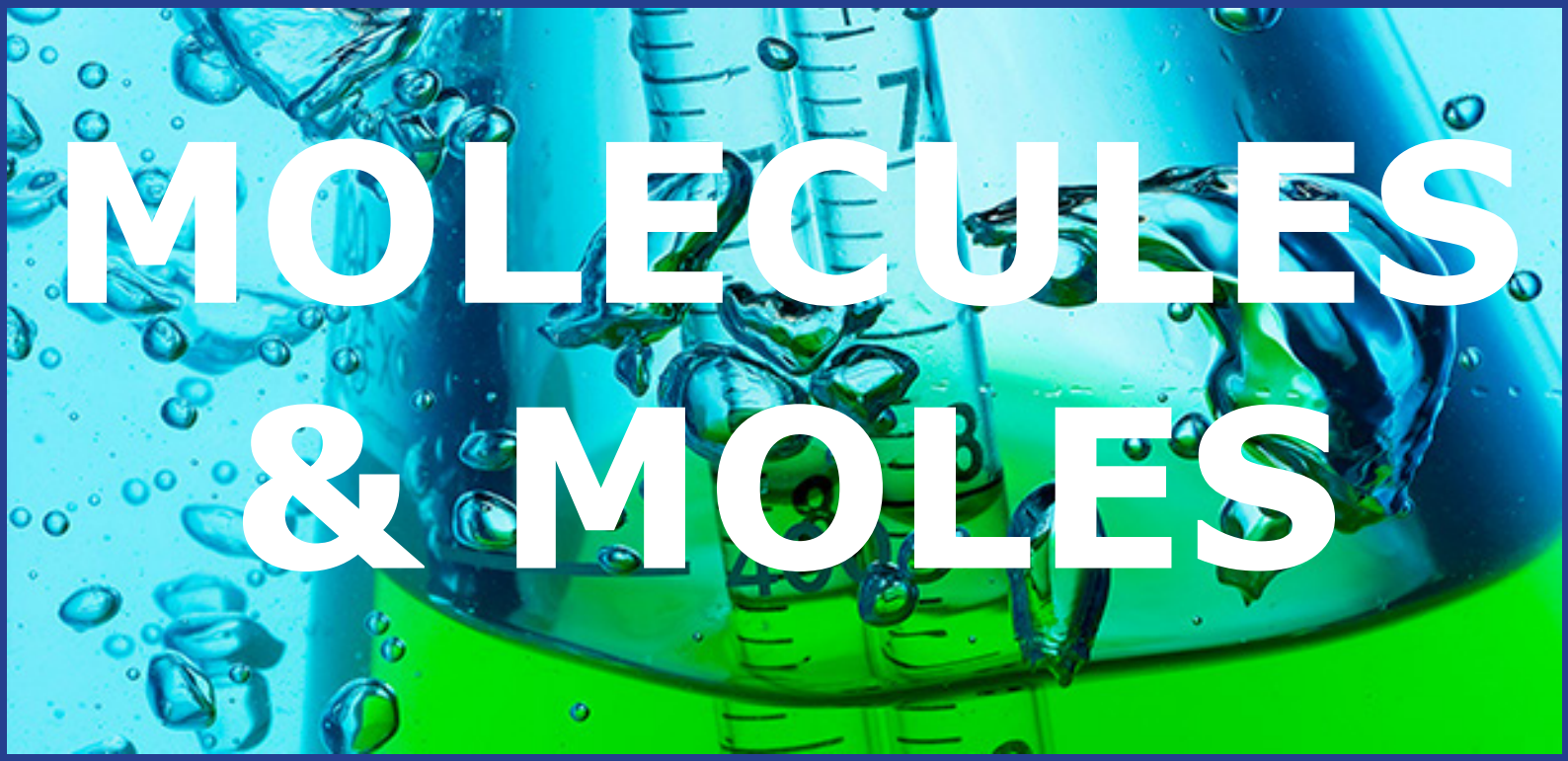


MOLECULES & MOLES

A NOTE FROM THE DEPARTMENT HEAD

Alumni and friends of the chemistry department,

It has been a busy time since first taking on the department head role in July 2015. Our six-year American Chemical Society Certification report was sent in during Summer 2016. We are looking forward to their reply and anticipate our ACS certification to remain intact. It has been so busy in fact that I realize we haven't had an edition of *Molecules and Moles* sent out since near the end of the Fall 2015 semester. Hence, this edition will focus primarily on the accomplishments of our faculty and students from calendar year 2016.

During 2016, departmental faculty published 10 research papers, several with student co-authors. In early 2017, Dr. Eric Bosch and his graduate student Chideraa Nwachwu had their research article featured on the cover of *Acta Crystallographica C*. Faculty and their students made 36 scientific presentations at professional conferences. At the Fall 2016 National ACS Meeting in Philadelphia, one of our graduate students Zachary Wilson had his presentation selected to be featured on the ACS website.

Several faculty won college awards, including Dr. Gerasimchuk winning the most prestigious of those—the Atwood Research and Teaching Award. This award is funded by our very own alumnus, Dr. Jerry Atwood, a 1964 graduate of the department who is also in the process of funding an endowed professorship. We are extremely grateful for his support.

Generosity from alumni, friends, and our Chemical Advisory Board are greatly appreciated, now more than ever with the looming budget cuts I'm sure many

of you have read about. The Advisory Board's endowed account is nearing their goal of a $100,000 endowment. At the Spring Awards Banquet we awarded $21,375 in scholarships to some of our most outstanding chemistry majors. We strive very hard in the department to use our budgeted dollars as efficiently as possible while still providing our students with a quality education that they too can be proud of when they become alumni.

The only new face in the department since the last newsletter belongs to that of the newsletter generator herself, Ms. Marla Fritz. Marla is a full-time administrative assistant who splits her time between the Departments of Chemistry and PAMS (Physics, Astronomy, and Materials Science). The only departure was her predecessor Ms. Kristy Teague who left the department in late 2015 and Marla came on board in early 2016. That transition is my second excuse for the time gap between editions of Molecules & Moles. We have just recently wrapped up a search for an Assistant Professor of Environmental Chemistry and anticipate being able to announce that hire in our next edition which will hopefully come your way in less than a year.

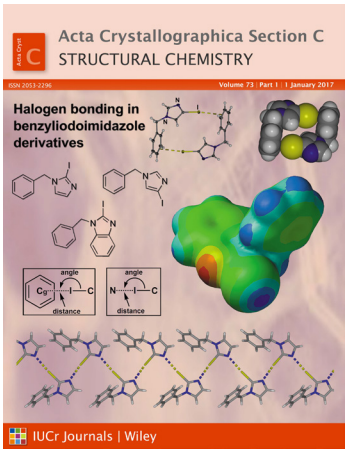
Bryan Breyfogle

Intellectual Contributions

Missouri State University

November 1, 2015 - March 31, 2017

Department of Chemistry



The Eric Bosch article as featured on the January 2017 cover of of Acta Crystallographica C .

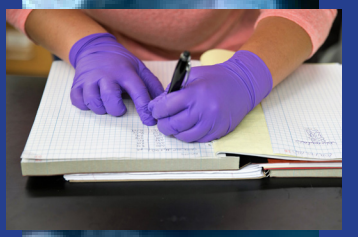
Bosch, Eric

Refereed Journal Articles

Journal Article, Professional Journal (Published)

Bosch, E., Nwachukwu, C. I. (2017). C-I···N and C-I···Pi Halogen bonding in the structures of 1-benzyl-iodoimidazole derivatives. *Acta Crystallographica Section C Structural Chemistry, C73*(1), 2-8. https://doi.org/10.1107/S2053229616018702





Journal Article, Professional Journal (Published)
Bosch, E. (2016). Cocrystals of 1,4-diethynylbenzene with 1,3-diacetylbenzene and benzene-1,4-dicarbaldehyde exhibiting strong nonconventional alkyne--carbonyl C---H-O hydrogen bonds between the components. *Acta Crystallographica Section C, C72*(10), 748-752. dx.doi.org/10.1107/S2053229616014972

Journal Article, Professional Journal (Published)
Bosch, E., Jeffries, L. (2016). X-Ray Structures of 1-Ethynyl-2-nitrobenzene and 1-Ethynyl-4,5-dimethyl-2-nitrobenzene: Correlation to the Enhanced Rate of Hydration and Investigation of the C-H---O Alkyne-Nitro Hydrogen Bonding. *Journal of Chemical Crystallography, 46*, 303-308. link.springer.com/article/10.1007/s10870-016-0660-0

Journal Article, Professional Journal (Published)
Bosch, E. (2016). Conjugated, trans-Spanning Ligands as Models for Multivalent p-Phenyleneethynylenes. *European Journal of Organic Chemistry, 2016*, 891-895. http://onlinelibrary.wiley.com/doi/10.1002/ejoc.201501528/epdf

Journal Article, Professional Journal (Published)
Kirchner, L., Bowling, N., Bosch, E. (2015). Extended self-complementary halogen bonded dimers. *Journal of Chemical Crystallography, 45*(10-12), 466-475. DOI 10.1007/s10870-015-0616-9

Fichter, Kathryn M.

Refereed Journal Articles

Journal Article, Academic Journal (Published)
Ellis, M. A., Grandinetti, G., Fichter, K. M. (2016). Synthesis of Cd-free InP/ZnS Quantum Dots Suitable for Biomedical Applications. *Journal of Visualized Experiments, 108*, e53684. http://www.jove.com/video/53684/synthesis-cd-free-inpzns-quantum-dots-suitable-for-biomedical

Gerasimchuk, Nikolay N.

Refereed Journal Articles

Journal Article, Academic Journal (Published)
Mann, A., Gerasimchuk, N., Silchenko, S. (2016). New non-aggregating bivalent cis-ML2 (M = Pd, Pt; L = pivaloylcyanoxime). *Inorganica Chimica Acta, 440*, 118-128.

Richter, Mark M.

Refereed Journal Articles

Journal Article, Academic Journal (Published)
Roughton, S., Richter, M. M. (2016). Enhanced Electrogenerated Chemiluminescence of Ruthenium and Iridium Coordination Compounds using Melatonin. *Inorganica Chimica Acta, 454*, 58-61.

Journal Article, Academic Journal (Published)
Richter, M. M., Witt, M. D., Roughton, S., Isakson, T. J. (2016). Enhanced Electrogenerated Chemiluminescence of Ru(bpy)32+/TPrA (bpy = 2,2'-bipyridine; TPrA = tri-n-propylamine) using Melatonin. *Journal of Luminescence, 171*, 118-123.

Journal Article, Academic Journal (Published)
R. W., Richter, M. M. (2015). Electrogenerated Chemiluminescence of tris(2-phenylpyridine)iridium(III) in Water, Acetonitrile and Trifluoroethanol. *Luminescence: The Journal of Biological and Chemical Luminescence,, 30*, 67-71. DOI 10.1002/bio.2691

Siebert, Matthew R.

Refereed Journal Articles

Journal Article, Academic Journal (Published)
Hines, J. M., Eason, J. J., Siebert, M. (2017). One Lump or Two? A Plurality of Pathways in Gold(III)-Catalyzed Cyclization Transforming Propargyl Acetates to a Carene-like Bicyclo[4.1.0]heptane. *Organometallics*. pubs.acs.org/doi/abs/10.1021/acs.organomet.6b00946

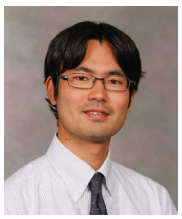
Journal Article, Academic Journal (Published)
Kirkpatrick, A. K., Siebert, M. (2016). Cations or Radicals? Inherent Reactivity of Biosynthetic Intermediates in the B-Ring Formation of Rotenoid Natural Products. *Journal of Physical Chemistry A, 120*(15), 2372-2379. pubs.acs.org/doi/abs/10.1021/acs.jpca.5b12367

Journal Article, Academic Journal (Published)
Painter, P. P., Siebert, M., Tantillo, D. J. (2015). Conjugate Addition/[3,3] Sigmatropic Shift Processes for Formation of Medium-Ring Cyclic Amines - Do They Circumvent the Woodward-Hoffmann Rules?. *Journal of Organic Chemistry, 80*(21), 11699-11705.

Wanekaya, Adam K.

Other Intellectual Contributions

Cited Research (Published)
Manani, G. N., Spidle, R. T., Bhaumik, A., Ghosh, K. C., Pandey, R. R., Chusuei, C. C., Delong, R. K., Wanekaya, A. K. (2016). *Novel aqueous fabrication and characterization of gold coated cobalt nanoparticles* (vol. 1, pp. 95-101). Current Bionanotechnology.



Yoshimatsu, Keiichi

Refereed Journal Articles

Journal Article, Academic Journal (Published)
Shiota, M., Yamazaki, T., Kojima, K., Tsugawa, W., Ferri, S., Sode, K. (2016). An Fe–S cluster in the conserved Cys-rich region in the catalytic subunit of FAD-dependent dehydrogenase complexes.. *Bioelectrochemistry, 112*, 178-183.

2015-2016 Scholarship and Award Winners

Chemistry Dept. Scholarship	Deborah Ehie & Shelby Harris
Harriett H. Ford Memorial Scholarship	Jessica Bruer
Louise & Roland Harthcock Scholarship	Montana Zitnak
Dr. & Mrs. Vernon Thielmann Chemical Education Award	Josh Woodiel
Wyman & Sue Grindstaff Chemical Education Scholarship	Michael Harris
Chemistry Board of Advisors Summer Research Fellowship	Brennon Foster
Doris C. Lorz Scholarship	John Cleek III
Emil Lorz Memorial Scholarship	John Cleek III & David Nichols
Foundation for Immunotoxicology Award	Chibuike Obinwa
Dr. Robert W. Martin Research Fellowship	Audrey Perrin & Melinda Sutton
Eugene T. Scafe Mem Schlrshp	Jacob Blankenship, Michael Guile, Shelby Harris, Timothy Isakson, Meagan Rippee
Robert Lloyd Ernst Summer Graduate Assistantship	Sarah Roughton
Robert S. Christie Memorial Scholarship	Melinda Sutton
WEB & AOB Scholarship	Adam Kirkpatrick
Willliam J. Husa Chemistry Scholarship	Michael Harris
ACS Division of Organic Chemistry Outstanding, Senior Organic Chemistry Student,	Michael Green
POLYED Undergraduate Organic Chemistry Award	Brennon Foster
ACS Undergraduate Award in Analytical Chemistry	Brennon Foster
Outstanding Environmental Chemistry Student	Alex Hunsel
General Chemistry Achievement Award	Carajill Campbell & Alex McMullen
Hypercube Scholar	Zach Wilson
Outstanding Physical Chemistry Student Award	Meghan McGowan
Outstanding Biochemistry Student Award	Brennon Foster
ACS Undergraduate Award in Inorganic Chemistry	Joe Zimmer
Outstanding Advanced Inorganic Chemistry Student Award	Emily Kempfer
Outstanding Senior 2015-2016	Joe Zimmer

Teaching, Travel and Research

I went on my sabbatical leave on June 20th to Spain and returned back on December 20th of 2016. My plans for sabbatical were several fold:

Participate in 3 international conferences two of which I was an invited speaker. More specifically I attended with talks and poster the following international meetings:

a) International Conference on Coordination Chemistry (ICCC-42), in Brest, France in July;

b) 2nd International Conference on Crystals, San-Sebastian, Spain, S eptember;

c) 2nd Caparica Conference on Samples Treatment, Caparica, Portugal, December.

Conduct high precision measurements of thermomagnetic properties in a cyclic fashion for some of my research compounds that I brought with me;

Write two research papers based on previously collected, systematized and analyzed data;

Conduct seminars about my research results, achievements and future plans at several European universities. More specifically in Spain (Valencia) and in Hungary (Budapest and Szeged) – pictures attached;

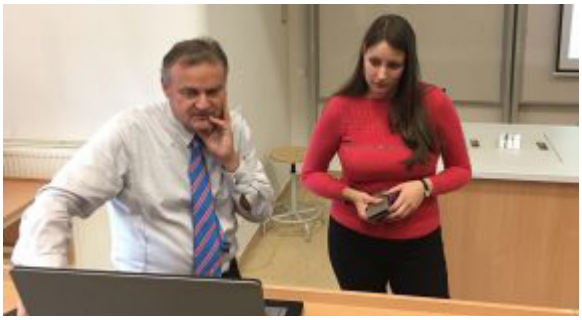
Establish new contacts and collaborations with European scientists in my field of research interests;

Write/submit a research proposal to solicit funding for interdisciplinary collaborative work with Oklahoma State University.

All of these activities I accomplished during my one-semester leave.

Thus two papers are written, edited and ready to be submitted for publicatrion.

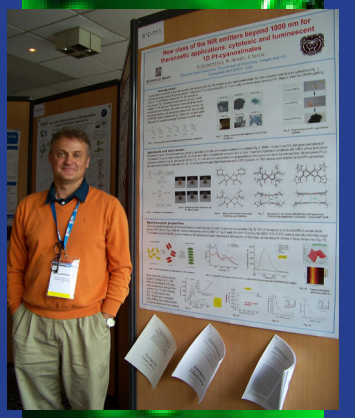
Pictured below: Question/answer session after seminar in Szeged, Hungary during lecture in Budapest

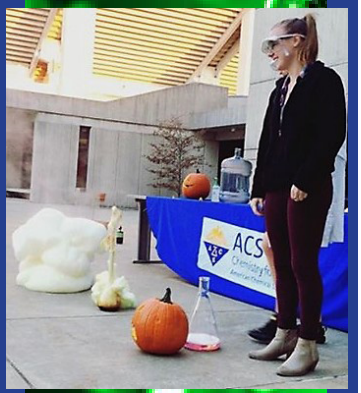


Both involve as co-authors my former graduate MS students and undergraduates who worked in the group. One paper is the result of a collaborating effort between MSU and the University of Minnesota-Duluth, while the other paper is the collaborative work between MSU and crystallography unit at the University of California Berkeley, and the University of Lisbon, Portugal. The proposal has been written, submitted, and after reviewing received funding. The award will be split between MSU and OSU in Stillwater, OK.

I have presented my work and promoted, and advertised good science developed at MSU at three international conferences and also conducted seminars and lectures in several European universities.

Quite unexpectedly in Valencia I received an invitation to conduct a course of crystallography for several students from the Middle East and Maghreb countries in northern Africa. Seven, two hours lectures + practical exercises on crystal structures solutions and refinement have been carried out.





I then had a lecture about chemical applications of Raman spectroscopy, followed by two lectures about the use of the electron paramagnetic resonance spectroscopy (EPR) in chemical research. We all lived together at the De Ribera Colegio affiliated with University of Valencia, Burjassot campus.

Group photo with students and priest in Collegio

My favorite event was travel, and more specifically - travel for interna tional conferences. It is exciting atmosphere of meeting new people, discussions, exchange of ideas! Sever al pictures from my presentations are attached as well. Also, I enjoyed greatly exploration of different cities, parks, riverbanks by bicycle. The sec ond my favorite activity was swim ming at communities' public swimming pools in Spain, which are exceptionally nice and clean.

I firmly believe that sabbatical is extremely important for a faculty member! They allow us to have a very valuable creative break in our common and routine work, get into less stressful day schedule and activities, slow down and think clearly on where to move next with respect to research, publications and presentations of accomplishments. It is absolutely valuable time for us for recharging.

I was very glad to have it, and I am very glad that I have received so far, being at MSU, two one-semester sabbatical leaves. One I spent in Heidelberg, Germany, in 2009, while the second one I spent in Spain – in Zaragoza and Valencia in 2016. Both were very productive in terms of publications and proposal writing/preparation, and allowed me to rest and relax before the next six year cycle of teaching, research and service at Missouri State.

Nikolay Gerasimchuk

American Chemical Society

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Secretary:
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Treasurer:
Michael Bakker
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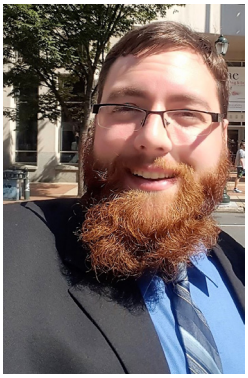
Alyssa Mondeaux
Recruitment and Ads:
Alli Freese
Field Trip Coordinator:
Andrew Eckelmann
Faculty Advisor:
Matthew R. Siebert

Back and Gone Again
A Doctors Tale by Galen Eakins

Dr. Galen Eakins came to us after finishing his PHD at Victoria University in Wellington New Zealand. As a former student of Missouri State University, it was very fortuitous that we were able to bring him back for a season as a temporary faculty member. He has since moved on to teach at OTC, and next year will be moving into a position at UWorld in Dallas TX. UWorld produces test preparation materials for a variety of standardized and professional exams. We wish him all the best.

ACS Conference Recognition



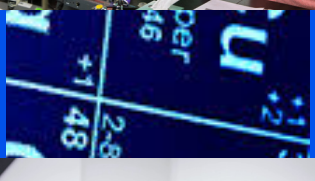
Zachary Wilson attended the ACS Conference in Philadelphia where he was asked to record his presentation for the ACS Presentations on Demand Shorts program (ACS POD Shorts). This program asks researchers doing cutting-edge research that transcends the barriers of their division (within chemistry) to record short promotional videos of general interest to all those in the chemical sciences and viewable by all members of the American Chemical Society.
Here is a link to download the video:
https://www.dropbox.com/s/cn0e6a4vww2u20k/Zachary%20Wilson.mp4?dl=0

Congratulations Graduates of 2016

Spring 2016
Roni Balzam
Angel Barr
Jacob Blankenship
Andrew Cheray
Amber Christenson
Nrupa Desai
Michael Green
Mary Haller
Alexander Hunsel
Samuel Kasson
Adalie Padgett
Snow Popis
Autumn Snider
Preston Thomas
Joshua Woodiel
Joseph Zimmer

Summer 2016
Michelle Butts
Melissa Gaspar
Michelle Herridge
Adedamola Opalade
Sarah Roughton
Kalliope Travlos

Fall 2016
Elizabeth Barnes
Andi Burroughs
Jeffrey Darko
Timothy Isakson
Karolina Kosinska
Christopher Reynolds
Brian Scott
Miranda Webber
Isadore Weinberg



CNAS Faculty Awards 2016

The 2016 recipient of the Atwood Research and Teaching Award is Dr. Nidolay Gerasimchuk, Professor in the Department of Chemistry.

2016 recipient of the CNAS Faculty Excellence in Service Award is Lisa Reece, Instructor in the Department of Chemistry.

2016 recipient of the CNAS Faculty Excellence in Teaching Award is Brian High, Senior Instructor in the Department of Chemistry.

Alumni and Friends

We enjoy hearing from our Chemistry alumni and friends! Please send us an e-mail at: chemistry@missouristate.edu. Include your current contact information, year of graduation and degree earned. Let us know where you are working now, job title or other career accomplishments, and we can include that in the next newsletter. Stay current with the MSU Alumni Association at: http://alumni.missouristate.edu. Here you can update your contact information online and learn about upcoming alumni events, such as MarooNation.

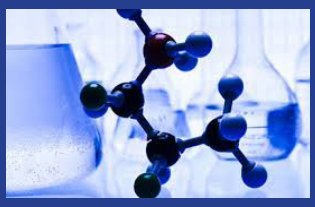
Giving

State universities could not operate without generous contributions from alumni and friends. Your support enables us to provide scholarships, teaching equipment, and more. We hope you will consider making a contribution; your gift is tax deductible.

If you would like to contribute, please make checks payable to the MSU Foundation in support of Chemistry, and mail to: Temple Hall 423, 901 S. National Ave., Springfield, MO 65897. Or, donate online at:

https://webapps.missouristate.edu/giving/pledgesearch.aspx?search=chemistry%20dept-general

Thank you!



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CONTENTS

Molecules & Moles

The Newsletter of the Missouri State University Department of Chemistry.To submit information for the next newsletter, please contact Marla Fritz or Linda Allen.