-H.; Meisel, M.W.; Hitchman, M.A.; Stratemeier, H.; Brunel, L.-C.; Telser, J. "EPR Spectra from 'EPR-Silent' Species: High-Frequency and High-Field EPR Spectroscopy of Pseudo-Tetrahedral Complexes of Nickel(II)"; *Inorg. Chem.* **2002**, *41*, 4478-4487.
49. Brezova, V.; Valko, M.; Breza, M.; Morris, H.; Telser, J.; Dvoranova, D.; Kaiserova, K.; Varecka, L.; Mazur, M.; Leibfritz, D. "Role of Radicals and Singlet Oxygen in Photoactivated DNA Cleavage by the Anticancer Drug Camptothecin: An Electron Paramagnetic Resonance Study"; *J. Phys. Chem. B.* **2003**, *107*, 2415-2425.

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51. Krzystek, J.; Yeagle, G. J.; Park, J.-H.; Britt, R. D.; Meisel, M. W.; Brunel, L.-C.; Telser, J. "High-Frequency and -Field EPR Spectroscopy of Tris(2,4-pentanedionato)manganese(III): Investigation of Solid-State versus Solution Jahn-Teller Effects"; *Inorg. Chem.* **2003**, *42*, 4610-4618. Correction: *Inorg. Chem.* **2009**, *48*, 3290.
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61. Harvey, J. D.; Ziegler, C. J.; Telser, J.; Ozarowski, A.; Krzystek, J.; "High-Frequency and -Field EPR Investigation of a Manganese(III) N-Confused Porphyrin Complex, [Mn(NCTPP)(py)<sub>2</sub>]" ; *Inorg. Chem.* **2005**, *44*, 4451-4453. Addition and Correction: *Inorg. Chem.* **2006**, *45*, 8459.
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11. Telser, J.; Ozarowski, A.; Krzystek, J.; "High-frequency and -field electron paramagnetic resonance of transition metal ion (d block) coordination complexes"; *Electron Paramag. Reson.*, **2013**, *23*, 209-263. (Royal Society of Chemistry, Specialist Periodical Report; DOI: 10.1039/9781849734837-00209).
12. Schwalbe, H.; Telser, J. "Magnetic Resonance Spectroscopy in Bio(in)organic Chemistry and in Mechanistic Systems Biology: A Tribute to Ivano Bertini"; *ChemBioChem* **2013**, *14*, 1671-1675. (Editorial for Ivano Bertini memorial issue; DOI: 10.1002/cbic.201300451).
13. Telser, J.; Ozarowski, A.; Krzystek, J.; "High-Frequency and High-Field Electron Paramagnetic Resonance (HFEP) – A new spectroscopic tool for bioinorganic chemistry"; *J. Biol. Inorg. Chem.* **2014**, *19*, 297-318. (DOI: 10.1007/s00775-013-1084-3).
14. Cutsail, G. E., III; Telser, J.; Hoffman, B. M.; "Advanced Paramagnetic Resonance Spectroscopies of Iron-Sulfur Proteins: Electron Nuclear Double Resonance (ENDOR) and Electron Spin Echo Envelope Modulation (ESEEM)"; *Biochim. Biophys. Acta – Molecular Cell Research* **2015**, 1853, 1370-1394. (DOI: 10.1016/j.bbamcr.2015.01.025).



15. Krzystek, J.; Ozarowski, A.; Telser, J.; Crans, D. C.; "High-Frequency and -Field Electron Paramagnetic Resonance of Vanadium(IV, III, and II) Complexes"; *Coord. Chem. Revs.* **2015**, 301–302, 123–133. (The Ninth International Symposium on the Chemistry and Biological Chemistry of Vanadium special issue; DOI: 10.1016/j.ccr.2014.10.014).

16. Krzystek, J.; Telser, J.; "Measuring giant anisotropy in paramagnetic transition metal complexes with relevance to single-ion magnetism"; *Dalton Trans.* **2016**, 45, 16751–16763. (Perspectives article; DOI: 10.1039/C6DT01754A).

17. Telser, J.; "EPR Interactions – Zero Field Splittings"; *eMagRes* **2017**, 6 (2), 207–233. (DOI: 10.1002/9780470034590.emrstm1501; ISBN: 9780470034590).

### **EDITED BOOK:**

*Paramagnetic Resonance of Metallobiomolecules*; ACS Symposium Series, vol. 858; J. Telser, Ed.; Washington, DC: American Chemical Society, 2003. (ISBN: 0-8412-3832-4; DOI: 10.1021/bk-2003-0858).

### **PATENT APPLICATION:**

Template-Directed Ligation of DNA Probes. Cruickshank, K.A.; Netzel, T.L.; Telser, J.A. U.S. Patent Application filed December, 1989. Assigned to Amoco Corporation.

### **PROFESSIONAL PRESENTATIONS:**

- Florida Catalysis Conference, Palm Coast, FL; April, 1985.
- 190th ACS National Meeting, Chicago, IL; September, 1985; BIOL 47.
- Gordon Research Conference on "Metals in Biology", Santa Barbara, CA; January, 1986.
- 194th ACS National Meeting, New Orleans, LA; September, 1987; INOR 132; Symposium on Metal Clusters in Proteins.
- 16th Annual Meeting, American Society for Photobiology, Colorado Springs, CO; March, 1988; THPM-A24 (in *Photochem. Photobiol.*).
- 195th ACS National Meeting, Toronto, Canada; June, 1988; INOR 411; Symposium on Transition Metal-Nucleic Acid Chemistry.
- 4th International Conference on Bioinorganic Chemistry, Cambridge, MA; July, 1989; A029 (in *J. Inorg. Biochem.*)
- 201st ACS National Meeting, Atlanta, GA; April, 1991; INOR 494.
- 203rd ACS National Meeting, San Francisco, CA; April, 1992; CHED 289.
- Gordon Research Conference on "Inorganic Chemistry", Wolfeboro, NH; July, 1993.
- 6th International Conference on Bioinorganic Chemistry, San Diego, CA; August, 1993; G059 (in *J. Inorg. Biochem.*)

- 208th ACS National Meeting, Washington, DC; August, 1994; INOR 353; Symposium on Ligand Effects in Bioinorganic Chemistry.
- Seminar, Chemistry Department, Wayne State University, Detroit, MI; November 10, 1994.
- Seminar, Center for the Study of Early Events in Photosynthesis, Arizona State University, Tempe, AZ; March 9, 1995.
- Gordon Research Conference on "Enzymes, Coenzymes, and Metabolic Pathways", Meriden, NH; July, 1995.
- 18th International EPR Symposium (Part of the 37th Rocky Mountain Conference on Analytical Chemistry); Denver, CO; July, 1995; 152.
- 210th ACS National Meeting, Chicago, IL; August, 1995; INOR 665.
- 7th International Conference on Bioinorganic Chemistry, Lübeck, Germany; September, 1995; M06 (in *J. Inorg. Biochem.*)
- Talk at 3rd European Conference on Biological Inorganic Chemistry, Noordwijkerhout, The Netherlands; August, 1996; C9.
- Seminar, Max Planck Institut für Terrestrische Mikrobiologie, Marburg, Germany; May 28, 1997.
- Seminar, Institute of Materials Science, National Center for Scientific Research "Demokritos", Athens-Agia Paraskevi, Greece; June 3, 1997.
- 5th Conference on EPR of Disordered Systems (EMARDIS), Sofia-Boyana, Bulgaria, June, 1997.
- Gordon Research Conference on "Magnetic Resonance in Biology and Medicine", Ventura, CA; February, 1998.
- 4th European Conference on Biological Inorganic Chemistry, Seville, Spain; July, 1998.
- Seminar, Biochemistry Department, University of Wisconsin, Madison, WI; September 24, 1998.
- Seminar, Chemistry Department, University of North Dakota, Grand Forks, ND; March 1, 1999.
- Seminar, Inorganic Chemistry Institute, University of Vienna, Vienna, Austria, June 1, 1999.
- Talk at Coordination Chemistry Conference, Smolenice, Slovakia, June, 1999.
- 9th International Conference on Bioinorganic Chemistry (ICBIC-9), Minneapolis, MN; July, 1999; 311B (in *J. Inorg. Biochem.*)
- Seminar, Chemistry Department, University of Florida, Gainesville, FL; August 24, 1999.
- Talk at UMBELLA Workshop on High-Field EPR, Nijmegen, The Netherlands, October, 1999.
- 5th European Conference on Biological Inorganic Chemistry, Toulouse, France; July, 2000.
- 221st ACS National Meeting, San Diego, CA; April, 2001; INOR 703.
- 7th Conference on EPR of Disordered Systems (EMARDIS), Sofia-Boyana, Bulgaria, June, 2001.
- 222nd ACS National Meeting, Chicago, IL; August, 2001; INOR 288 (also session chair).
- Seminar, Chemistry Department, University of Sydney, Sydney, NSW, Australia; September 28, 2001.

- Seminar, Chemistry Department, University of Western Australia, Perth WA, Australia; October 3, 2001.
- Seminar, Faculty of Biochemical and Pharmaceutical Sciences, Rosario National University, Rosario, Argentina; November 13, 2001.
- Seminar, Faculty of Biochemistry and Biological Sciences, Litoral National University, Santa Fe, Argentina; November 14, 2001.
- Seminar, Department of Chemistry, University of Puerto Rico, Río Piedras, PR; December 10, 2001.
- 223rd ACS National Meeting, Orlando, FL; April, 2002. Symposium Organizer and Session Chair and Introductory and Final Remarks.
- Congress AMPERE, Poznań (Posen), Poland; July 2002.
- 6th European Conference on Biological Inorganic Chemistry, Lund, Sweden; July-August, 2002.
- Seminar at Ørsted Institute, Copenhagen, Denmark; August 5, 2002.
- Seminar, Inorganic Division, Department of Chemistry, Purdue University, West Lafayette, IN; November 12, 2002.
- Talk at workshop on Electron Magnetic Resonance, NHMFL, Tallahassee, FL; December, 2002.
- Seminar, Chemistry Department, Washington State University, Pullman, WA; April 14, 2003.
- Seminar, Inorganic Chemistry Division, University of Wisconsin, Madison, WI; April 28, 2003.
- Seminar, Chemistry Department, University of New Mexico, Albuquerque, NM; September 12, 2003.
- Seminar, Department of Chemistry and Biochemistry, University of Bern, Bern, Switzerland, January 8, 2004.
- Seminar, Institute of Physical Chemistry, University of Stuttgart, Stuttgart, Germany, January 12, 2004.
- Seminar, Max Planck Institut für Bioanorganische Chemie, Mülheim a.d. Ruhr, Germany, January 19, 2004.
- Seminar, Chemistry Department, University of Memphis, Memphis, TN; October 29, 2004.
- Seminar, Physical Chemistry Department, Slovak Technical University, Bratislava, Slovakia; January 21, 2005.
- Seminar, Physical Chemistry Division, Chemistry Department, Michigan State University, East Lansing, MI; February 15, 2005.
- 229th ACS National Meeting, San Diego, CA; March, 2005; INOR 402.
- Plenary Lecturer, Royal Society of Chemistry, ESR Group, 38th International Meeting, Bath, England, UK; March 23, 2005.
- Talk at DFG-Priority Programme 1071 Workshop on "Enzymes in Radical Catalysis", Schloss Rauischholzhausen, Hessen, Germany; April 11-13, 2005.
- Seminar, Inorganic Chemistry Division, Chemistry Department, University of Texas, Austin, TX; May 2, 2005.

- Seminar, Inorganic Chemistry Division, Chemistry Department, Texas A&M University, College Station, TX; May 4, 2005.
- 12th International Conference on Bioinorganic Chemistry (ICBIC-12), Ann Arbor, MI; July 31 - August 5, 2005; 2-MICH-49.
- Seminar, Chemistry Department, University of Victoria, Victoria, BC, Canada; November 14, 2005.
- Seminar, Chemistry Department, Simon Fraser University, Burnaby, BC, Canada; November 16, 2005.
- Seminar, Chemistry Department, Loyola University, Chicago, IL; January 26, 2006.
- Seminar, Chemistry Department, Johns Hopkins University, Baltimore, MD; April 5, 2006.
- Talk in Symposium on "Paramagnetic Inorganic and Organometallic Complexes", 89th Chemical Society of Canada Meeting, Halifax, NS, Canada; May 29, 2006.
- 8th European Conference on Biological Inorganic Chemistry (EUROBIC-8), Aveiro, Portugal; July, 2006.
- Talk at 13th Brazilian Meeting on Inorganic Chemistry (BMIC XIII), Fortaleza, CE, Brazil; September 5, 2006.
- Seminar, Chemistry Department, University of Miami, Coral Gables, FL; February 15, 2007.
- 233rd ACS National Meeting, Chicago, IL; March, 2007; INOR 1312 (also session chair).
- Talk in Symposium on "Concepts and Models in Bioinorganic Chemistry", 90th Chemical Society of Canada Meeting, Winnipeg, MB, Canada; May 30, 2007.
- Invited talk at 13th International Conference on Bioinorganic Chemistry (ICBIC-13), Vienna, Austria; July 17, 2007; Abstract O092a (also session chair).
- Talk in Symposium on Molecular Magnetism, VIII Latin American Workshop on Magnetism, Magnetic Materials and their Applications (LAW3M), Rio de Janeiro, RJ, Brazil, August, 12 - 16, 2007; MONOR11.
- Gordon Research Conference on "Protein Derived Radicals, Cofactors, and Quinones", Ventura, CA; January, 2008.
- Seminar, Biophysics Department, Medical College of Wisconsin, Milwaukee, WI; February 8, 2008.
- 235th ACS National Meeting, New Orleans, LA; April, 2008; INOR 518 (also session chair).
- Talk at 91st Chemical Society of Canada Meeting, Edmonton, AB, Canada; May 28, 2008.
- Talk at 31st International EPR Symposium, Breckenridge, CO; July 30, 2008.
- Poster at 14th Brazilian Meeting on Inorganic Chemistry (BMIC XIV), Foz do Iguaçu, PR, Brazil; August 31 - September 4, 2008.
- Seminar, Chemistry Department, University of Tromsø, Tromsø, Norway; October 15, 2008. Also served as "opponent" for Ph.D. thesis defense of Dr. Espen Tangen, student; Prof. Abhik Ghosh, advisor.
- Seminar, Chemistry Department, Western Michigan University, Kalamazoo, MI; October 27, 2008.
- Seminar, Institute of Organic Chemistry and Biochemistry, Academy of Sciences of the Czech Republic, Prague, Czech Republic; January 26, 2009.

- Seminar, Chemistry Department, University of Kansas, Lawrence, KS; February 27, 2009.
- Seminar, Inorganic Chemistry Division, University of Oregon, Eugene, OR; April 10, 2009.
- Seminar, Inorganic Chemistry Division, Indiana University, Bloomington, IN; April 17, 2009.
- Invited speaker, “NMR-squared”, Albuquerque, NM; April 25, 2009.
- Seminar, Institute for Physical and Theoretical Chemistry, University of Bonn, Bonn, Germany; June 4, 2010.
- Talk at 6th International Conference on Porphyrins and Phthalocyanines (ICPP-6), Santa Ana Pueblo, NM; July 5, 2010.
- Keynote Lecture at 15th Brazilian Meeting on Inorganic Chemistry (BMIC XV), Angra dos Reis, RJ, Brazil; August 17, 2010.
- Seminar, Chemistry Department, IUPUI, Indianapolis, IN; October 6, 2010.
- 241st ACS National Meeting, Anaheim, CA; March 27, 2011; INOR 131.
- Invited speaker, XVII Congreso Argentino de Fisicoquímica y Química Inorgánica, Córdoba, Argentina; May 5, 2011.
- Talk at 94th Canadian Society for Chemistry Meeting, Montréal, QC, Canada; June 8, 2011.
- Invited talk at 15th International Conference on Bioinorganic Chemistry (ICBIC-15), Vancouver, BC, Canada; August 10, 2011; Abstract 1072716.
- Seminar, Chemistry Department, University of Texas-Arlington, Arlington, TX; March 9, 2012.
- 243rd ACS National Meeting, San Diego, CA; March 25 – 29, 2012. Symposium Organizer and Introductory Remarks.
- Seminar, Chemistry Department, Miami University, Oxford, OH; April 26, 2012.
- Seminar, Chemistry Department, North Dakota State University, Fargo, ND; May 22, 2012.
- V<sup>th</sup> International Conference on Molecular Materials (MolMat2012), Barcelona, Spain; July 3 – 6, 2012; PO 166.
- Keynote Lecture at 16th Brazilian Meeting on Inorganic Chemistry (BMIC XVI), Florianópolis, SC, Brazil; August 14, 2012.
- Talk at 41st Southeastern Magnetic Resonance Conference (part of Southeastern Regional ACS Meeting (SERMACS)), Raleigh, NC; November 15 – 17, 2012; Abstract 1094.
- Seminar, Chemistry Department, Illinois Institute of Technology, Chicago, IL; February 20, 2013.
- Talk at 12th International Symposium on Metal Ions in Biology and Medicine, Punta del Este, Uruguay; March 11 – 13, 2013. Abstract 033, in ISBN: 978-9974-0-0911-0.
- Seminar, Instituto de Química, Universidad de la República, Montevideo, Uruguay; March 15, 2013.
- 245th ACS National Meeting, New Orleans, LA; April 7 – 11, 2013; INOR 1234.
- 18th International Society of Magnetic Resonance (ISMAR) Meeting, Rio de Janeiro, RJ, Brazil, May 19 – 24, 2013; MO232, TU233.
- Seminars, Instituto de Química de São Carlos, Universidade de São Paulo, São Carlos, SP Brazil, August 21, 22, 2013.

- Seminar, Chemistry Department, University of Nevada, Reno, NV; September 13, 2013.
- Seminar, Chemistry Department, University of Akron, Akron, OH; January 22, 2014.
- Invited Participant, 5th Ringberg Workshop on Science with FELs [Free Electron Lasers], Schloss Ringberg, Kreuth, Bavaria, Germany; February 16 – 19, 2014.  
<http://www.mpimf-heidelberg.mpg.de/12477665/Science-with-FELs>
- Seminar, Inorganic Chemistry Faculty, Friedrich-Alexander Universität, Erlangen, Germany; February 20, 2014.
- 247th ACS National Meeting, Dallas, TX; March 16 – 20, 2014; INOR 108. Speaker in ACS Award in Organometallic Chemistry Symposium in Honor of Kenneth G. Caulton.
- Poster at 9th International BioMetals Symposium (BioMetals 2014), Duke University, Durham, NC; July 14 – 18, 2014.
- Talk at 17th Brazilian Meeting on Inorganic Chemistry (BMIC XVII), Araxá, MG, Brazil; August 13, 2014. Abstract OP-8.  
[http://bmic2014.ufmg.br/arquivos/programacao.completa\\_3.pdf](http://bmic2014.ufmg.br/arquivos/programacao.completa_3.pdf)
- Seminar, Chemistry Department, University of Texas-El Paso (UTEP), El Paso, TX; November 14, 2014.
- Seminar, Inorganic Chemistry Division, Indiana University, Bloomington, IN; February 13, 2015.
- 249th ACS National Meeting, Denver, CO; March 22 – 26, 2015; INOR 384. Speaker in ACS Award in Organometallic Chemistry Symposium in Honor of William J. Evans.
- Seminar, Chemistry Department, University of Tennessee, Knoxville, TN; April 9, 2015.
- Seminar, Inorganic Chemistry Division, University of Georgia, Athens, GA; May 18, 2015.
- Seminar, Inorganic Chemistry Division, University of Pennsylvania, Philadelphia, PA; June 9, 2015.
- Talk at 98th Canadian Society for Chemistry Meeting, Ottawa, ON, Canada; June 16, 2015.
- Talk at 3rd EuCheMS Inorganic Chemistry Conference, Wrocław (Breslau), Poland; June 30, 2015. <http://euchems.chem.uni.wroc.pl/program/>
- Seminar, Chemistry Department, University of Missouri – Saint Louis (UMSL), Saint Louis, MO; September 21, 2015.
- Talk at 44th Southeast Magnetic Resonance Conference (SEMRC), Daytona Beach, Florida; October 10, 2015.  
[https://nationalmaglab.org/images/news\\_events/searchable\\_docs/seminars/SEMRC\\_2015\\_program.pdf](https://nationalmaglab.org/images/news_events/searchable_docs/seminars/SEMRC_2015_program.pdf)
- Seminar, Chemistry Department, University of Gießen, Gießen a. d. Lahn, Germany; January 11, 2016.
- Seminar, Max Planck Institut für chemische Energiekonversion (MPI-CEC), Mülheim a.d. Ruhr, Germany, January 18, 2016.
- 251st ACS National Meeting, San Diego, CA; March 13 – 17, 2016; INOR 125. Talk in Symposium on “Undergraduate Research at the Frontiers of Inorganic Chemistry”.
- Invited Speaker, International Conference on HYPERFINE Interactions and their Applications, Leuven, Belgium, July 3 – 8, 2016. Video of talk available at:  
<https://iks32.fys.kuleuven.be/indico/event/31/page/15>

- 72nd ACS Southwest Regional Meeting (SWRM), Galveston, TX; November 10 – 13, 2016; Talk 629.
- Seminar, Physical Chemistry Institute, Universität Stuttgart, Stuttgart, Germany, March 8, 2017.
- Seminar, Inorganic Chemistry Institute, Universität Heidelberg, Heidelberg, Germany, March 9, 2017.
- Seminar, Inorganic Division, Chemistry Department, University of California – Irvine, Irvine, CA; May 11, 2017.
- Seminar, Inorganic Division, Chemistry Department, University of California – Santa Barbara, Santa Barbara, CA; May 15, 2017.
- Seminar, Inorganic Division, Chemistry Department, University of California – Riverside, Riverside, CA; May 12, 2017.
- Invited Speaker, 4<sup>th</sup> EuCheMS Inorganic Chemistry Conference (EICC-4), Copenhagen, Denmark; July 2 – 6, 2017; Talk I\_09\_CW.
- Poster at 46<sup>th</sup> World Chemistry Congress / IUPAC 49<sup>th</sup> General Assembly (40<sup>a</sup> Reunião Anual da Sociedade Brasileira de Química), São Paulo, SP, Brazil; July 9 – 14, 2017; Poster 182 (see: <http://www.neopixdmi.com.br/@mci/iupac2017/pdf/182.pdf>).
- Invited Speaker, 18<sup>th</sup> International Conference on Bioinorganic Chemistry (ICBIC-18), Florianópolis, SC, Brazil; July 31 – August 4, 2017; (see: <http://icbic18.weebly.com/invited-speakers.html>; published in *J. Biol. Inorg. Chem.* **2017**, 22 (Suppl), S210; see: <https://link.springer.com/article/10.1007/s00775-017-1475-y>).
- Contributed talk, 46th Southeastern Magnetic Resonance Conference (SEMRC), Tallahassee, FL; October 27 – 29, 2017; see: <https://nationalmaglab.org/news-events/events/for-scientists/south-east-magnetic-resonance-conference>
- Seminar, Inorganic Chemistry Institute, Freie Universität Berlin, Berlin, Germany; November 9, 2017.
- Seminar, Chemistry Department, Marquette University, Milwaukee, WI; December 1, 2017.
- Seminar, Inorganic Chemistry Division, Chemistry Department, The Ohio State University, Columbus, OH; February 6, 2018.
- Seminar, Chemistry Department, University of Alabama, Tuscaloosa, AL; February 15, 2018.
- Seminar, Chemistry Department, Mississippi State University, Starkville, MS; February 16, 2018.
- 255th ACS National Meeting, New Orleans, LA; March 18 – 22, 2018; INOR 152.

## POPULAR PRESS PUBLICATIONS

- Letter to the Editor, *Chemical & Engineering News*; vol 68, issue 15, p 3; April 9, 1990; (subject: Elena Ceaușescu's scientific career).  
<http://pubs.acs.org/doi/pdf/10.1021/cen-v068n015.p002>

- Comment to “The Straight Dope” column; November 10, 1994.  
<http://www.straightdope.com/columns/read/966/can-some-people-extinguish-streetlamps-by-means-of-their-bodily-emanations>  
<http://www.chicagoreader.com/chicago/the-straight-dope/Content?oid=885950>
- Letter to the Editor, *Chicago Reader*; February 8, 1996; (subject: kinetic theory of gases).  
<http://www.chicagoreader.com/chicago/kinetic-clarification/Content?oid=889679>
- Letter to the Editor, *Chicago Reader*; December 6, 2007; (subject: pH values).  
<http://www.chicagoreader.com/chicago/kinetic-clarification/Content?oid=889679>
- Letter to the Editor, *Chemical & Engineering News*; March 21, 2011; (subject: atomic mass).  
<http://cen.acs.org/articles/89/i12/Pondering-Atoms-Weight-Versus-Mass.html>
- Letter to the Editor, *Chemical & Engineering News*; September 9, 2013; (subject: Paul Walden, German history).  
<http://cen.acs.org/articles/91/i36/Paul-Walden-Just-Scientist.html>

#### **HONORS AND SPECIAL ASSIGNMENTS:**

- National Merit Finalist, 1975.
- Dreyfus Foundation Scholar at U. of Chicago, Summer, 1979 (with William J. Evans).
- University of Illinois Foundation Fellowship, 1980 - 1983.
- USPHS/NIH Individual National Research Service Award, 1985 - 1986.
- NSF Research Opportunity Award at Northwestern U., Summer, 1992.
- NSF Research Opportunity Award at Northwestern U., Summer, 1993.
- National High Magnetic Field Laboratory User Award, May, 1997.
- Teaching and Research Participant (TARP) Award, Gordon Research Conferences, 1993.
- Chairman's Award, Gordon Research Conferences, 1998.
- ACS International Initiatives Travel Award, 1999.
- Plenary Lecturer, Royal Society of Chemistry, ESR Group, 38th International Meeting, March 20 – 24, 2005.
- Electron Magnetic Resonance User Committee representative, 2006 – 2014; Committee chair, 2011 – 2014.
- Fulbright Scholar Award, 2012 (declined).
- Organizer, Symposium on "Paramagnetic Resonance of Metallobiomolecules", 223rd ACS National Meeting, Orlando, FL, April 7 – 9, 2002.
- Organizer, Alfred Bader Award in Bioinorganic Chemistry Symposium in Honor of Brian M. Hoffman, 243rd ACS National Meeting, San Diego, CA, March 25 – 29, 2012.
- Guest Editor (joint with Prof. Harald Schwalbe, Uni. Frankfurt) of Ivano Bertini memorial issue of *ChemBioChem*, volume 14, issue 14, September 23, 2013.
- Organizer, Microsymposium on "Advanced Spectroscopic Methods Applied to Metalloporphyrins and Heme Proteins", 8th International Conference on Porphyrins and Phthalocyanines (ICPP-8), Istanbul, Turkey, June 22 – 27, 2014.
- Chair, 3rd Chicago Regional Inorganic Colloquium (CRIC-3), Roosevelt University, Chicago, IL; November 20, 2016.



- Co-Organizer (with V. J. DeRose), Symposium on “Spectroscopic Elucidation of Metalloenzyme Mechanism: Current Successes and Future Challenges”, 253rd ACS National Meeting, San Francisco, CA, April 2 – 6, 2017. Mentioned in: C&EN, **2017**, 95 (15), p 11 April 10, 2017; <http://pubs.acs.org/doi/10.1021/cen-09515-scicon005>.

## REVIEWING AND PROFESSIONAL SOCIETY MEMBERSHIPS

- Peer reviewer for: *Applied Magnetic Resonance*, *Biochemistry*, *Chem. Comm.*, *Chem. Phys. Lett.*, *Chemistry – European J.*, *Dalton Trans.*, *European J. Inorg. Chem.*, *Inorg. Chem.*, *J. Am. Chem. Soc.*, *J. Biol. Inorg. Chem.*, *J. Braz. Chem. Soc.*, *J. Chem. Educ.*, *J. Inorg. Biochem.*, *J. Magn. Reson.*, *J. Phys. Chem. B*, *J. Phys. Chem. Solids*, *Organometallics*, *Physica B*, *Polyhedron*, NSF (CHE, MRI, GRFP), ACS-PRF, DoD NDSEG, Nederlandse Organisatie voor Wetenschappelijk Onderzoek (NWO, Netherlands Organisation for Scientific Research), Science Foundation of Ireland (SFI), Vedecká grantová agentúra Ministerstva školstva, vedy, výskumu a športu SR a Slovenskej akadémie vied (VEGA, Scientific Grant Agency of the Ministry of Education, science, research and sport of the Slovak Republic and the Slovak Academy of Sciences).
- Member: Phi Lambda Upsilon Honorary Society.
- Member: American Chemical Society: Inorganic Division and Bioinorganic Subdivision, Chicago Section, and NIH Advisory Committee.
- Member: International EPR(ESR) Society (<http://www.ieprs.org/>).
- Member: Society of Porphyrins and Phthalocyanines (<http://spp.u-bourgogne.fr/>).
- Member: Society of Biological Inorganic Chemistry (<http://sbichem.org/>).
- Member: International Biometals Society (<http://www.biometals.org/>).
- Member: American Nano Society.
- Member: AAUP.