

CURRICULUM VITAE

Mark M. Richter

Present Position and Address

Professor
Henry Dreyfus Teacher-Scholar
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Accomplishments

- 2007 Carnegie Foundation for the Advancement of Teaching Missouri Professor of the Year.
- Young Endowed Professor in the Honors College, 2007 – 2010
- Inducted into Phi Kappa Phi Honor Society, May 2007.
- Henry Dreyfus Teacher-Scholar Award Recipient
 - 1 of 6 National Award recipients in 2002.
- Nominated for *Who's Who Among America's Teachers*®, 2005 and *Who's Who Among America's Teachers*®, 2006.
- Missouri State University Recipient of 2003 Missouri Governor's Award in Teaching Excellence
- Missouri State University Fellow in Research
- Received over \$246,000 in grant-supported funding from external sources
- Received over \$36,000 in grant-supported funding from Missouri State University for teaching and research related projects
- Forty-three peer-reviewed papers have been published, one has been accepted for publication with one submitted.
 - nine of these publications are related to chemical education scholarship
 - Thirty-two of these publications are related to research scholarship
 - thirty-eight of these publications have Missouri State University students as co-authors
- Authored three book chapters (e.g., “Electrochemiluminescence” for *Optical Biosensors: Today and Tomorrow*, 2nd ed (Published 2008)). All were invited publications.
- Authored comprehensive review article on “Electrogenerated Chemiluminescence” for *Chemical Reviews* that was published in 2004. Invited Publication.
- Co-authoring comprehensive review article on “Electrochemiluminescence” for *Annual Reports C*. First draft due January 15, 2007. Invited Publication.
- Research advisor for 19-graduate students
 - all have successfully completed their master's thesis
- Research mentor for 30-undergraduate students including 2-honor's theses and 1-high school student.
- Research and teaching scholarship results have been presented at numerous local, regional and national meetings
- Technology and web-based enhancements have been incorporated in all lecture courses.
- Recipient of Missouri State University:

- University Foundation Award in Service (2006 – 2007)
- University Award for Excellence in Teaching (2005 – 2006)
- University Fellow in Research (2004 – 2007)
- University Foundation Award for Excellence in Teaching (2002 – 2003)
- University Foundation Award for Excellence in Research (2001 – 2002)
- CNAS Award for Outstanding Teaching (1999 – 2000)
- CNAS Award for Outstanding Research Accomplishments (1998 – 1999)
- Recipient of 2012 College of Natural and Applied Sciences Faculty Excellence Award.

Education

<u>Year</u>	<u>Degree</u>	<u>Degree Conferring Institution</u>	<u>Field</u>
1993	Ph.D.	Washington State University Pullman, Washington	Analytical/Inorganic Chemistry
1989	B.A.	Gustavus Adolphus College St. Peter, Minnesota	Chemistry

Professional Experience

2007 – present Missouri State University, Department of Chemistry, Springfield, MO
Professor of Chemistry

2002 – 2007 Missouri State University, Department of Chemistry, Springfield, MO
Associate Professor of Chemistry

1997-2002 Missouri State University, Department of Chemistry, Springfield, MO
Assistant Professor of Chemistry
- granted early tenure in May 2001

1996-1997 Boehringer Mannheim Corporation, Laboratory Diagnostics, Concord, CA
Senior Scientist, New Technologies and Technology Assessment

1993-1996 University of Texas, Austin, Texas
Post-Doctoral Fellow in Electroanalytical Chemistry

1989-1993 Washington State University, Pullman, Washington
Graduate Research Assistant; Graduate Teaching Assistant

1988-1989 Gustavus Adolphus College, St. Peter, Minnesota
Undergraduate Research Assistant; Undergraduate Teaching Assistant

Awards and Honors (2002 – present; the Associate Professor years)

- Carnegie Foundation for the Advancement of Teaching Missouri Professor of the Year (2007)
- Phi Kappa Phi Honor Society – Inducted May 1, 2007
- Young Endowed Professor in the Honors College (2007 – 2010)
- Missouri State University Award for Excellence in Teaching (2005 – 2006)
- Missouri Governor's Award in Teaching Excellence (2003)
- Henry Dreyfus Teacher-Scholar Award (2002-2007)
- Missouri State University Fellow in Research (2004 – 2007)
- Missouri State University Foundation Award for Excellence in Teaching (2002 – 2003)
- Missouri State University Outstanding Thesis Advisor Award (April 26, 2003).

Missouri State University Foundation Award for Excellence in Research (2001 - 2002)
 Missouri State University College of Natural and Applied Sciences Award for Excellence in Teaching (1999-2000)
 Missouri State University College of Natural and Applied Sciences Award for Excellence in Research (1998-1999)

Graduate Students

<u>Name</u>	<u>Degree</u>	<u>Advisor/Committee</u>	<u>Dates</u>
Craig Alexander ¹	M.S.	Advisor	1997 – 1999
Scott Workman ²	M.S.	Advisor	1998 – 2000
Brigitte Factor ³	M.S.	Advisor	2000 – 2001
Brian High ⁴	M.S.	Advisor	1998 – 2002
Laura Franklin ⁵	M.S.	Advisor	2000 – 2002
Richard Black ⁶	M.S.	Advisor	2001 – 2002
David Bruce ⁷	M.S.	Advisor	2001 – 2002
Christopher Cole ⁸	M.S.	Advisor	2001 – 2003
Jason Walworth ⁹	M.S.	Advisor	2002 – 2003
Sean Brooks ¹⁰	M.S.	Advisor	2003 – 2004
Kabir Singh ¹¹	M.S.	Advisor	2003 – 2004
Toby R. Long ¹²	M.S.	Advisor	2003 – 2004
Jessica Byrd ¹³	M.S.	Advisor	2003 – 2005
Catherine Haslag ¹⁴	M.S.	Advisor	2003 – 2005
Gabriel Craig	M.S.	Committee Member	1998 – 2000
Lisa Calvin Blue	M.S.	Committee Member	1998 – 2002
Jessica Thiessen	M.S.	Committee Member	2000 – 2002
Ronald Obiyo	M.S.	Committee Member	2001 – 2004
Scotty Jones	M.S.	Committee Member	2002 – 2004
Joseph K. Mbugua	M.S.	Committee Member	2003 – 2005
David Vinyard ¹⁵	M.S.	Advisor	2007 – 2008
Wesley Robinson ¹⁶	M.S.	Advisor	2008 – 2009
Tiffany L. Severs	M.S.	Committee Member	2009 – 2010
Jeffrey Morton	M.S.	Committee Member	2009 – 2010
Manjeera Malempati ¹⁷	M.S.	Advisor	2010 – 2011
Megan Schnuriger ¹⁸	M.S.	Advisor	2011
Jared Roop ¹⁹	M.S.	Advisor	2011 – 2012
Sarah Phillips	M.S.	Committee Member	Summer, 2011
Regina Tudzi	M.S.	Committee Member	Fall, 2011
Derek Gillis	M.S.	Committee Member	Summer, 2012
Sarah Roughton ²⁰	M.S.	Advisor	2013 – 2015
Jamie Gray	M.S.	Advisor	2015 – present

¹Thesis Title: “The Measurement of an Environmentally Important Surfactant System Using Electrochemiluminescence” July 1999. Craig J. Alexander.

²Thesis Title: “The Effects of Nonionic Surfactants on the Tris(2,2’-bipyridyl)ruthenium(II)-Tripropylamine Electrochemiluminescence System” May 2000. Michael Scott Workman.

³Thesis Title: “The Effects of Nonionic Surfactant Chain Length on the Tris(2,2’-bipyridyl)ruthenium(II)-Tripropylamine Electrochemiluminescence System” April 2001. Brigitte Factor.

⁴Thesis Title: “Detecting Copper Ions in Water Using Electrochemiluminescence” May 2002. Brian High.

⁵Thesis title: “Electrochemiluminescence of a Ruthenium Polypyridyl Cyanide Complex” May 2002. Laura Franklin.

⁶Thesis Title: “Heavy Metal Concentrations in Springs and Sinkholes in and around Springfield, Greene County, Missouri” August 2002. Richard H. Black.

- ⁷Thesis Title: “Electrochemiluminescence of various systems” December 2002. David Bruce.
- ⁸Thesis Title: “The Effects of Triton X-100 (polyethylene glycol tert-octylphenyl ether) on the Tris(2-phenylpyridine)iridium(III)-Tripropylamine Electrochemiluminescence System”. May 2003. Christopher Cole.
- ⁹Thesis Title: “Enhanced Electrochemiluminescence from Os(phen)₂(dppene)²⁺ (phen = 1,10-phenanthroline and DPPENE = bis(diphenylphosphino)ethane) in the presence of Triton X-100 (polyethylene glycol tert-octylphenyl ether)”. August 2003. Jason Walworth
- ¹⁰Thesis Title: “Electrochemiluminescence of Ruthenium(II) Bis-Bipyridine Acetylacetonate Type Complexes”. May 2004. Sean Brooks.
- ¹¹Thesis Title: “Electrogenerated Chemiluminescence of Pb(II)-Bromide Complexes” May 2004. Pavneet (Kabir) Singh.
- ¹²Thesis Title: “An Investigation of the electrochemical, spectroscopic and electrochemiluminescent properties of platinum(II) octaethylprophyrin including a new, experimental system for testing hydrophobic, light-emitting molecules”. December 2004. Toby R. Long.
- ¹³Thesis Title: “Detecting Dipicolinic Acid and Phenolic Estrogens using Electrogenerated Chemiluminescence”. May 2005. Jessica Byrd.
- ¹⁴Thesis Title: “Electrogenerated Chemiluminescence Quenching of Ru(bpy)₃²⁺ in the Presence of Acetaminophen, Acetylsalicylic Acid and their Metabolites”. May 2005. Catherine Haslag.
- ¹⁵Thesis Title: “Luminophore Discovery and Solvent Effects in Electrogenerated Chemiluminescence”. May 2008. David Vinyard
- ¹⁶Thesis Title: “The Effects of Surfactants and 2,2,2-Trifluoroethanol on Electrochemiluminescence”. August 2008. Wesley Robinson.
- ¹⁷Thesis Title: “The Effects of Ionic Liquids on tris(2,2'-bipyridyl)Ruthenium(II) Chloride” August, 2011. Manjeera Malempati.
- ¹⁸Thesis Title: “Electrogenerated Chemiluminescence of Luminophores and Ionic Liquids” December, 2011. Megan Schnuriger.
- ¹⁹Thesis Title: “Ionic Liquid Adsorbate Enhanced Electrogenerated Chemiluminescence of Ruthenium Compounds in Water” May, 2012. Jared Roop.
- ²⁰Thesis Title: “Electrogenerated Chemiluminescence of Luminophores And Enhancement with Melatonin” August, 2015, Sarah Roughton

Undergraduate Students

<u>Name</u>	<u>Degree</u>	<u>Dates</u>
Jeffrey McCall	B.S.	Spring 1998 – Spring 2000
Brian High	B.S.	Spring - Summer 1999
John Bos	B.S.	Spring 1999
Jaime Bellamy	B.S.	Summer 1999-Spring 2000
Christopher Cole	B.S.	Summer 1999 - present
Edward Bolton	B.S.	Fall 1999- Spring 2000
David Bruce ¹	B.A.	Summer 2000, Summer 2001
Andrew Ralya	B.S.	Spring 2001
Sean Brooks	B.S.	Spring 2002 – Fall 2002
Cierra Cross	B.S.	Spring 2002 – Fall 2002
James Gianakon	B.S.	Spring 2002; Spring 2003
Mary Elizabeth Hall	B.S.	Summer 2002
Brian Muegge ²	B.S.	Summer 2002; Summer 2003
Catherine Haslag	B.S.	Fall 2002
Jessica Byrd	B.S.	Spring 2003
Maria Witt ³	B.S.	Fall 2003 – Spring 2005
David Vinyard ⁴	B.S.	Fall 2005 – Spring 2007
Edward Bolton	B.S.	Spring 2006
Angela Bolin	B.S.	Spring 2006 – Spring 2008
Ashely Coffelt	B.S.	Spring 2007
Jennifer Giessen ⁵	B.S.	Summer 2007
Neill ‘Seamus’ Pennington	B.S.	Spring 2008 – Fall 2009

Scott Curtis	B.S.	Fall 2009 – Spring 2011
Megan Schnuriger	B.S.	Fall 2009 – Fall 2010
Jared Roop	B.S.	Fall 2009 – Spring 2011
Devin Moore	B.S.	Spring 2009
Mike Nothnangel	B.S.	Spring 2009
Eric Tague	B.S.	Spring 2009
Zachary Franklin	B.S.	Spring 2012
Sarah Roughton	B.S.	Spring 2012 – Fall 2013
Timothy J. Isakson	B.S.	Fall 2013 – Spring 2013;
Jamie Keathley	B.S.	Spring 2013 – present
Jasten Jacobs	B.S.	Spring 2013
Brandon Scherrer	B.S.	Spring 2013
Jonathan Lloyd	B.S.	Spring 2013
Holly Ortmeyer	B.S.	Spring 2013
Traci Meadows	B.S.	Fall 2013

¹Mr. Bruce was a student at College of the Ozarks. He was on a summer assistantship at Missouri State University to learn new skills and techniques in my research and teaching laboratory. He graduated with a M.S. degree in Chemistry from Missouri State University in 2002.

²Mr. Muegge was a high school student (see below) at Greenwood Laboratory School, and began doing research in my group during the summer of 2000. He continued this during the summer of 2001, and then entered Princeton University as a Freshman. Upon completing his freshman year he volunteered to work on research projects (without pay) during the summer of 2002 and worked on an assistantship during the summer of 2003. After graduating from Princeton in Spring of 2005, he entered an MD/Ph.D. program at Washington University in St. Louis.

³Honor's Thesis Title: "Electrochemiluminescence of Ru(bpy)₃²⁺ using 7-azatryptophan as an Oxidative-Reductive Coreactant". May 2005. Maria Witt.

⁴Honor's Thesis Title: "Electrochemiluminescence of "Boron" Complexes" Anticipated May 2007. David Vinyard.

⁵Ms. Giessen was a student at Cornell College (Dubuque, IA). She was on a summer assistantship at MSU as part of the chemistry department SURF program.

High School Student (research mentor)

<u>Name</u>	<u>Degree</u>	<u>Institution</u>	<u>Dates</u>
Brian Muegge	Diploma	Greenwood Laboratory School	Summer 2000, Summer 2001

Mr. Muegge was a student at Greenwood Laboratory School. He was on a summer assistantship at Missouri State University to learn new skills and techniques in my research and teaching laboratory. In the Fall of 2001 he entered Princeton University as a Freshman.

Participation in Teaching Workshops at National Level

Chautauqua Short Course "Using Case Studies to Teach Science – A Workshop", Austin, TX, Aug 1 – 3, 2005.

National Science Foundation Multi-Initiative Dissemination (MID) Project Workshop, Columbia, MO April 11-12, 2003.

Pittcon '01 "Problem-Based Learning in Analytical Chemistry" New Orleans, LA March 2001

Pittcon '00 "New Frontiers in Analytical Education" New Orleans, LA March 2000

Pittcon '98 "New Methods of Teaching Analytical Chemistry", New Orleans, LA March 1998

Research Activities Funded

<u>Title of Proposal/Project</u>	<u>PI/Co-PI</u>	<u>Funding Agency</u>	<u>Total Amount</u>	<u>Dates</u>
“Enhancing light emission using carbon nanotubes”	PI	Missouri State Univ. Faculty Research Grant	\$5695.60	1/1/10-12/31/10
“Developing new Light-Emitting Compounds for Practical Applications”	PI	Missouri State Univ. Faculty Research Grant	\$5,382.30	1/1/07 – 12/31/07
“The Measurement of Medically Important Compounds Using Electricity and Light”	PI	MSU Faculty Research Grant	\$4,200	1/1/04 – 12/31/04
“Electrogenerated Chemi-Luminescence of Ruthenium(II) Polyazine Complexes Containing Crown Ether Moities in the Presence of Metal Ions”	PI	American Chemical Society - Petroleum Research Fund	\$52,570	7/1/03 – 8/31/2006
“Electrogenerated Chemi-Luminescence of Ruthenium(II) Polyazine Complexes Containing Crown Ether Moities in the Presence of Metal Ions”	PI	Dreyfus Foundation Henry Dreyfus Teacher Scholar Award	\$60,000	2002-2007
“Measuring Toxic Metals Using Electricity and Light”	PI	MSU-Faculty Fellowship	\$5,000	2002
“The Measurement of Heavy Metals Using Electricity and Light”	PI	MSU Faculty Research Grant	\$4,100	2001-2002
“Electrogenerated Chemiluminescence of Cu(I) Diimine Systems”	PI	Research Corporation	\$44,382	2000 – 2002
“Electrochemiluminescent Properties in Aqueous Surfactant and Micellar Media: New Tools for the Study of Ru(II) Sensitizers”	PI	American Chemical Society-Petroleum Research Fund	\$25,000	1999 – 2001
"The Measurement of Priority Environmental Pollutants Using Electricity and Light"	PI	MSU Faculty Research Grant	\$4,000	1999
"The Measurement of Environmentally Important Compounds Using Electricity and Light"	PI	MSU Summer Faculty Fellowship	\$5,000	1998
"The Measurement of Environmentally Important Compounds Using Electrochemiluminescence"	PI	MSU Faculty Research Grant	\$6,595	1998

Teaching Activities Funded

<u>Title of Proposal/Project</u>	<u>PI/Co-PI</u>	<u>Funding Agency</u>	<u>Total Amount</u>	<u>Dates</u>
“Aligning Pedagogy and Technology, Student Generated Case Studies” (Drs Jim Zimmerman and Tamera Jahnke, Co-PIs)	Co-PI	Missouri State University	\$3600	8/1/05 – 5/1/06
“Electrochemical Light: Putting Modern Technology into the Hands of Students” (Drs Annette Gordon and Bryan Breyfogle, Co-PIs)	PI	National Science Foundation	\$65,000	6/1/02-6/1/04
Show me Tomorrow’s Teachers Using Technology” ST3 Grant (CNAS)	participant	Department of Education	\$4,000	Spring – Fall, 2001
"How Science Really Works: A Project-Based Approach to Teaching Analytical Chemistry Laboratories”	PI	SMSU Funding For Results	\$750	1999

Publications (1997 – present):

- underlined name indicates student co-author
- reverse chronological order

- 46) “Enhanced Electrogenerated Chemiluminescence of Ruthenium and Iridium Coordination Compounds using Melatonin” Sarah Roughton, Mark M. Richter, *Inorganica Chimica Acta*, **2016**, 454, 58-61.
- 45) “Enhanced Electrogenerated Chemiluminescence of Ru(bpy)₃²⁺/TPrA (bpy = 2,2’-bipyridine; TPrA = tri-n-propylamine) using Melatonin” Maria D. Witt, Sarah Roughton, Timothy J. Isakson, Mark M. Richter, *Journal of Luminescence*, **2016**, 121, 118 - 123.
- 44) “Electrogenerated Chemiluminescence of tris(2-phenylpyridine)iridium(III) in Water, Acetonitrile and Trifluoroethanol”, Wesley D. Robinson, Mark M. Richter, *Luminescence: The Journal of Biological and Chemical Luminescence*, **2015**, 30, 67-71.
- 43) “Chemiluminescence from osmium(II) complexes with phenanthroline, diphosphine and diarsine ligands” Elizabeth M. Zammit,^a Gregory J. Barbante, Brenden Carlson, Egan H. Doeven, Neil W. Barnett, Conor F. Hogan, Mark M Richter and Paul S. Francis, *Analyst*, **2012**, 137, 2766 – 2769.
- 42) “Electrogenerated Chemiluminescence Quenching of Ru(bpy)₃²⁺ (bpy = 2,2’-bipyridine) in the presence of Acetaminophen, Salicylic Acid and their metabolites” C. Haslag, M. M. Richter, *Journal of Luminescence*, **2012**, 132, 636-640.
- 41) "Electrogenerated chemiluminescence Properties of Bisalicylideneethylenediamino (salen) Metal Complexes” M. Schnuriger, E. Tague, M.M. Richter, *Inorganica Chimica Acta*, " **2011**, 379, 158-162.
- 40) "Electrogenerated chemiluminescence from Osmium(II) Polypyridine Carbonyl Chloride Systems” M. Schnuriger, M.M. Richter, B. Carlson, *Inorganica Chimica Acta*, **2011**, 378, 202 – 205.
- 39) “Looking ahead: Challenges and Opportunities in Organometallic Chemistry” S.J. Higgins,^a R.J. Nichols,^a S. Martin,^b P. Cea,^b H.S.J. van der Zant,^c M.M. Richter,^d P.J. Low.^{e*} *Organometallics*, **2011**, 30(1), 7 – 12.

- 38) "Ionic Liquid Adsorbate Enhanced Electrogenerated Chemiluminescence of Ruthenium, Osmium, and Iridium Complexes in Water" J. Roop, M. Nothnagel, M. Schnuriger, M.M. Richter, G.A. Baker, *J. Electroanal. Chem.*, **2011**, 656, 34 – 40. Invited publication for issue honoring Professor S. Dong.
- 37) "Efficient Electrogenerated chemiluminescence from Osmium(II) Polypyridine Systems Containing Tetraphenylarsine or Diphenylphosphine Ligands" N.S. Pennington, M.M. Richter, B. Carlson, *Dalton Transactions*, **2010**, 39, 1586 - 1590.
- 36) "Electrogenerated Chemiluminescence of Ruthenium Porphyrin Complexes" A. Bolin, M.M. Richter, *Inorganica Chimica Acta*, **2009**, 362, 1974 – 1976.
- 35) "Electrogenerated Chemiluminescence of 9,10-Diphenylanthracene, Rubrene, and Anthracene in Fluorinated Aromatic Solvents" D.J. Vinyard, S. Su, M.M. Richter, *J. Phys. Chem. A*, **2008**, 112(37), 8529 - 8533.
- 34) "Would you Supersize My Cancer Please? A Case Study Exploring Chemicals in the News" A. Coffelt, M.M. Richter, *National Center for Case Study Teaching in Science*, **2008**.
<http://www.sciencecases.org/acrylamide/acrylamide.asp> and also listed on this site
<http://ublib.buffalo.edu/libraries/projects/cases/ubcase.htm>.
- 33) "Enhanced Electrogenerated Chemiluminescence in the Presence of Fluorinated Alcohols" D.J. Vinyard, M.M. Richter, *Analytical Chemistry*, **2007**, 79, 6404 – 6409.
- 32) "Electrochemical Light: Putting Modern Technology Into the Hands of Students" E. Bolton, B. Breyfogle, A. Gordon and M.M. Richter, *The Chemical Educator*, **2007**, 12, 15 – 17.
- 31) "Photoluminescence and Electrogenerated Chemiluminescence of a Bis(bipyridyl)Ruthenium(II)-Porphyrin Complex" D.J. Vinyard, S. Swavey, M.M. Richter, *Inorganica Chimica Acta*, **2007**, 360, 1529 – 1534.
- 30) "Electrogenerated Chemiluminescence of Hydroxyquinolato Boron Complexes" D.J. Vinyard, M.M. Richter, *Dalton Transactions*, **2006**, 37, 4461 – 4464.
- 29) "Electrogenerated Chemiluminescence of (Bis-bipyridyl)Ruthenium(II) Acetylacetonate Complexes" S.C. Brooks, D.J. Vinyard and M.M. Richter, *Inorganica Chimica Acta*, **2006**, 359, 4635 – 4638.
- 28) "Electrochemiluminescence of dipicolinic acid (DPA) and (bpy)₂Ru(DPA)⁺ (bpy = 2,2'-bipyridine)" J. Byrd, J. Bruno, M.M. Richter, *Luminescence*, **2006**, 21(2), 72 – 76. DOI: 10.1002/bio.882.
- 27) "Generating Quality Control Charts using Spectroscopy" M.M. Richter, *The Chemical Educator*, **2005**, 10, 357 – 358. DOI: [10.1333/s00897050951a](https://doi.org/10.1333/s00897050951a) (<http://chemeducator.org/papers/0010005/1050357mr.pdf>)
- 26) "Electrogenerated chemiluminescence of polymer-bound ortho-metalated iridium(III) systems" B. Muegge, M.M. Richter, *Luminescence*, **2005**, 20(2), pp76-80. DOI: [10.1002/bio.807](https://doi.org/10.1002/bio.807).
- 25) "Electrogenerated Chemiluminescence of the Platinum (II) Octaethylporphyrin/Tri-*n*-propylamine System" T.R. Long, M.M. Richter *Inorganica Chimica Acta*, **2005**, Vol 358(6), pp 2141-2145. doi:[10.1016/j.ica.2004.12.017](https://doi.org/10.1016/j.ica.2004.12.017)
- 24) "Electrogenerated Chemiluminescence of Pb(II)-Bromide Complexes" P. Singh, M.M. Richter, *Inorg. Chim. Acta*, **2004**, 357(5), 1589-1592.. DOI: [10.1016/j.ica.2003.12.008](https://doi.org/10.1016/j.ica.2003.12.008) (rapid communication).
- 23) "Multi-Colored Electrogenerated Chemiluminescence from Ortho-metalated Iridium(III) Systems" B.D. Muegge, M.M. Richter, *Analytical Chemistry*, **2004**, 76(1) pp 73 – 77. DOI: [10.1021/ac035038j](https://doi.org/10.1021/ac035038j)
- 22) "Enhanced Electrochemiluminescence from Os(phen)₂(dppene)²⁺ (phen = 1,10-phenanthroline and dppene = bis(diphenylphosphino)ethene) in the presence of Triton X-100 (polyethylene glycol tert-octylphenyl ether)" J. Walworth, K.J. Brewer, M.M. Richter, *Anal. Chim. Acta.*, **2004**, 503(2), pp 241 – 245.
[doi:10.1016/j.ica.2003.10.029](https://doi.org/10.1016/j.ica.2003.10.029) .

- 21) "Electrochemiluminescence of tris(8-hydroxyquinoline-5-sulfonic acid)aluminum(III) in Aqueous Solution" B.D. Muegge, S. Brooks, M.M. Richter, *Analytical Chemistry*, **2003**, *75*, 1102-1105. DOI: [10.1021/ac026152p](https://doi.org/10.1021/ac026152p)
- 20) "The Effects of Triton X-100 (polyethylene glycol tert-octylphenyl ether) on the Tris(2-phenylpyridine)iridium(III)-Tripropylamine Electrochemiluminescence System" C. Cole, B. Muegge and M.M. Richter, *Analytical Chemistry*, **2003**, *75*, 601-604. DOI: [10.1021/ac0203600](https://doi.org/10.1021/ac0203600)
- 19) "Electrochemiluminescence in Aqueous Solution of a Ruthenium(II) Bipyridyl Complex Containing a Crown Ether Moiety in the Presence of Metal Ions" D. Bruce and M.M. Richter, *The Analyst*, **2002**, *127(11)*, 1492-1494. DOI: [10.1039/b206514m](https://doi.org/10.1039/b206514m)
- 18) "Determination of DNA Bases using Electrochemistry: A Discovery-Based Experiment" S. Brooks and M.M. Richter, *The Chemical Educator* **2002**, *7*, 284-287. DOI: [10.1007/s00897020595a](https://doi.org/10.1007/s00897020595a)
- 17) "Electrochemical Light, From Laboratory Curiosity to Useful Analytical Technique" M.M. Richter, *The Chemical Educator*, **2002**, *7(4)*, 195 - 199. DOI: [10.1007/s00897020584a](https://doi.org/10.1007/s00897020584a)
- 16) "Supramolecular Complexes of Bis(2,2'-bipyridine)Osmium(II) and Ruthenium(II)" J.A. Clark, M.M. Richter and K.J. Brewer *Inorganic Syntheses* **2002**, *33*, pp 26 - 39.
- 15) "Electrochemiluminescence from Os(phen)₂(dppene)²⁺ (phen = 1,10-phenanthroline; dppene = bis(diphenylphosphino)ethene)" D. Bruce, M.M. Richter and K.J. Brewer, *Analytical Chemistry* **2002**, *74*, 3157-3159. DOI: [10.1021/ac020089m](https://doi.org/10.1021/ac020089m)
- 14) "Green Electrochemiluminescence from Ortho-metalted Tris(2-phenylpyridine)iridium(III)" D. Bruce and M.M. Richter, *Analytical Chemistry*, **2002**, *74*, 1340 – 1342. DOI: [10.1021/ac0111513](https://doi.org/10.1021/ac0111513).
- 13) "Effects of Electron Withdrawing and Donating Groups on the Efficiency of Tris(2,2'-bipyridyl)ruthenium(II)/Tri-n-propylamine Electrochemiluminescence" D. Bruce, J. McCall and M.M. Richter, *The Analyst*, **2002**, *127(1)*, 125-128. DOI: [10.1039/b108072p](https://doi.org/10.1039/b108072p)
- 12) "Electrochemiluminescent Detection of Metal Cations Using a Ruthenium(II) Bipyridyl Complex Containing a Crown Ether Moiety" B. Muegge and M.M. Richter, *Analytical Chemistry*, **2002**, *74*, 547-550. DOI: [10.1021/ac010872z](https://doi.org/10.1021/ac010872z)
- 11) "Determining Copper Ions in Water Using Electrochemiluminescence" B. High, D. Bruce, and M.M. Richter, *Analytica Chimica Acta*, **2001**, *449*, 17-22. DOI: [10.1016/S0003-2670\(01\)01357-5](https://doi.org/10.1016/S0003-2670(01)01357-5)
- 10) "Surfactant Chain Length Effects on the Light Emission of Tris(2,2'-bipyridyl)Ruthenium(II)/Tripropylamine Electrogenenerated Chemiluminescence" B. Factor, B. Muegge, S. Workman, E. Bolton, J. Bos and M. M. Richter, *Analytical Chemistry*, **2001**, *73*, 4621-4624. DOI: [10.1021/ac010698e](https://doi.org/10.1021/ac010698e).
- 9) "Electrochemiluminescence of Copper (I) Bis(2,9-dimethyl-1,10-phenanthroline)" J. McCall, D. Bruce, S. Workman, C. Cole, M.M. Richter, *Analytical Chemistry*, **2001**, *73*, 4617-4620. DOI: [10.1021/ac0106750](https://doi.org/10.1021/ac0106750).
- 8) "Quantitative Determination of Copper: Combining Project-Based Laboratories with Single Analyte Detection" M.M. Richter, *Chemical Educator*, **2001**, *6(1)*, 21-24. DOI: [10.1007/s00897000453a](https://doi.org/10.1007/s00897000453a)
- 7) "The Effects of Nonionic Surfactants on the Tris(2,2'-bipyridyl)ruthenium(II)-Tripropylamine Electrochemiluminescence System" S. Workman and M.M. Richter, *Analytical Chemistry*, **2000**, *72*, 5556-5561. DOI: [10.1021/ac000800s](https://doi.org/10.1021/ac000800s)
- 6) "Light Emission at Electrodes: An Electrochemiluminescence Demonstration" E. Bolton and M.M. Richter *Journal of Chemical Education* **2001**, *78*, pp 641-643.
- 5) "Chemiluminescence of Tris(2,2'-bipyridyl)ruthenium(II): A Glowing Experience" E. Bolton and M.M. Richter *Journal of Chemical Education* **2001**, *78*, 47-48.

- 4) "Phenol Substituent Effects on Electrogenerated Chemiluminescence Quenching" J. McCall and M.M. Richter *Analyt* **2000**, *125*, 545-548. DOI: [10.1039/a904540f](https://doi.org/10.1039/a904540f)
- 3) "Measurement of Fatty-Amine Ethoxylate Surfactants Using Electrochemiluminescence" C. Alexander and M.M. Richter *Analytica Chimica Acta* **1999**, *402(1-2)*, 105-112. DOI: [10.1016/S0003-2670\(99\)00535-8](https://doi.org/10.1016/S0003-2670(99)00535-8)
- 2) "Quenching of Electrogenerated Chemiluminescence by Phenols, Hydroquinones, Catechols and Benzoquinones" J. McCall, C. Alexander and M.M. Richter *Analytical Chemistry* **1999**, *71*, 2523. DOI: [10.1021/ac981322c](https://doi.org/10.1021/ac981322c)
- 1) "An Instrumental Analysis Laboratory Using Electrogenerated Chemiluminescence" by C. Alexander, J. McCall and M.M. Richter *Chemical Educator* **1998**, *3(6)*, 1. DOI: [10.1333/s00897980256a](https://doi.org/10.1333/s00897980256a)

Publications (prior to becoming a Missouri State University faculty member):

- reverse chronological order

- 14) "Electrogenerated Chemiluminescence. 62. Enhanced ECL in Bimetallic Assemblies with Ligands that Bridge Isolated Chromophores" M.M. Richter, A.J. Bard, W. Kim and R. Schmehl *Analytical Chemistry* **1998**, *70*, 310. DOI: [10.1021/ac970736n](https://doi.org/10.1021/ac970736n)
- 13) "Electrogenerated Chemiluminescence. 61. NIR ECL in Heptamethine Cyanine Dye" S.K. Lee, M.M. Richter, A.J. Bard and L. Strekowski *Analytical Chemistry* **1997**, *69*, 4126. DOI: [10.1021/ac9704570](https://doi.org/10.1021/ac9704570)
- 12) "Electrogenerated Chemiluminescence. 59. Rhenium Complexes" M.M. Richter, J.D. Debad, D.S. Striplin, G.A. Crosby and A.J. Bard *Analytical Chemistry* **1996**, *68*, 4370. DOI: [10.1021/ac9606160](https://doi.org/10.1021/ac9606160)
- 11) "Electrogenerated Chemiluminescence. 58. Ligand-Sensitized Electrogenerated Chemiluminescence in Europium Labels." M.M. Richter and A.J. Bard *Analytical Chemistry* **1996**, *68*, 2641. DOI: [10.1021/ac960211f](https://doi.org/10.1021/ac960211f)
- 10) "A Comparative Study of the Spectroscopy and Oxidative Spectroelectrochemistry of a Series of Homo- and Hetero-bimetallic Ru(II) and Os(II) Polypyridine Complexes." M.M. Richter, G.E. Jensen and K.J. Brewer *Inorganica Chimica Acta* **1995**, *230*, 30.
- 9) "Electrogenerated Chemiluminescence. 56. Electrochemistry and ECL of films of the Conjugated Polymer 4-Methoxy-(2-ethylhexoxyl)-2,5-polyphenylenevinylene [MEH-PPV]." M.M. Richter, F.F. Fan, F. Klavetter, A.J. Heeger and A.J. Bard *Chemical Physics Letters* **1994**, *226*, 115.
- 8) "Photochemical Properties of Mixed-Metal Supramolecular Species." S.M. Molnar, G.E. Jensen, L.M. Vogler, S.W. Jones, L. Laverman, J.S. Bridgewater, M.M. Richter and K.J. Brewer *Journal of Photochemistry and Photobiology A: Chemistry* **1994**, *80*, 315.
- 7) "Osmium(II)/Ruthenium(II) Trimetallics Incorporating Polyazine Bridging Ligands: Isovalent NIR Absorbers with Unique Electrochemical Behavior." M.M. Richter and K.J. Brewer *Inorganic Chemistry* **1993**, *32*, 5762.
- 6) "Investigation of the Spectroscopic, Electrochemical and Spectroelectrochemical Properties of Os(II) Complexes Incorporating Polypyridyl Bridging Ligands: Formation of the Os₂ and Os,Ru Mixed-Valence Complexes." M.M. Richter and K.J. Brewer *Inorganic Chemistry* **1993**, *32*, 2827.
- 5) "Spectroscopic, Electrochemical and Spectroelectrochemical Investigations of Mixed-Metal Osmium(II)/Ruthenium(II) Bimetallic Complexes Incorporating Polypyridyl Bridging Ligands." M.M. Richter and K.J. Brewer *Inorganic Chemistry* **1992**, *31*, 1594.
- 4) "Structure and Properties of a Bimetallic Complex with a Conjugated Bridge Between Iron Atoms in Two Macrocycles." H.S. Mountford, L.O. Spreer, J.W. Otvos, M. Calvin, K.J. Brewer, M. Richter and B. Scott *Inorganic Chemistry* **1992**, *31*, 717 - 718.
- 3) "Crystal and Molecular Structure of Tris(2,2'-bipyridyl)-osmium(II) bis(hexafluorophosphate)." M.M. Richter, B. Scott, K.J. Brewer and R. Willett *Acta Crystallographica*, **C47** **1991**, 2443.

- 2) "Synthesis and Characterization of osmium(II) complexes incorporating polypyridyl bridging ligands." M.M. Richter and K.J. Brewer *Inorganica Chimica Acta* **1991**, 180, 125.
- 1) "Synthesis and Characterization of a Series of Novel Rhodium and Iridium Complexes Containing Polypyridyl Bridging Ligands: Potential Uses in the Development of Multimetal Catalysts for Carbon Dioxide Reduction." S.C. Rasmussen, M.M. Richter, E. Yi, H. Place and K.J. Brewer *Inorganic Chemistry* **1990**, 29, 3926.

Full copies of papers are available on request.

Comprehensive Review Articles

- 2) "ECL – Electrochemical Luminescence" R. Pyati and M.M. Richter, *Annual Reports C*, **2007**, 103, 12-78. Invited Publication. (Reviewed by editor, not sent to independent reviewers)
- 1) "Electrochemiluminescence (ECL)" M.M. Richter, *Chemical Reviews*, **2004**, 104, pp 3003 – 3036. Invited Publication. DOI: [10.1021/cr020373d](https://doi.org/10.1021/cr020373d) (peer-reviewed)

Book Chapters:

Mark M. Richter "Electrochemiluminescence" in *Optical Biosensors: Today and Tomorrow (2nd Edition)*, F. Ligler and C.A. Rowe-Taite Editors, Elsevier, Amsterdam. Revised Chapter from *Optical Biosensors: Present and Future*; Elsevier, Amsterdam, 2008, Chapter 7. ISBN: 978-0-444-53125-4. Invited Publication.

Mark M. Richter "Metal Chelate Systems" in *Electrogenerated Chemiluminescence*, A.J. Bard Editor, Marcel Dekker, Inc., New York, 2004, Chapter 7. ISBN: 0-8247-5347-X. Invited Publication.

Mark M. Richter "Electrochemiluminescence" in *Optical Biosensors: Present and Future*, F. Ligler and C.A. Rowe-Taite Editors, Elsevier, Amsterdam, April 2002, Chapter 6. ISBN: 0-444-50974-7. Invited Publication.

Full copies of book chapters are available on request. The pre-2007 books are also available in Meyer Library.

Patents

Mark M. Richter, David J. Vinyard "Improving Electrochemiluminescence" US Provisional Patent application serial number 60/883,650, filed January 5, 2007. Abandoned.

Patents (on work done prior to prior to becoming a Missouri State University faculty member):

Mark M. Richter, Allen J. Bard, Russell H. Schmehl "Electrochemiluminescent Label Based on Multimetallic Assemblies" U.S. Patent Number 6,613,583 (Sept. 2, 2003).

Mark M. Richter, Michael J. Powell, Christopher M. Belisle "Assays employing electrochemiluminescent labels and electrochemiluminescence quenchers" European Patent Number EP 0,914,612 B1; US Patent Number 7,314,711 (Jan. 1, 2008).

Symposium

Mark M. Richter, Organizer and Chair. "Photoluminescence, Chemiluminescence and Electrochemiluminescence of Inorganic Complexes". 224th National Meeting of the American Chemical Society, Boston, MA (August 2002).

<http://www.people.virginia.edu/~jnd/Meetings/Boston02/224thACSMeting.htm>

Presentations (1997 – present):

- reverse chronological order

- 40) ACS Meeting, Karen's Memorial Service.
- 39) "Enhancing Coreactant Electrogenerated Chemiluminescence (ECL) by Oxygen Quenching", The 15th International Symposium on Electroanalytical Chemistry (15th ISEAC), August 13-16, 2015, Changchun, China.
- 37) "Enhancing Coreactant Electrogenerated Chemiluminescence (ECL)", University of Science and Technology, August 10, 2015, Hefei, China. Invited Presentation.
- 36) "Enhancing Electrogenerated Chemiluminescence Using Melatonin" ECL 2014, International Meeting on Electrogenerated Chemiluminescence, Bertinoro, Italy, September 7 – 10, 2014. Invited Presentation (1 of 7 invited speakers; all expenses paid).
- 35) "Electrogenerated chemiluminescence Properties of Bisalicylideneethylenediamino (salen) Metal Complexes" 24th Annual Missouri Inorganic Day, Springfield, MO April 30, 2011.
- 34) "Challenges and Strategies for Teaching Introductory Chemistry to Honor's Students" National Collegiate Honor's Council (NCHC), Kansas City, MO, October 21 – 24, 2010. Abstract was refereed prior to acceptance. (same talk as given at GPHC; #31 below)
- 33) "Case Studies: The Good and the Bad" 21st Biennial Conference on Chemical Education, Denton, TX, August 1 – 4, 2010. Invited Presentation.
- 32) "Enhanced Electrogenerated Chemiluminescence" 12th Annual Royal Australian Chemical Institute (RACI) Convention July 4 – 9, 2010. Invited Presentation as Keynote Speaker.
- 31) "Challenges and Strategies for Teaching Introductory Chemistry to Honor's Students" Great Plains Honor's Council Meeting, Tulsa, Oklahoma, March 26 – 27, 2010. Abstract was refereed prior to acceptance.
- 30) "Enhanced coreactant ECL of Ru(bpy)₃²⁺ in the presence of fluorinated alcohols" 12th ISEC (International Symposium on Electroanalytical Chemistry), Changchun, China. August 13-15, 2009 Invited Presentation.
- 29) "Electrogenerated Chemiluminescence: From Laboratory Curiosity to Powerful Analytical Technique" 5th Chianti Meeting on Inorganic Electrochemistry. Siena, Italy. July 2008. Invited Presentation.
- 28) "Enhanced Electrogenerated Chemiluminescence in the Presence of both Fluorinated Alcohols and Nonionic Surfactants", National Meeting of the American Chemical Society, New Orleans, LA, April 6, 2008. (D. Vinyard, J. Giessen, W. Robinson listed on poster).
- 27) "Electrogenerated Chemiluminescence of Hydroxyquinolato Boron Complexes" at the National Meeting of the American Chemical Society, San Francisco, CA (September 2006).
- 26) "Multi-colored electrogenerated Chemiluminescence" Gustavus Adolphus College, St. Peter, MN (March 17, 2006) – invited presentation.
- 25) "Multi-colored electrogenerated Chemiluminescence" College of the Ozarks, Point Lookout, MO (March 10, 2006)
- 24) "Electrogenerated Chemiluminescence of Dipicolinic Acid (DPA) and a Ruthenium Coordination Complex Incorporating DPA" at the National Meeting of the American Chemical Society, Washington DC (August 2005)
- 23) "Multi-colored electrogenerated Chemiluminescence" University of Southern Mississippi, Hattiesburg, MS (April 15, 2005) – Invited Presentation.
- 22) "Electrogenerated Chemiluminescence of ortho-metalated iridium systems in solution and the solid state" at American Chemical Society Great Lakes Regional Meeting, Peoria, IL Oct 2004.

- 21) "Electrogenerated Chemiluminescence of ortho-metalated iridium systems" at the 10th European Society for Electroanalytical Chemistry meeting in Galway, Ireland, June 2004.
- 20) "Electrochemical Light: From Laboratory Curiosity to Useful Analytical Technique" Ouachita Baptist University, Arkadelphia, AR. February 4, 2004. – Invited presentation.
- 19) "Combing Project Based Laboratories with Single Analyte Detection" Midwest Regional Meeting of the American Chemical Society, Columbia, MO, November 5-7, 2003.
- 18) "Combing Project Based Laboratories with Single Analyte Detection" in New Approaches to Teaching Analytical Chemistry symposium, FACSS 2003, Ft. Lauderdale, FL October 19-23, 2003 – Invited presentation.
- 17) "Electrochemiluminescence of inorganic and organometallic complexes" 31st Regional meeting of the American Chemical Society, Saratoga Springs, New York, June 16th, 2003. – Invited Presentation.
- 16) "Green Electrochemiluminescence from Ortho-Metalated Iridium(III) Complexes" in the *Photoluminescence, Chemiluminescence and Electrochemiluminescence of Inorganic Systems* Symposium at the 224th National Meeting of the American Chemical Society, Boston, MA (August 2002). – Invited Presentation.
- 15) "Quantitative Determination of Copper: Combining Project-Based Laboratories with Single Analyte Detection" 223rd National meeting of the American Chemical Society, Orlando, FL (April 2002).
- 14) "Electrochemiluminescence of Metal Cations Using a Ruthenium(II) Bipyridyl Complex Containing a Crown Ether Moiety" 223rd National meeting of the American Chemical Society, Orlando, FL (April 2002).
- 13) "Electrochemiluminescent Detection of Metal Cations Using a Ruthenium(II) Bipyridyl Complex Containing a Crown Ether Moiety", University of Missouri Columbia, Columbia, Missouri (April 26th, 2002) – invited presentation.
- 12) "Electrochemiluminescence Quenching by Phenols, Catechols, Hydroquinones and Benzoquinones" University of Arkansas, Fayetteville, Arkansas (May 30th, 2001) – invited presentation
- 11) "Electrochemiluminescence of Cu(I) Diimine Systems" Pittcon 2001, New Orleans, LA (March 2001)
- 10) "Electrochemiluminescence of Cu(I) Diimine Complexes" 35th Regional Meeting of the American Chemical Society in St. Louis, MO (October 2000)
- 9) "Incorporation and Evaluation of Project Based Laboratories into the Undergraduate and Graduate Curriculum" 35th Regional Meeting of the American Chemical Society in St. Louis, MO (October 2000)
- 8) "Electrochemical Light: From Laboratory Curiosity to Useful Analytical Technique" English Language Institute SMSU (July 6th, 2000)
- 7) "Incorporation and Evaluation of Project Based Laboratories into the Undergraduate and Graduate Curriculum" at the National ACS Meeting in New Orleans, LA (August 1999)
- 6) "Measurement of a Series of Fatty-Amine Ethoxylate Surfactants Using Electrochemiluminescence" presented by at the National ACS Meeting in New Orleans, LA (August 1999).
- 5) "Quenching of Electrochemiluminescent Excited States by Phenols, Catechols, Benzoquinones and Catechols" National Meeting of the American Chemical Society, Anaheim, CA (March 1999)
- 4) "ECL Quenching" Southwest Missouri State University, Springfield, MO (October 1998)
- 3) "ECL Quenching with Phenols" Southwest Missouri State University, Springfield, MO (April 1998).
- 2) "Electrogenerated Chemiluminescence Quenching. Who turned out the lights?" Gustavus Adolphus College, St. Peter, MN (March 1998) - invited presentation

- 1) "Electrochemiluminescence Quenching with Phenols, Hydroquinones, Catechols and Benzoquinones" Midwest Regional ACS Meeting, Tan-Tar-A Lodge, MO (October, 1997)