

Craig A. Grapperhaus

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Professional Background

2011 – present	Professor of Chemistry	University of Louisville
2009 – present	Vice Chair of Chemistry	University of Louisville
2005 – 2011	Associate Professor of Chemistry	University of Louisville
2005 – 2010	Chemistry Director of Graduate Studies	University of Louisville
2000 – present	Member of Graduate Faculty	University of Louisville
2000 – 2005	Assistant Professor of Chemistry	University of Louisville

Education

1998 – 2000	Alexander von Humboldt Postdoctoral Fellow Max Planck Institut für Strahlenchemie, Mülheim, Germany Synthesis and characterization of Fe=O and Fe≡N cyclam derivatives Advisor: Prof. Karl Wieghardt
1994 – 1998	Ph.D. in inorganic chemistry Texas A&M University Dissertation title: “ <i>Oxygenation and Subsequent Alkylation of Nickel-Bound Thiolates</i> ” Advisor: Prof. Marcetta Y. Darensbourg
1990 – 1994	B.S. in Chemistry, <i>Summa Cum Laude</i> , minor in Economics Southern Illinois University at Edwardsville Synthesis and reactivity of gallium alkyl complexes Advisor: Prof. Thomas Getman

Honors and Awards

2011	Provost Award for Exemplary Advising
2001	Ralph E. Powe Junior Faculty Enhancement Award
1998 – 2000	Alexander von Humboldt Postdoctoral Fellowship (1998-2000)
1997 – 1998	Dow Teacher/Scholar Fellowship, Texas A&M
1996 – 1997	Chemistry/Biology Interface Training Program Fellowship, Texas A&M (NIH)
1996	Martell Travel Grant Award, Texas A&M (1996)
1994 – 1996	Industry-University Cooperative Chemistry Program Fellowship, Texas A&M
1994	Medallion of Lincoln, Academy of Lincoln
1993	Council on Undergraduate Research Fellowship, SIUE

Professional Societies and Activities

2007	Local Organizing Committee – Kentucky Academy of Science Annual Meeting
2005	Invited Participant – Tenth Annual Congressional Visits Day
2001 – 2004	Founder and Chair: Kentuckiana Undergraduate Research Symposium
2001 –	Member of Society of Bioinorganic Chemistry
2000 – 2005	Member of Council on Undergraduate Research
1996 –	Member of the American Chemical Society

Publications

1. Grapperhaus, C. A.; Darensbourg, M. Y.; Sumner, L. W.; Russell, D. H. "Template effect for O₂ addition across cis-sulfur sites in nickel dithiolates" *J. Am. Chem. Soc.* **1996**, *118*, 1791-1792.
2. Grapperhaus, C. A.; Maguire, M. J.; Tuntulani, T.; Darensbourg, M. Y. "Singlet oxygen and the production of sulfur oxygenates of nickel(II) and palladium(II) thiolates" *Inorg. Chem.* **1997**, *36*, 1860-1866.
3. Mills, D. K.; Font, I.; Farmer, P. J.; Hsiao, Y. M.; Tuntulani, T.; Buonomo, R. M.; Goodman, D. C.; Musie, G.; Grapperhaus, C. A.; Maguire, M. J.; Lai, C. H.; Hatley, M. L.; Smee, J. J.; Bellefeuille, J. A.; Darensbourg, M. Y. "1,5-Diazacyclooctane, Pendant Arm Thiolato Derivatives and [(N,N'-bis(2-mercaptoethyl)-1,5-diazacyclooctanato]Nickel(II) " *Inorg. Synth.* **1998**, *37*, 4052-4058.
4. Grapperhaus, C. A.; Tuntulani, T.; Reibenspies, J. H.; Darensbourg, M. Y. "Methylation of tethered thiolates in (bme-daco)Zn₂ and (bme-daco)Cd₂ as a model of zinc sulfur-methylation proteins" *Inorg. Chem.* **1998**, *37*, 4052-4058.
5. Bellefeuille, J. A.; Grapperhaus, C. A.; Buonomo, R. M.; Reibenspies, J. H.; Darensbourg, M. Y. "Alkylation-induced O-atom rearrangement in nickel S-oxygenates" *Organometallics* **1998**, *17*, 4813-4821.
6. Grapperhaus, C. A.; Darensbourg, M. Y. "Oxygen capture by sulfur in nickel thiolates" *Acc. Chem. Res.* **1998**, *31*, 451-459.
7. Grapperhaus, C. A.; Bill, E.; Wieghardt, K. "Ozone oxidation of iron(III) in a monofunctionalized cyclam: Spectroscopic characterization of high valent iron species" *J. Inorg. Biochem.* **1999**, *74*, 146-146.
8. Grapperhaus, C. A.; Bellefeuille, J. A.; Reibenspies, J. H.; Darensbourg, M. Y. "Synthesis and dimer cleavage reactions of the N₂S thiolate bridged dimer [(mmp-dach)₂Ni]₂Cl₂" *Inorg. Chem.* **1999**, *38*, 3698-3703.
9. Bellefeuille, J. A.; Grapperhaus, C. A.; Derecskei-Kovacs, A.; Reibenspies, J. H.; Darensbourg, M. Y. "Correlation of electrochemistry, nucleophilicity and density functional calculations of the cis-dithiolate (bme*-daco)Ni" *Inorg. Chim. Acta* **2000**, *300*, 73-81.
10. Grapperhaus, C. A.; Mienert, B.; Bill, E.; Weyhermuller, T.; Wieghardt, K. "Mononuclear (nitrido)iron(V) and (oxo)iron(IV) complexes via photolysis of [(cyclam-acetato)Fe^{III}N₃]⁺

- and ozonolysis of [(cyclam-acetato)Fe^{III}O₃SCF₃]⁺ in water/acetone mixtures" *Inorg. Chem.* **2000**, *39*, 5306-5317.
11. Smee, J. J.; Miller, M. L.; Grapperhaus, C. A.; Reibenspies, J. H.; Darensbourg, M. Y. "Subtle bite-angle influences on N₂S₂Ni complexes" *Inorg. Chem.* **2001**, *40*, 3601-3605.
 12. Grapperhaus, C. A.; Bill, E.; Weyhermuller, T.; Neese, F.; Wieghardt, K. "Molecular and electronic structure of [Mn^VN(cyclam-acetato)]PF₆. A combined experimental and DFT study" *Inorg. Chem.* **2001**, *40*, 4191-4198.
 13. Grapperhaus, C. A.; Patra, A. K.; Poturovic, S. "Synthetic models of nitrile hydratase" *J. Inorg. Biochem.* **2001**, *86*, 240-240.
 14. Grapperhaus, C. A.; Patra, A. K.; Mashuta, M. S. "First {Fe-NO}⁶ complex with an N₂S₃Fe-NO core as a model of NO-inactivated iron-containing nitrile hydratase. Are thiolates and thioethers equivalent donors in low-spin iron complexes?" *Inorg. Chem.* **2002**, *41*, 1039-1041.
 15. Kaasjager, V. E.; Bouwman, E.; Gorter, S.; Reedijk, J.; Grapperhaus, C. A.; Reibenspies, J. H.; Smee, J. J.; Darensbourg, M. Y.; Derecskei-Kovacs, A.; Thomson, L. M. "Unique reactivity of a tetradentate N₂S₂ complex of nickel: Intermediates in the production of sulfur oxygenates" *Inorg. Chem.* **2002**, *41*, 1837-1844.
 16. Mashuta, M. S.; Pimenov, K. V.; Grapperhaus, C. A. "cis-Dioxocyclam" *Acta Crystallogr., Sect. C: Cryst. Struct. Commun.* **2002**, *58*, O226-O227.
 17. Grapperhaus, C. A.; Li, M.; Mashuta, M. S. "1,5-Bis(benzothiazolyl)-3-thiapentane and its asymmetric dinuclear Ag(I) complex with three distinct intermolecular-stacking interactions" *J. Chem. Soc., Chem. Commun.* **2002**, 1792-1793.
 18. Grapperhaus, C. A.; Poturovic, S.; Mashuta, M. S. "Dichloromethane alkylates a trithiolato-ruthenium complex to yield a methylene-bridged thioether core. Synthesis and structural comparison to the thiolato-ruthenium precursor" *Inorg. Chem.* **2002**, *41*, 4309-4311.
 19. Grapperhaus, C. A.; Li, M.; Patra, A. K.; Poturovic, S.; Kozlowski, P. M.; Zgierski, M. Z.; Mashuta, M. S. "Synthesis and characterization of N₂S₃X-Fe models of iron-containing nitrile hydratase" *Inorg. Chem.* **2003**, *42*, 4382-4388.
 20. Grapperhaus, C. A.; Li, M.; Gibson, E. R.; Mashuta, M. S. "Hydrogen-bond networks in the mono- and diprotonated cyclic diamine 9aneN₂S" *J. Chem. Crystallogr.* **2004**, *34*, 5-11.
 21. Grapperhaus, C. A.; Mullins, C. S.; Kozlowski, P. M.; Mashuta, M. S. "Synthesis and oxygenation of a nickel(II) and zinc(II) dithiolate: An experimental and theoretical comparison" *Inorg. Chem.* **2004**, *43*, 2859-2866.
 22. Grapperhaus, C. A.; Poturovic, S. "Electrochemical investigations of the tris(2-(diphenylphosphino)thiaphenolato)ruthenate(II) monoanion reveal metal- and ligand-centered events: Radical, reactivity, and rate" *Inorg. Chem.* **2004**, *43*, 3292-3298.
 23. Serres, R. G.; Grapperhaus, C. A.; Bothe, E.; Bill, E.; Weyhermuller, T.; Neese, F.; Wieghardt, K. "Structural, spectroscopic, and computational study of an octahedral, non-heme {Fe-NO}⁶⁻⁸ series: [Fe(NO)(cyclam-ac)]^{2+/-0}" *J. Am. Chem. Soc.* **2004**, *126*, 5138-5153.
 24. Grapperhaus, C. A.; Kreso, M.; Burkhardt, G. A.; Roddy, J. V. F.; Mashuta, M. S. "Template synthesis of N₂S and N₃S chelates via alkylation of bis(2-

- aminoethanethiolato)Ni: sulfur and nitrogen-centered alkylations" *Inorg. Chim. Acta* **2005**, 358, 123-130.
25. Grapperhaus, C. A.; Mullins, C. S.; Mashuta, M. S. "Structural comparison of alkylated derivatives of (bmmp-dmed)Ni and (bmmp-dmed)Zn" *Inorg. Chim. Acta* **2005**, 358, 623-632.
 26. Poturovic, S.; Mashuta, M. S.; Grapperhaus, C. A. "Carbon-sulfur bond formation between a ruthenium-coordinated thiyl radical and methyl ketones" *Angew. Chem., Int. Ed. Engl.* **2005**, 44, 1883-1887.
 27. Grapperhaus, C. A.; Poturovic, S.; Mashuta, M. S. "Oxygenation of a ruthenium(II) thiolate to a ruthenium(II) sulfinato proceeds via ruthenium(III)" *Inorg. Chem.* **2005**, 44, 8185-8187.
 28. Mullins, C. S.; Grapperhaus, C. A.; Kozlowski, P. M. "Density functional theory investigations of NiN₂S₂ reactivity as a function of nitrogen donor type and N-H...S hydrogen bonding inspired by nickel-containing superoxide dismutase" *J. Biol. Inorg. Chem.* **2006**, 11, 617-625.
 29. Frye, B. C.; Mashuta, M. S.; Mullins, C. S.; Grapperhaus, C. A.; Buchanan, R. M. "Ethyl 1-methylimidazole-2-carboxylate" *Acta Crystallogr., Sect. E: Struct. Rep. Online* **2006**, 62, O1548-O1549.
 30. Grapperhaus, C. A.; O'Toole, M. G.; Mashuta, M. S. "Synthesis and structure of the tetradeca-iron(III) oxide-alkoxide cluster [Bu₄N]₂[Fe₁₄O₈(OCH₂CH₃)₂₀Cl₈]" *Inorg. Chem. Comm.* **2006**, 9, 1204-1206.
 31. Grapperhaus, C. A.; Kozlowski, P. M.; Kumar, D.; Frye, H. N.; Venna, K. B.; Poturovic, S. "Singlet diradical character of an oxidized ruthenium trithiolate: electronic structure and reactivity" *Angew. Chem., Int. Ed. Engl.* **2007**, 46, 4085-4088.
 32. Green, K. N.; Brothers, S. M.; Jenkins, R. M.; Carson, C. E.; Grapperhaus, C. A.; Darensbourg, M. Y. "An experimental and computational study of sulfur-modified nucleophilicity in a dianionic NiN₂S₂ complex" *Inorg. Chem.* **2007**, 46, 7536-7544.
 33. Grapperhaus, C. A.; O'Toole, M. G.; Mashuta, M. S. "{3,3'-Ethane-1,2-diylbis(methylimino)-bis(propane-1-thiolato)}nickel(II)" *Acta Crystallogr., Sect. E: Struct. Rep. Online* **2007**, 63, M2281-U2317.
 34. Grapperhaus, C. A.; Venna, K. B.; Mashuta, M. S. "Carbon-sulfur bond formation via alkene addition to an oxidized ruthenium thiolate" *Inorg. Chem.* **2007**, 46, 8044-8050.
 35. Grant, G. J.; Botros, M. E.; Hassler, J. S.; Janzen, D. E.; Grapperhaus, C. A.; O'Toole, M. G.; VanDerveer, D. G. "Hg(II) and Cd(II) complexes with mixed donor macrocyclic thioethers: The oxophobicity of mercury(II)" *Polyhedron* **2008**, 27, 3097-3104.
 36. O'Toole, M. G.; Kreso, M.; Kozlowski, P. M.; Mashuta, M. S.; Grapperhaus, C. A. "Spin-state-dependent oxygen sensitivity of iron dithiolates: sulfur oxygenation or disulfide formation" *J. Biol. Inorg. Chem.* **2008**, 13, 1219-1230.
 37. O'Toole, M. G.; Bennett, B.; Mashuta, M. S.; Grapperhaus, C. A. "Substrate Binding Preferences and pK_a Determinations of a Nitrile Hydratase Model Complex: Variable Solvent Coordination to (bmmp-TASN)FeOTf" *Inorg. Chem.* **2009**, 48, 2300-2308.
 38. Grapperhaus, C. A.; Ouch, K.; Mashuta, M. S. "Redox-Regulated Ethylene Binding to a Ruthenium-Thiolate Complex" *J. Am. Chem. Soc.* **2009**, 131, 64-65.

39. N₂S₃X-Fe Models of Nitrile Hydratase; O'Toole, M., G.; Grapperhaus, C., A. In *Bioinorganic Chemistry*; American Chemical Society: Washington, DC, 2009, p 99-113.
40. Mullins, C. S.; Grapperhaus, C. A.; Frye, B. C.; Wood, L. H.; Hay, A. J.; Buchanan, R. M.; Mashuta, M. S. "Synthesis and Sulfur Oxygenation of a (N₃S)Ni Complex Related to Nickel-Containing Superoxide Dismutase" *Inorg. Chem.* **2009**, *48*, 9974-9976.
41. Grapperhaus, C. A.; Cui, J. L.; Buchanan, R. M.; Mashuta, M. S. "Supramolecular assembly of a dinuclear Ag(I) complex with discreet Ag₂S₂ centers" *Inorg. Chem. Comm.* **2009**, *12*, 1091-1093.
42. Masitas, C. A.; Mashuta, M. S.; Grapperhaus, C. A. "Asymmetric Oxygenation of a Ruthenium Dithiolate Mimics the Mixed Sulfenato/Sulfinato Donor Sets of Nitrile Hydratase and Thiocyanate Hydrolase" *Inorg. Chem.* **2010**, *49*, 5344-5346.
43. Masitas, C. A.; Kumar, M.; Mashuta, M. S.; Kozlowski, P. M.; Grapperhaus, C. A. "Controlled Sulfur Oxygenation of the Ruthenium Dithiolate (4,7-Bis-(2'-methyl-2'-mercaptopropyl)-1-thia-4,7-diazacyclononane)RuPPh₃ under Limiting O₂ Conditions Yields Thiolato/Sulfinato, Sulfenato/Sulfinato, and Bis-Sulfinato Derivatives" *Inorg. Chem.* **2010**, *49*, 10875-10881.
44. Cui, J.; Mashuta, M. S.; Buchanan, R. M.; Grapperhaus, C. A. "Synthesis, Structure, and Solution Properties of [(mim-TASN)FeCl₂]⁺ and Its μ-Oxo Derivative" *Inorg. Chem.* **2010**, *49*, 10427-10435.
45. Ouch, K.; Mashuta, M. S.; Grapperhaus, C. A. "Metal-Stabilized Thiyl Radicals as Scaffolds for Reversible Alkene Addition via C-S Bond Formation/Cleavage" *Inorg. Chem.* **2011**, ASAP.

Current and Pending Funding

Current:

Title: Electrochemically-Controlled Alkene Binding Affinity of Surface-Immobilized Metal-Thiolate Complexes

Source: Petroleum Research Fund

Funds Requested/Received: \$100,000/2 yrs./

Submitted: 11/05/10 *Action:* **funded, active**

50% Co-PI with Frank Zamborini

Title: Oxygen Sensitivity and Functional Models of Nitrile Hydratase

Source: National Science Foundation

Funds Requested/Received: **\$384,000/3 yrs.**

Submitted: 07/30/07 *Action:* **funded, active**

80% PI with Robert Buchanan, ACTIVE (ends 01/31/12)

Pending:

Title: Collaboration in Mathematics and Science (CIMS)

Source: National Science Foundation

Funds Requested: \$9,560,395.00/5 yrs./**pending**

Submitted: 10/14/10 *Action:* **pending**

Senior Personnel (6%); C. Rich is PI

Title: Redox Active Metal-Coordinated Ligands for the Functionalization of Non-Activated Alkenes: Synthetic Applications of Metal-Stabilized Tyl Radicals

Source: Department of Energy

Funds Requested: \$487,175/3 yrs./**pending**

Submitted: 11/30/10 *Action:* **pending**

sole PI

Title: Applications of Metal-Stabilized Thiyl Radicals for the Functionalization of Non-Activated Alkenes

Source: Kentucky Science and Engineering Foundation

Funds Requested: \$100,000/2 yrs./**pending**

Submitted: 01/27/11 *Action:* **pending**

sole PI

Title: Bio-Inspired Modulation of Second Coordination Spheres of Metal Ions: Effect of Hydrogen Bonding on Metal Mediated Hydrolytic and Oxidative Processes

Source: Kentucky Science and Engineering Foundation

Funds Requested/Received: \$100,000/2 yrs./**pending**

Submitted: 01/27/11 *Action:* **pending**

50% Co-PI with Robert Buchanan

Presentations

A. Scholarly Meetings

1. Grapperhaus, C. A.; Maguire, M. J.; Tuntulani, T.; Darensbourg, M. Y. "Reactions of sulfur in nickel- and palladium-bound thiolates with $^1\text{D O}_2$: Production of metallosulfoxides and metallosulfones" 211th American Chemical Society National Meeting, New Orleans, LA (1996) poster presentation
2. Grapperhaus, C. A.; Bellefeuille, J. A.; Darensbourg, N. Y. "Alkylation induced oxygen transfer in nickel sulfoxides" 215th American Chemical Society National Meeting, Dallas, TX (1998) oral presentation
3. Grapperhaus, C. A.; Darensbourg, M. Y.; Bellefeuille, J. A. "Sulfur Site Reactivity of Nickel Thiolates and Implications for Degradation of Metalloenzymes by Oxygenation" Graduate Research Seminar: Bioinorganic Chemistry (Gordon), Ventura, CA (1998) oral presentation

4. Grapperhaus, C. A.; Bill, E.; Weighardt, K. "Ozone Oxidation of Iron(III) in a Monofunctionalized Cyclam: Spectroscopic Characterization of High Valent Iron Species" 9th International Conference on Biological Inorganic Chemistry, Minneapolis, MN (1999) poster presentation
5. Grapperhaus, C. A.; Bill, E.; Weyhermüller, T.; Weighardt, K. "Ozonolysis and Photolysis of Fe(III) Precursors in a Monofunctionalized Cyclam: Spectroscopic Characterization of Fe(IV)=O and Fe(V)=N Species" TMR (Training and Mobility of Researchers) – NOHEMIP Research Network Mid-Term Review and Second Annual Meeting, Toulouse, France (2000) oral presentation
6. Grapperhaus, C. A.; Patra, A. K.; Poturovic, S. "Synthetic Models of Nitrile Hydratase" 1st Annual Kentuckiana Undergraduate Research Symposium, Louisville, KY (2001) oral presentation
7. Grapperhaus, C. A.; Patra, A. K.; Poturovic, S. "Synthetic Models of Nitrile Hydratase" 10th International Conference on Bioinorganic Chemistry, Florence, Italy (2001) poster presentation
8. Grapperhaus, C. A.; Patra, A. K.; Poturovic, S.; Kozlowski, P. M.; Mashuta, M. S. "A Structural and Electronic Model of NO-Inactivated Iron-Containing Nitrile Hydratase. A Comparison of Thiolate and Thioether Donor Atoms in Low-Spin Iron Complexes" Metals in Biology Gordon Conference Ventura, CA (2002) poster presentation
9. Grapperhaus, C. A.; Patra, A. K.; Li, M.; Poturovic, S.; Mashuta, M. S. "Modeling oxygenated cysteine thiolates with a thiolate/thioether donor set. A structural and spectroscopic model of no-inactivated iron-containing nitrile hydratase" 224th American Chemical Society National Meeting, Boston, MA (2002) oral presentation
10. Grapperhaus, C. A.; Poturovic, S.; Mashuta, M. S. "Ligand versus metal oxygen sensitivity of ruthenium(II) thiolates" 225th American Chemical Society National Meeting, New Orleans, LA (2003) oral presentation
11. Grapperhaus, C. A.; Poturovic, S.; Mashuta, M. S. "Understanding ruthenium thiolate reactivity: radicals, oxygen, and alkylation" Inorganic Chemistry Gordon Research Conference, Newport, RI (2003) poster presentation
12. Grapperhaus, C. A. "Modeling Oxygenated Cysteine Thiolates at the Active Site of Iron-Containing Nitrile Hydratase with a Thiolate/Thioether Donor Set" Third German-American Symposium on Frontiers of Chemistry (*invited*), Kloster Seeon, Germany (2004) poster presentation (*withdrawn due to illness*)
13. Grapperhaus, C. A.; Patra, A. K.; Li, M.; Poturovic, S.; Mashuta, M. S. "Modeling Oxygenated Cysteine Thiolates at the Active Site of Iron-Containing Nitrile Hydratase with a Thiolate/Thioether Donor Set" CERC3 Young Chemists' Workshop: Biocatalysis, Erlangen, Germany (2004) oral presentation
14. Grapperhaus, C. A. "Understanding Ruthenium Thiolate Reactivity: Radicals, Oxygen, and Alkylation" Inorganic Chemistry Gordon Conference, Newport, RI (2004) poster presentation (*withdrawn due to illness*)
15. Grapperhaus, C. A.; Poturovic, S.; Mashuta, M. S. "Reactivity Studies of a Metal-Coordinated Thiyl Radical: C-S Bond Formation" Inorganic Reaction Mechanisms Gordon Conference, Ventura, CA (2005) poster presentation

16. Grapperhaus, C. A.; Poturovic, S.; Mashuta, M. S. "Reactivity Studies of a Proposed Metal-Coordinated Thiyl Radical: C-S Bond Formation" 12th International Conference on Biological Inorganic Chemistry, Ann Arbor, MI (2005) poster presentation
17. Grapperhaus, C. A.; Mullins, C. S.; Buchanan, R. M.; Frye, B. C.; Mashuta, M. S.; Kozlowski, P. M. "Probing thiolate reactivity of Ni-SOD model complexes" 232nd American Chemical Society National Meeting, Atlanta, GA (2006) oral presentation (delivered by Martin G. O'Toole due to illness)
18. Grapperhaus, C. A.; Poturovic, S.; Frye, H. N.; Mashuta, M. S.; Kozlowski, P. M. "Reactivity studies of a proposed metal-coordinated thiyl radical" 231st American Chemical Society National Meeting, Atlanta, GA (2006) poster presentation (delivered by Martin G. O'Toole due to illness)
19. Grapperhaus, C. A. "Substrate Binding & Oxygenation Studies of Iron-Dithiolates as Models of Nitrile Hydratase" Metals in Biology Gordon Conference, Ventura, CA (2007) poster presentation
20. Grapperhaus, C. A.; O'Toole, M. G.; Mashuta, M. S. " N_2S_3FeX model complexes of nitrile hydratase: Substrate binding and spin state dependent oxygen reactivity" 233rd American Chemical Society National Meeting, Chicago, IL (2007) oral presentation
21. Grapperhaus, C. A. "Reactivity of Nitrile Hydratase Model Complexes" CERMACS2007 – Central Regional Meeting of the American Chemical Society, Cincinnati, OH (2007) oral presentation (*invited*)
22. Grapperhaus, C. A. "[9]aneN₂S Based Models of the Sulfur-Oxygenated Active Site of Nitrile Hydratase" SERMACS2007 - Southeastern Regional Meeting of the American Chemical Society, Greenville, SC (2007) oral presentation (*invited*)
23. Grapperhaus, C. A.; Ouch, K.; Venna, K. B.; Mashuta, M. S. "One way or reversible: Alkene addition to metal-coordinated thiyl radicals" 236th American Chemical Society National Meeting, Philadelphia, PA (2008) oral presentation
24. Grapperhaus, C. A. "Redox Regulated Binding of Alkenes to a Rhenium Thiolate" Inorganic Reaction Mechanisms Gordon Conference, Galveston, TX (2009) poster presentation (*winner of poster competition; oral presentation*)
25. Grapperhaus, C. A.; Ouch, K.; Mashuta, M. S. "Redox Regulated Binding of Alkenes to a Rhenium Thiolate" 39th IRMG: Inorganic/Bioinorganic Reaction Mechanisms Group Meeting, Kloster Banz, Germany (2010) poster presentation
26. Grapperhaus, C. A. "A Tame Metal-Coordinated Thiyl Radical: Redox Regulation of Alkene Binding to Metal Thiolates" International Symposium on Molecular Coordination Chemistry (In honor of Prof. K. Wieghardt's retirement), Mülheim, Germany (2010) oral presentation (*invited*)
27. Chauhan, R.; Mashuta, M. S.; Grapperhaus, C. A. "Alkene addition to a Ru-coordinated thiyl radical: Synthesis by chemical oxidants and reactivity studies" Pacificchem 2010, Honolulu, HI (2010) poster presentation
28. Grapperhaus, C. A.; Ouch, K.; Chauhan, R.; Mashuta, M. S. "Alkene addition and reactivity with oxidized metal thiolates" Pacificchem 2010, Honolulu, HI (2010) oral presentation (*invited*)
29. Grapperhaus, C. A.; Ouch, K.; Mashuta, M. S. "Redox regulated binding of alkenes to rhenium thiolates" Pacificchem 2010, Honolulu, HI (2010) poster presentation

30. Grapperhaus, C. A.; Masitas, C. A.; Mashuta, M. S. "Sulfur Oxygenation of Nitrile Hydratase Mimic Enhances Ligand Lability and Hydrolysis Activity" Inorganic Reaction Mechanisms Gordon Conference, Galveston, TX (2011) poster presentation

Invited Oral Presentations at Academic Institutions

Western Kentucky University (2000)
Southern Illinois University at Edwardsville (2001)
Kentucky State University (2002)
Indiana State University (2003)
University of Nevada – Reno (2004)
University of Cincinnati (2004)
University of Würzburg (2004)
University of Delaware (2004)
Indiana University (2004)
Texas A&M University (2004)
Rice University (2004)
University of Miami (Ohio) (2004)
University of Kentucky (2004)
College of Mount St. Joseph (2005)
Purdue University (2005)
University of North Carolina – Charlotte (2005)
Marshall University (2007)
Virginia Commonwealth University (2008)
Old Dominion University (2008)
Bellarmino University (2008)
Ohio University (2008)
Wayne State University (2008)
Berea College (2009)
Western Kentucky University (2009)
University of Missouri, St. Louis (2009)
University of Louisville, Department of Chemical Engineering (2010)
Technische Universität Kaiserslautern (2010)
University of Nevada, Reno (2011)

Persons Mentored

A. Post-Doctoral Researchers

2008 – current Jinlan Cui
2001 – 2002 Ming Li
2000 – 2001 Apurba Patra

B. Ph.D. Students

current Cesar Masitas
Kagna Ouch
Rajat Chauhan
Davinder Kumar
2008 Martin O'Toole
2006 Christopher S. Mullins
2005 Selma Poturovic

C. M.S. Students

2008 Kagna Ouch
2007 Kiran Venna
2006 Majda Kreso

D. Undergraduates

Jessica Taylor, 00	Gretchen Burkhardt, 00-01	Julianna Roddy, 01
Elaine Miller, 01	Ben Hahn, 02	Ryan Denton, 02
Holly Miller, 02-03	Majda Kreso, 02-03	Jason Wiles, 02-03
Benjamin Risner, 04	Angela Phillips, 04	Danielle Kimmel, 04
Bertha Coleman, 05	Mindy Holley, 05	Komeneci Yates, 05
Andrew Barnes, 07	Stefen Bright, 08	Stephanie Bebout, 09
Tracy McKnight, 09	Victoria D'Angelo, 09	Ito Okpokho, 09
Samantha Pavey, 09	Jessica Newman, 09	Matt Texter, 10
Donald Herdt, 10	Lisa Kenney, 10-11	Mark Sprowl, 10-11
Christian Kasey, 10-11	Aaron Tyagi, 11	Douglas Banda, 11

E. Ph.D./M.S. Thesis Committees

Manoj Kumar, Ph.D. current (Kozlowski)
Chinmay Deshmane, Ph.D. current (Carreon, Chem. Eng.)
Jin Zhuang, Ph.D. current (Hammond)
Radhika Dasari, Ph.D. current (Zamborini)
Sam Asem, Ph.D. current (Buchanan)
Ackim Maduvu, M.S. 2011 (Noble)
Lucius Johnson, Ph.D. 2009 (DuPre)

Jose Aponte, Ph.D. 2009 (Hammond)
 Philip Bauer, Ph.D. 2009 (Buchanan)
 Lukasz Sztaberek, Ph.D. 2009 (Baldwin)
 Jadwiga Kuta, Ph.D. 2008 (Kozlowski)
 Arimitsu Satoru, Ph.D. 2008 (Hammond)
 Damien Duveau, Ph.D. 2006 (Luzzio)
 Lionel Cheruzel, Ph.D. 2005 (Buchanan)
 Joel Ott, M.S. 2004 (Luzzio)
 Chi Minh Tuong, M.S. 2004 (Noble)
 Vadim Nazarenko, M.S. 2003 (Noble)
 Amit Galande, Ph.D. 2003 (Spatola)
 Alexander Mayorov, Ph.D., 2001 (Luzzio)

Courses Taught (Last Five Years)

<u>Course #</u>	<u>Course Title</u>	<u>Semesters Taught</u>
Chem 201	General Chemistry I	Spring 2009
Chem 202	General Chemistry II	Spring 2008
Chem 515	Inorganic Chemistry	Fall 2007, 08, 09, 10
Chem 529	Synthesis and Analysis II	Spring 2006, 10, 11
Chem 654	Advanced Coordination Chemistry	Fall 2006
Chem 656	Special Topics Inorganic Chemistry	Spring 2007

Other Contributions to Teaching

Developed a new Special Topics Course on Metals in Medicine (Spring 2001)
 Undergraduate Research Director (Fall 2003 – Fall 2004)
 Physical Chemistry Laboratory Reorganization Committee (Fall 2003)
 Updated and re-equipped CHEM 529: Synthesis and Analysis II (Senior Level Inorganic/Analytical) (Spring 2005, 2006)
 Developed a new Special Topics Course on Biological Inorganic Chemistry (Spring 2007)
 Guest Lectures in CHEM 450: Computational Chemistry (Spring 2006-10) and CHEM 527: Separations and Spectroscopy (Fall 2006)

Service to the University

1. Departmental, Divisional, Program

Unit Business Manager Search Committee, member 2010
Instrumentation Specialist Search Committee Chair 2010
Interim Chair Search Committee Chair 2010
Department of Chemistry, Vice Chair, 2009 - current
Department of Chemistry Graduate Student Advisor 2005 – 2010
Organic Faculty Search Committee 2007-2008
Graduate Admissions and Recruiting, member, 2000-2003, 2004 – 2008
Ad Hoc Committee – Lab Usage Fees – 2006 –current
Departmental Personnel Committee Alternate – 2006-2007
Bloch Chair Professor Faculty Search Committee, member 2005 - 2006
Chemistry Stockroom Committee, member 2005
Bioanalytical Faculty Search Committee, member, 2004 - 2005
Chemistry Department Personnel Committee, Alternate 2003 - 2005
Kentuckiana Undergraduate Research Symposium, Chair, 2001 - 2004
Undergraduate Research Director, 2003 - 2004
Drafted Criteria/Guidelines for Departmental Graduate Fellowship, 2003
Rewrote Original Research Proposal Guidelines for Graduate Handbook, 2003
Instrumentation Specialist Search Committee, member, 2001
Analytical Faculty Search Committee, member, 2000-2001

2. University-Wide

A&S Decanal Review Committee, 2010
Ph.D. Completion Project, 2006 – 2008

3. Service to the Community

Science Fair Judge – Floyd Knobs Elementary 2009 – 2011
Kentucky Academy of Science Annual Meeting – Local Affairs Committee, 2007
Reader, Kentucky Junior Science and Humanities Symposium, 2007
Project Advisor, duPont Manual High School Science Fair, 2007
Project Advisor, duPont Manual High School Science Fair, 2006
Preliminary Judge, Louisville Regional Science Fair, 2003, 2005
Poster Judge, duPont Manual High School Science Fair, 2002, 2005
Reader, Kentucky Junior Science and Humanities Symposium, 2002
Panel Judge, Kentucky Junior Science and Humanities Symposium, 2001

4. Service to the Profession

Extramural Review for: National Science Foundation, Department of Energy – Basic Sciences, Petroleum Research Fund, Journal of Biological Inorganic Chemistry, Journal of the American Chemical Society, Inorganic Chemistry, Journal of Coordination Chemistry, European Journal of Inorganic Chemistry, Coordination Chemistry Reviews, Chemical Communications, Inorganica Chimica Acta, Synthesis and Reactivity in Inorganic and Metallo-Organic Chemistry, Journal of Inclusion Phenomena and Macrocyclic Chemistry, Inorganic Chemistry Communications