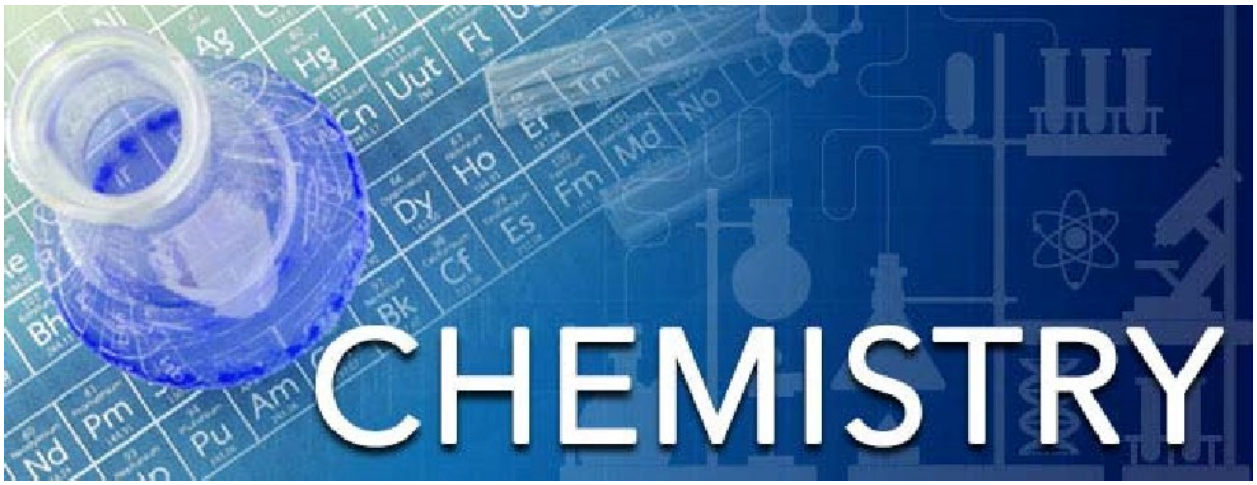

Bloomsburg University
Department of Chemistry & Biochemistry
2016 Annual Report

Bloomsburg University
Department of Chemistry and Biochemistry
Annual Report 2016
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Important Links

http://www.bloomu.edu/chemistry

Support the Department

https://itspersonal.bloomu.edu/donate/department-pages/chemistry/support-the-department-of-chemistry-and-biochemistry-at-bloomsburg-university

Department Faculty

Department of Chemistry and Biochemistry

Chairperson's Remarks

Bruce E. Wilcox

It's all about the students! Whether it is in the classroom or the laboratory, the Chemistry and the Citizen course for non-science majors or research with our majors, the department works to give the best experiences to our students so they can be enlighten citizens and proficient practitioners.

Our Programs

The department awards two degrees, a B.A. in Chemistry or a B.S. in Chemistry. Within, the B.S. there are tracks (sub-plans) that include "standard" chemistry, a specialization in nanotechnology, and one in biochemistry. The nanotechnology program offers students an intensive semester or summer at Penn State University taking a core of courses and working in the nanotech laboratories. Additionally, students' degrees may become certified by the American Chemical Society (ACS) with the completion of certain breadth and research requirements beyond those in the "standard" B.S. Also, students in the biochemistry tracks may obtain certification by the American Society of Biochemistry and Molecular Biology (ASBMB) by achieving a certain score on the ASBMB certification exam. The department has a formal agreement with the Pennsylvania College of Osteopathic Medicine to offer 3-4 and 4-4 bachelors-D.O. programs.

In 2016 we received final approval for a new **Certificate Program in Pre-Medical Studies.** This was prompted by having several post-baccalaureate students recently come to our department to take courses to complete requirements for medical schools. The formal certificate program gives the students some structure and ability to schedule certain courses as well as an adviser in our department to help guide them. One of the courses in the program is the Pre-Medical Sciences Seminar which guides students in preparing for application to schools in the medical professions, including allopathic and osteopathic medical schools, dental school, chiropractic school, veterinary school, optometry school, and podiatry school. The Chemistry & Biochemistry and Biological and Allied Health Sciences departments share in the instruction of the course, which is open to all students.

Program review and development of assessments continued this year. We developed a set of program student learning outcomes (PSLOs) as well as course student learning outcomes (CSLOs) which allowed us to develop a curricular map that links the two sets together and will serve as the basis for our long-range assessment plan to be developed in 2017.

Enrollments

The department serves not only our majors but also other majors in natural science, nursing and exercise science, as well as non-science majors taking general education courses. The year 2016 saw enrollments of 153 students in courses for chemistry majors, 704 students from other sciences and 1395 students in general education.

Career Day

The department hosted a panel discussion during the October 14 COST Career Day. The panelists were Duane Greenly '72, a chemistry graduate who talked about his varied career in chemistry and as a very successful businessman; Ashley Wagner '15, a molecular biology graduate who did research with Dr.

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Borland and who is now a research scientist at Avon Products, Inc.; and Scott Blackburn '13, who talked about his masters work at Bucknell University and his position at Esschem, Inc. as a product development chemist. The experiences and perspectives described by them will be of great benefit to our students.

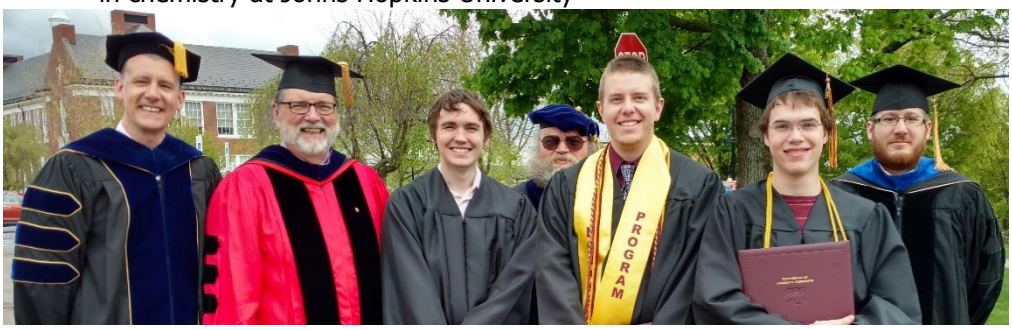
Students Helping Students

The department continued its Chemistry Consultants program where upperclass majors are hired to provide tutoring in specific freshman and sophomore classes. This along with the Chemistry Club's volunteer tutoring program provide ample outside of class help to our larger enrollment courses. Also, the Chemistry Club has been very active participating in on-campus activities with other clubs, doing demonstrates at schools in the area, providing socializing activities for chemistry majors, and helping the department in its student recruitment efforts.

Graduates

Graduates May 2016

- Dean Kolb – BS (ACS) Chemistry
- Frank Rodemer – BS (ACS) and double major in EGGS– is working on an M.S. in Geology at The University of North Carolina at Wilmington
- Eric Thompson – BS (ACS) *cum laude* Chemistry and Nanotechnology – is in the Ph.D. program in chemistry at Johns Hopkins University



Graduates December 2016

- Kelly Barko – BS Chemistry and double major in Health Physics
- Megan Burke – BS Biochem – Applying to schools of veterinary medicine
- Shelby Coleman – BS Biochem – applying to graduate schools
- Laura Sitler – BS Chemistry

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Honors and Awards

Dr. Matthew Polinski, Assistant Professor

- American Chemical Society Nobel Laureate Signature A ward for Graduate Education in Chemistry 2016, along with his doctoral mentor, Dr. Thomas Albrecht-Schmitt
  - Bloomsburg University of PA Influential Professor Award 2016

Tyler Behrent (Class of 2017)

- Junior Chemistry Achievement Award 2016
- Parwin Sawhney Memorial Scholarship 2016

Katherine Mullen (Class of 2017)

- David Murphy Memorial Scholarship 2016

Todd Poe (Class of 2018)

- POLYED Undergraduate Award for Achievement in Organic Chemistry 2016

Eric Thompson (Class of 2016)

- ACS Outstanding Senior Award 2016
- Phi Lambda Upsilon National Chemistry Honor Society inductee

Lauren Barrett (Class of 2019)

- Freshman Chemistry Award for 2015-16

Research and Scholarship

Research is alive and well in the department, especially projects that involve our students. In 2016 students took research for credit sixteen times and three others worked for faculty members on a volunteer basis. Dr. Michael Pugh started a yearlong sabbatical project at the Virginia Institute of Marine Science of the College of William and Mary doing DNA sequencing studies of tuna populations. Dr. Mark Tapsak has taken a year leave of absence to continue his founding work with Zzyzx Polymers, LLC in Allentown.

Other fruits of our labors are described in the listings below. We are particularly proud of our students and the number of presentations they have made. Through the Wayne P. Anderson Student Travel Fund and the Chemistry Club, we are able to send our students to national meetings at no cost.

2016 Grants Received

- **Hallen**: Degenstein Foundation via Susquehanna River Heartland Coalition for Environmental Studies, co-PI, awarded April 2016, $25,000.
- **Kehres**: Bloomsburg University Research and Scholarship Grant, 2016-2017, $4800.
- **Lewis**: Extreme Science and Engineering Discovery Environment (XSEDE), High Performance Computing Resource Grant - Allocation of space and time on Comet, a supercomputing system housed at the San Diego Supercomputer Center (SDSC).
- **Pugh**: Bloomsburg University - 2016 Henry Carver Margin of Excellence Grant entitled: "Complete Mitochondrial DNA Sequencing and Analysis of Four Species of Tuna (genus *Thunnus)* ($10K funded to support 2016-2017 sabbatical at the Virginia Institute of Marine Science, College of William and Mary).
- **Pugh**: Bloomsburg University - 2016 Research and Scholarship Grant (Category B) "Complete Mitochondrial DNA Sequencing and Analysis of Four Species of Tuna (genus *Thunnus)"* ($10K

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funded to support 2016-2017 sabbatical at the Virginia Institute of Marine Science, College of William and Mary).

BU Undergraduate Research, Scholarship and Creative Activity Summer Stipends

- *Kelly N. Barko*, "Examination of DNA Methylation as a PPAR-dependent 2016 Transcriptional Regulator Mechanism in Human Keratinocytes. URSCA, $6000.00 Co-mentored with Dr. Ellen Kehres and Dr. Michael Borland.
- *Daniel P. Callen*, "Examination of Two Retinoids as PPAR Activators and 2016 Modulators of Melanoma Proliferation. URSCA, $6000.00 Co-mentored with Dr. Ellen Kehres and Dr. Michael Borland.
- *Mark R. Drumm*, "Disecting an Interaction Between PPARs and the GR in 2016 Human Malignant Melanoma. URSCA, ~$1700.00. Co-mentored with Dr. Ellen Kehres and Dr. Michael Borland.

2016 Publications

- Cary, S. K.; Silver, M. A.; Arico, A. A.; Baumbach, R. E.; Wang, J. C.; Johnson, J. A.; **Polinski, M. J.**; Chemey, A.; Liu, G.; Chen, K-W.; Van Cleve, S. M.; Marsh, M. L.; Eaton, T. M.; van de Burgt, L.; Grey, A. L.; Hobart, D. E.; Hanson, K.; Yang, P.; Braley, J.; Albrecht-Schmitt, T. E. "Revelations from the Complexation of Berkelium" *Science*, 2016, 353, DOI:10.1126/science.aaf3762.
- Parker, G. T.; Albrecht-Schmitt, T. E.; **Polinsk, M. J**.; Wang, S.; Diwu, J. "Plutonium Halides" *The Plutonium Handbook*, 2016, Accepted.
- Arcis, H.; Ferguson, J. P.; Applegarth, L. M.; **Zimmerman G. H**.; Tremaine, P. R., "Ionization of Boric Acid in Water from 298 K to 623 K by AC Conductivity and Raman Spectroscopy" *J. Chem. Thermodynamics,* **2016**, Accepted, August 16, 2016.
- Arcis, H.; Ferguson, J. P.; **Zimmerman G. H**.; Tremaine, P. R., "The Limiting Conductivity of the Borate Ion and its Ion-Pair Formation Constants with Sodium and Potassium under Hydrothermal Conditions" *Phys. Chem. Chem. Phys.*, **2016**, 18, 24081-24094.

2016 Presentations

Faculty and students made a number of presentations of their research this year:

(Key: *Student* **Faculty** *Presenter)

- ***Polinski, M. J.** "Synthesis and Characterization of Novel Trivalent *f*-Element Borates" Student Affiliation of the American Chemical Society 2nd Annual Winter Conference, Washington and Jefferson College, Washington, PA, February 7, 2016. (Invited Talk).

At the 251st American Chemical Society National Meeting in San Diego in March

- **Lewis, Morgan;* **Trumbo Bell, Toni A** "Inhibition of blood clot formation using the tetrapeptides acet-FSPR-amide, acet-LSPR-amide and acet-ISPR-amide"
- **Gulasarian, Hovanes*; **Trumbo Bell, Toni A,** "Spectroscopic analysis of thrombin-catalyzed fibrin clot formation in the search of direct thrombin inhibitors" .
- **Tyler Behrent* and **Gregory Zimmerman** "A New Flow Conductivity Cell for High Concentration Aqueous Solutions".

At the 50th North Central Section, Geological Society of American, Indianapolis, IN, in April.

- **Eric Thompson*, **Christopher P. Hallen**, Cynthia Venn, "(Paper 29-6) Determination of Water Quality of Natural Water Sources in State Parks Around the Susquehanna River Valley".

At the BU College of Science and Technology Research Day in April.

- **Brittain, K. L.*; **Polinski, M. J.** "Synthesis and Characterization of Cationic Inorganic Materials".

- **Rachel Dendler*, **Mark Tapsak,** "Zwitterionic Polymers and Networks Prepared from Acrylic Acid and Sulfobetaine Methacrylate"
- **Kristi Brittain,* **Matther Polinski, "**Cationic Inorganic Materials".
- **Devin Mulvey,* **Kristen Lewis**, The Effects of Hydroxylation on the Stability and Antioxidant Activity of Fullerenols.
- **Kelly Barko,* **Philip Osburn**, "Tridentate Rh(I) Complexes for Transfer Hydrogenation: A Comparative Rate Study"
- **Kolb, D. R.*; **Polinski, M. J.** "Synthesis and Characterization of Nickel Containing Lanthanide Tellurites".
- **Tyler Behrent,* **Gregory Zimmerman**, "A New Quartz Cell for Conductance Measurements of NaCl (aq) at 298.15K and 0.60 MPa."
- **Blake Durante*, **Gregory Zimmerman**, "Electrical Conductivity of Lanthanum Chloride Solutions to High Concentrations."
- **Megan Burke,* **Michael Borland**, "Effect of PPAR Expression and Modulators on Vitamin D Receptor Transcriptional Regulation and Clonal Expansion in Human Malignant Melanoma."
- **Wagner, S.W.* and **Borland, M.G.** The PPARs Modulate Estrogen-dependent Changes in Human Malignant Melanoma Cell Growth.

<u>At the 6th Annual Susquehanna Valley Undergraduate Research Symposium (SVURS). Held at BU in July</u>

- **Barko, K.N.*, *Wagner, A.L.*, **Kehres, E.M.**, and **Borland, M.G.** Examination of DNA Methylation as a PPAR-dependent Transcriptional Regulator Mechanism in Human Keratinocytes.
- **Callen, D.P.*, **Kehres, E.M.**, **and Borland, M.G**. Examination of Two Retinoids as PPAR Activators and Modulators of Melanoma Proliferation.
- **Drumm, M.R., Wagner, A.L.*, **Kehres, E.M**., and **Borland, M.G.** Discetting an Interaction Between PPARs and the GR in Human Malignant Melanoma. <u>Mark was awarded Outstanding Abstract Award in the Biological Sciences Category.</u>
- **Laura Sitler*, **Christopher Hallen,** "Water Quality of Fishing Creek and Beyond - Combining "Drinking before the Drills' with 'Has the Gas Production Affected Bloomsburg's Water Quality"".

<u>At the BU Department of Chemistry and Biochemistry Fall Research Day</u>

- **Todd Poe*, **Matthew Polinski,** "Hydrothermal Synthesis of Lanthanide and Tellurite Based Cationic Materials."
- **Lauren Kerstetter*, **Matthew Polinski, "**Synthetic investigations of low valent lanthanide-based materials derived from in situ hydrothermal reduction."
- **Kelly Barko*, **Philip Osburn**, Synthesis of a series of bidentate triazole/NHC Rh (I) and Ir (I) complexes; application in catalytic hydrogen transfer.
- **Blake Durante*, **Gregory Zimmerman**, "Determination of Equilibrium Constants in Lanthanum Salt Solutions at Elevated Temperatures and Pressures."
- **Olivia Fry*, **Eric Hawrelak**, "Comparative Investigation of Catalytic Cyclotrimerization Reaction."
- **Daniel Callen*, **John Morgan "**Imidazolinium Salts as Precatalysts in Biodiesel Production."

Toni Trumbo Bell, Ph.D.

Professor of Chemistry & Biochemistry

Scholarly Interests

Mild traumatic brain injury (concussion)-In a collaborative project with Dr. Joseph Hazzard of Exercise Science, we are working toward finding biomarkers for concussion in human body fluid samples. Timothy Shuey (class of 2016, now a medical student at Philadelphia College of Osteopathic Medicine) was the first students working on the project. Since then, Diane Cruz (class of 2016, now a Second Lieutenant in the United States Army) and Andrew Denisenko (class of 2017) have furthered the project. Cruz and Denisenko have discovered a potential marker.

Zero calorie sweeteners-Zero calorie sweeteners (ZCS) are common dietary component for Americans who wish to restrict calorie and/or carbohydrate intake while still enjoying sweet foods and beverage. It is not known how carbohydrate-based ZCS, such as sucralose or extracts of the stevia plant, interact with digestive enzymes. In the fall, Lorenz School (post-bacc from Slippery Rock University) and Pinkay Oscar (class of 2019) narrowed-down the analytical method. Ms. Oscar will continue to work on the project in spring 2017.

Inhibitors of blood clot formation-Inappropriate formation of blood clots results in deep venous thrombosis, heart attack, and stroke. Many former researchers have helped me in my search for orally viable blood clot inhibitors. Most recently, Morgan Lewis (class of 2017) and Hovanes Gulasarian (class of 2017) have finished developing a method for rapid and inexpensive analysis of clot formation in the presence of an inhibitor.

Education

University of Louisville, Louisville, KY, Ph.D., 2002
University of Louisville, Louisville, KY, M.S., 2001
University of Louisville, Louisville, KY, B.A., 1996

2016 Presentations

"Inhibition of blood clot formation using the tetrapeptides acet-FSPR-amide, acet-LSPR-amide and acet-ISPR-amide" **Lewis, Morgan**; Trumbo Bell, Toni A From Abstracts of Papers, 251st ACS National Meeting, San Diego, CA, United States, March 13-17 (2016)

"Spectroscopic analysis of thrombin-catalyzed fibrin clot formation in the search of direct thrombin inhibitors" **Gulasarian, Hovanes**; Trumbo Bell, Toni A From Abstracts of Papers, 251st ACS National Meeting, San Diego, CA, United States, March 13-17 (2016)

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2016 Teaching

Spring: CHEM108 Physiological Chemistry lab (and lab coordinator)
CHEM341 Biochemistry 1, lecture and lab
CHEM281 Introduction to Chemical Literature

Fall: INTSTUDY100 University Seminar (for Chemistry and Biochemistry majors)
CHEM100 Chemistry and the Citizen
CHEM341 Biochemistry 1, lecture and lab

Selected 2016 Service Activities

Fall 2004-present	Pre-Professional Advisory Committee
Fall 2004-present	Coordinator-BU Science Iditarod
Spring 2004-present	ACS High School Chemistry Exam
Fall 2006-Spring 2016	Bloomsburg University Curriculum Committee

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Michael Gregory Borland, Ph.D.

Associate Professor of Chemistry & Biochemistry

Scholarly Interests
Skin cancer preventatives and chemotherapeutics, molecular toxicology of nuclear hormone receptors, chromatin and DNA modifications in transcriptional regulation, in vitro models of molecular toxicology and carcinogenesis, development of novel undergraduate laboratory experiences, introduction of educational technologies to chemistry/biochemistry courses.

Education
Penn State University, University Park, PA, Ph.D., Biochemistry, Microbiology & Molecular Biology, 2010
National Science Foundation Graduate Research Fellow

Penn State University, University Park, B.S., Biochemistry & Molecular Biology, 2005
Cum Laude, Schreyer Honors Scholar

2016 Presentations with Students
Barko, K.N., Wagner, A.L., Kehres, E.M., and **Borland, M.G.** Examination of DNA Methylation as a PPAR-dependent Transcriptional Regulator Mechanism in Human Keratinocytes. Poster Presentation at the 6th Annual Susquehanna Valley Undergraduate Research Symposium (SVURS). Held at BU, July 27, 2016

Callen, D.P., Kehres, E.M., and Borland, M.G. Examination of Two Retinoids as PPAR Activators and Modulators of Melanoma Proliferation. Poster Presentation at the 6th Annual SVURS. Held at BU, July 27, 2016

Drumm, M.R., Wagner, A.L., Kehres,E.M., and **Borland, M.G.** Dissecting an Interaction Between PPARs and the GR in Human Malignant Melanoma. Poster Presentation at the 6th Annual SVURS. Held at BU, July 27, 2016.
Note: Mark was awarded Outstanding Abstract Award in the Biological Sciences Category.

Burke, M. and **Borland, M.G.** Examining PPAR Expression and Modulators on Vitamin D Receptor Transcriptional Regulation and Clonal Expansion in Human Malignant Melanoma. Platform presentation at the Spring 2016 College of Science & Technology Research Day. April 29, 2016.

2016 Faculty Funding

Margin of Excellence Grant, "Examining DNA Methylation as a PPAR-dependent Mechanism of Gene Regulation in the Skin", $8,500.

College of Science & Technology Scholarly Activity Grant, $2,500.

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2016 Faculty Mentored Funding for Students
Barko, K.N. "Examination of DNA Methylation as a PPAR-dependent Transcriptional Regulator Mechanism in Human Keratinocytes. Undergraduate Research, Scholarship, and Creative Activities (URSCA) Grant, $6000.00. Co-mentored with Dr. Ellen M. Kehres.

Callen, D.P. "Examination of Two Retinoids as PPAR Activators and Modulators of Melanoma Proliferation. URSCA, $6000.00. Co-mentored with Dr. Ellen M. Kehres.

Drumm, M.R. "Discetting an Interaction Between PPARs and the GR in Human Malignant Melanoma. URSCA, ~$1700.00. Co-mentored with Dr. Ellen Kehres

2016 Teaching
Spring 2016:
Chemistry 108 – Physiological Chemistry Lecture Course #: 1287 Lab Courses #: 1288 & 1289
Chemistry 442 – Biochemistry 2 Lecture Course #: 1322 Lab Course #: 1323
Chemistry 492 – Chemical Research I Course #: 2892

Fall 2016:
Chemistry 101 – Introductory Chemistry Course #: 1112
Chemistry 115 – Chemistry for the Sciences I Lecture Course #: 2911 Lab Courses #: 2908 & 2910
Chemistry 492 – Chemical Research I Course #: 3045
Chemistry 493 – Chemical Research I Course #: 3044

2016 Service Activities
National:
Accreditation Exam Scorer, American Society for Biochemistry & Molecular Biology (ASBMB)
Accreditation Exam Question Reviewer, ASBMB
Editor & Reviewer, Journal of Toxicological Education

Bloomsburg University:
Research Coordinator, cDNA Resource Center
Co-Chair, Picket Committee, Association of Pennsylvania State College & University Faculties (APSCUF)
Member & Chairperson, APSCUF Membership Committee
Member, Faculty Professional Development Committee
Member, Health Sciences Symposium Organization Committee
Member, URSCA Awards Committee
Member, Institutional Biosafety Committee
Alternate Member, Pre-Professional Advisory Committee

Chemistry & Biochemistry Department
Coordinator, ASBMB Accreditation Program (B.S. Chemistry – Biochemistry Option)
Member & Chairperson, Department Search & Screen Committee
Member, Department Curriculum Committee
Library Liaison

2016 Professional Memberships
American Society for Biochemistry & Molecular Biology
Society of Toxicology
American Chemical Society
Association for Pennsylvania State College & University Faculties

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Christopher P. Hallen, Ph.D.

Professor of Chemistry & Biochemistry

Education

University of New Hampshire, Durham, NH, Ph.D., Chemistry, 1986
Assumption College, Worcester, MA, A.B., Chemistry, 1980

2016 Presentations

Eric Thompson*, Christopher P. Hallen, Cynthia Venn, "(Paper 29-6) Determination of Water Quality of Natural Water Sources in State Parks Around the Susquehanna River Valley", 50th North Central Section, Geological Society of American, Indianapolis, IN, April 18-19, 2016.

2016 Funding

Degenstein Foundation via Susquehanna River Heartland Coalition for Environmental Studies, co-PI, awarded April 2016, $25,000

2016 Teaching

Spring: Introductory Chemistry Lecture Course # 1605 & 1606
Instrumental Analytical Chemistry Lecture Course # 1678, Lab # 1647

Fall: Introductory Chemistry Lecture Course # 1110
Analytical Chemistry 1 Lecture Course # 2930, Lab # 2928 & 2929

2016 Service Activities

APSCUF Negotiations team
APSCUF Mobilization Committee
Treasurer, APSCUF
APSCUF Budget Committee
APSCUF Investment Committee
APSCUF CAP Committee
BU APSCUF Executive Committee
CAP Committee
Delegate to APSCUF Legislative Assembly
Local Meet and Discuss

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Eric J. Hawrelak, Ph.D.

Associate Professor of Chemistry & Biochemistry

Education

Virginia Polytechnic Institute & State University, Blacksburg, VA, Ph.D., Chemistry, 2002

University of Kentucky, Lexington, KY, M.S., Chemistry, 1998
Hamilton College, Clinton, NY, B.A., Chemistry, 1995

2016 Teaching

Spring: Chemistry for the Sciences 2, Lecture course #: 1638 Lab course #: 1636 & 1637
Inorganic Chemistry, Lecture course #: 1645
Chemical Research 2, Course #: 2989

Fall: Chemistry for the Sciences 1, Lecture course #: 2907 Lab course #: 2902, 2903 & 2906
Chemical Research 1, Course #: 3039

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Ellen M. Kehres, Ph.D.

Assistant Professor of Chemistry & Biochemistry

Scholarly Interests
Investigating the biochemical functions of the peroxisome proliferator-activated receptors (PPARs) in skin cancers by examining the possibility and mechanism in which PPAR expression and/or modulators (agonists/antagonists) can be can be combined with other known melanoma therapeutics as part of future chemotherapeutics.

Education
Penn State University, State College, PA, Ph.D., Chemistry, 2004
Mansfield University of Pennsylvania, Mansfield, PA, B.S., Chemistry, Minor in Mathematics 2000
Summa Cum Laude

2016 Presentations
Barko, K.N., Wagner, A.L., **Kehres, E.M.**, and Borland, M.G. Examination of DNA Methylation as a PPAR-dependent Transcriptional Regulator Mechanism in Human Keratinocytes. Poster Presentation at the 6th Annual Susquehanna Valley Undergraduate Research Symposium (SVURS), held at Bloomsburg University, July 27, 2016

Callen, D.P., **Kehres, E.M.**, and Borland, M.G. Examination of Two Retinoids as PPAR Activators and Modulators of Melanoma Proliferation. Poster Presentation at the 6th Annual SVURS, held at Bloomsburg University, July 27, 2016

Drumm, M.R., Wagner, A.L., **Kehres,E.M.**, and Borland, M.G. Dissecting an Interaction Between PPARs and the GR in Human Malignant Melanoma. Poster Presentation at the 6th Annual SVURS, held at Bloomsburg University, July 27, 2016.
Note: Mark was awarded Outstanding Abstract Award in the Biological Sciences Category.

2016 Funding
Bloomsburg University Research and Scholarship Grant, $4800

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2016 Faculty Mentored Funding for Students

Barko, K.N. "Examination of DNA Methylation as a PPAR-dependent Transcriptional Regulator Mechanism in Human Keratinocytes. Undergraduate Research, Scholarship, and Creative Activities (URSCA) Grant, $6000.00.
Co-mentored with Dr. Michael Borland.

Callen, D.P. "Examination of Two Retinoids as PPAR Activators and Modulators of Melanoma Proliferation. URSCA, $6000.00. Co-mentored with Dr. Michael Borland.

Drumm, M.R. "Dissecting an Interaction Between PPARs and the GR in Human Malignant Melanoma. URSCA, ~$1700.00. Co-mentored with Dr. Michael Borland.

2016 Teaching
Spring:
Chemistry 108 – Physiological Chemistry Lecture Course #: 1279 Lab Course #: 1280, 1281, 1282
Chemistry 115 – Chemistry for the Sciences I Lab Course#: 1297

Fall:
Chemistry 115 – Chemistry for the Sciences I Lecture Course #: 2915 Lab Course #: 2912
Chemistry 341 – Biochemistry I Lab Course #: 2932

2016 Service Activities
Research Coordinator, cDNA Resource Center
COST (College of Science and Technology) Communication Director
Search and Screen Committee – Department of Chemistry
Bloomsburg University Online Proctoring Working Group
COST Communication Committee
APSCUF – elected Public Relations Committee

2016 Professional Memberships
American Chemical Society
Association for Pennsylvania State College & University Faculties

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John Philip Morgan, Ph.D.

Assistant Professor of Chemistry & Biochemistry

Scholarly Interests
Organic catalysis, organometallics, catalytic materials, organometallics in total synthesis, biofuels/alternative fuel sources/biomaterials.

Education
California Institute of Technology, Pasadena, CA, Ph.D., 2003
Haverford College, Haverford, PA, B.S., 1997

2016 Publications
Morgan, J. P.; Callen, D. P.; Shaffer, A. J. "Imidazolium Salts as Precatalysts in Base-Mediated Biodiesel Synthesis," Energy and Fuels 2017 (manuscript in preparation).

2016 Presentations
Callen, Dan P. and J. P. Morgan, "Imidazolinium Salts as Precatalysts in Biodiesel Production," College of Science and Technology Research Day, December 9th, 2016.

2016 Teaching
Spring: Chemistry 108 – Physiological Chemistry Lab Course #: 1608
Chemistry 230 – Fundamentals of Organic Chemistry Lecture Course #: 1641 Lab Course #: 1639 & 1640
Chemistry 281 – Intro to Chemical Literature Lecture Course #: 1646
Fall: Chemistry 116 – Chemistry for the Sciences 2 Lab Course #: 2921
Chemistry 230 – Fundamentals of Organic Chemistry Lecture Course #: 2900 Lab Course#: 2897 & 2898
Chemistry 492 – Chemical Research I Course #: 3038

2016 Service Activities
- Member of the Pre-professional Advisory Committee, reviewed 5 application packets for medical school; helped develop recommendation letters on said packets
- Member of the College of Science and Technology Curriculum Committee, reviewed over 40 proposals for new course content and changes to existing courses
- Liaison to the Philadelphia College of Osteopathic Medicine for their Affiliation Agreement with Bloomsburg University: responsible for reviewing medical school applicants in the program; spoke to 3 interested students; provided advising for the students currently in the program at Bloomsburg
- Advised 6 majors in the Chemistry program

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Philip L. Osburn, Ph.D.

Associate Professor of Chemistry & Biochemistry

Scholarly Interests

Organic, organometallic, and polymer chemistry: organometallic synthesis, homogeneous catalysis, C-H activation, polymer supports in synthesis and catalysis

Education

Alexander von Humboldt Postdoctoral Fellow, FAU Erlangen-Nürnberg, Erlangen, Germany (2001-2002)
NSF Graduate Research Fellow, Texas A&M University, College Station, TX (Ph.D., 2001)
University of Tennessee at Martin, Martin, TN (B.S., 1996)

2016 Teaching

Spring: Chemistry 115 – Chemistry for the Sciences 1 Lab Course #: 1295
Chemistry 232 – Organic Chemistry 2 Lecture Course #: 1309 Lab Course #: 1310 & 1311
Fall: Chemistry 231 – Organic Chemistry 1 Lecture Course #:2927 Lab Course #: 2924, 2925, & 2926
Chemistry 494 – Advanced Chemical Research Course #: 3036

2016 Service Activities

University-Wide Promotion Committee
Department of Chemistry & Biochemistry 5-year Review Committee
Responsible for review and revision of the Organic Chemistry lecture and laboratory curriculum
Department of Chemistry & Biochemistry Search and Screen Committee

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Matthew J. Polinski, Ph.D.

Assistant Professor of Chemistry & Biochemistry

Scholarly Interests

My research is in the area of synthetic solid state inorganic chemistry, which bridges between physical, inorganic, engineering, and materials science. Our primary focus is to expand upon the fundamental chemistry of the *f*-elements (particularly the Lanthanides). We are interested in designing new synthetic techniques to produce functional materials for a wide array of uses as well as to produce complexes in which the metal is in an unusual oxidation state. We strive to produce these complexes so that they are both air and water stable as this adds to their potential usefulness as functional materials.

Academic Year 2016 – 2017 Research Group
Todd Poe, Dr. Polinski, Lauren Kerstetter, Kristi Brittain

Education

University of Notre Dame, Notre Dame, IN, Ph.D., 2013
Washington and Jefferson College, Washington, PA, B.A., 2010

2016 Publications

Cary, S. K.; Silver, M. A.; Arico, A. A.; Baumbach, R. E.; Wang, J. C.; Johnson, J. A.; **Polinski, M. J.**; Chemey, A.; Liu, G.; Chen, K-W.; Van Cleve, S. M.; Marsh, M. L.; Eaton, T. M.; van de Burgt, L.; Grey, A. L.; Hobart, D. E.; Hanson, K.; Yang, P.; Braley, J.; Albrecht-Schmitt, T. E. "Revelations from the Complexation of Berkelium" *Science*. **2016**, 353, DOI:10.1126/science.aaf3762.

2016 Presentations

Kerstetter, L.; **Polinski, M. J**. "Synthetic Investigations of Low Valent Lanthanide and Transition Metal Based Materials", College of Science and Technology Research Day, Bloomsburg University, Bloomsburg, PA, Fall 2016. (Student Presentation)

Poe, T. N.; **Polinski, M. J**. "Hydrothermal Synthesis of Lanthanide and Tellurite Based Cationic Materials", College of Science and Technology Research Day, Bloomsburg University, Bloomsburg, PA, Fall 2016.

Brittain, K. L.; **Polinski, M. J.** "Synthesis and Characterization of Cationic Inorganic Materials", College of Science and Technology Research Day, Bloomsburg University, Bloomsburg, PA, Spring 2016

Kolb, D. R.; **Polinski, M. J.** "Synthesis and Characterization of Nickel Containing Lanthanide Tellurites", College of Science and Technology Research Day, Bloomsburg University, Bloomsburg, PA, Spring 2016

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Polinski, M. J. "Synthesis and Characterization of Novel Trivalent *f*-Element Borates" Student Affiliation of the American Chemical Society 2nd Annual Winter Conference, Washington and Jefferson College, Washington, PA, February 7, 2016

2016 Funding

M. J. Polinski (PI), "Synthetic Investigations of Low Valent Lanthanide-Based Materials Derived from *in situ* Hydrothermal Reduction", Bloomsburg University of Pennsylvania Research and Scholarship Grant, $15,000, 5/6/16.

2016 Teaching

Spring: Chemistry 115 – Chemistry for the Sciences I Lecture Course #: 1622 Lab Course #: 1619
Chemistry 116 – Chemistry for the Sciences 2 Lecture Course #: 1635 Lab Course #: 1633
Fall: Chemistry 115 – Chemistry for the Sciences I Lecture Course #: 2919 Lab Course #: 2916
Chemistry 452 – Advanced Inorganic Chemistry Lecture Course #: 2938 Lab Course#: 2937
Chemistry 492 – Chemical Research I Course #: 3034

2016 Service Activities

Dept. of Chemistry Search and Screen Committee
Dept. of Chemistry Five Year Review Committee
Teaching and Learning Enhancement (TALE) Ambassador
Dept. of Chemistry Seminar Coordinator
University Forum Representative

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Michael Eugene Pugh, Ph.D.

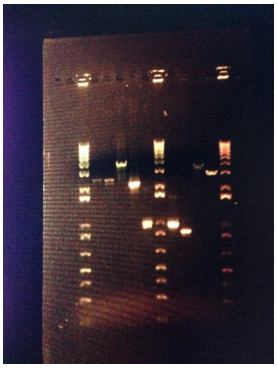
Professor of Chemistry & Biochemistry

Scholarly Interests
Population genetics studies of *Thunnus* sp. tuna mtDNA, microsatellite sequence determination of bay scallops, forensic scienece

Education
Arizona State University, Tempe, AZ, Ph.D. Chemistry, 1983
University of California Davis, Davis, CA, B.S. Biochemistry, 1976

2016 Sabbatical Research activities
Introgression of albacore mtDNA into other tuna species- VA Institute of Marine Science, College of William and Mary

PCR fragments of the complete 16.5 kbp Atlantic Bluefin tuna mtDNA



2016 Funding
Bloomsburg University - 2016 Henry Carver Margin of Excellence Grant entitled: "Complete Mitochondrial DNA Sequencing and Analysis of Four Species of Tuna (genus *Thunnus)* ($10K funded to support 2016-2017 sabbatical at the Virginia Institute of Marine Science, College of William and Mary).

Bloomsburg University - 2016 Research and Scholarship Grant (Category B) entitled: "Complete Mitochondrial DNA Sequencing and Analysis of Four Species of Tuna (genus *Thunnus)"* ($10K funded to support 2016-2017 sabbatical at the Virginia Institute of Marine Science, College of William and Mary).

2016 Teaching
Spring: On Leave
Fall: On Leave

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Mark A. Tapsak, Ph.D.

Professor of Chemistry & Biochemistry

Scholarly Interests

Dr. Tapsak is a polymer chemist, and interested in polymers used in long term implantable medical devices. He is also interested in the efficient and cost effective recycling of co-mingled plastics.

Education
University of Southern California, Los Angeles, CA, Ph.D., 1995
St. Cloud State University, St. Cloud, MN, B.E.S., 1992

2016 Publications
US Patent 9,498,155 Signal processing for continuous analyte sensor, issued November 22.
US Patent 9,439,589 Device and method for determining analyte levels, issued September 13.
US Patent 9,328,371 Sensor head for use with implantable devices, issued May 3.
US Patent 9,296,882 Methods for increasing throughput rates of solid-state extrusion devices, issued March 29.
US Patent 9,279,071 Adhesives and methods for their manufacture and use, issued March 8.
Synthesis of High Refractive Index Silicone Materials Incorporating Aromatic Moieties with Adjacent Linkage Groups for Flexible Electronic Displays. Published Oct. 2016
The Thermal Degradation Behaviour of a Series of Siloxane Copolymers – a Study by Thermal Volatilisation Analysis. Published Oct. 2016

2016 Funding
SBIR Phase II: Efficient and Effective Recycling of Post-Consumer Plastics for High-Value Applications, award # 1434826, amount $940,640, end date January 2017.

2016 Teaching
On leave during 2016-17 academic year

2016 Service Activities
On leave during 2016-17 academic year

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Bruce E. Wilcox, Ph.D.

Associate Professor of Chemistry & Biochemistry

Scholarly Interests

Development of guided inquiry materials for teaching chemistry.

Education

University of Cincinnati, Cincinnati, OH, Ph.D., 1987
State University of New York at Oswego, Oswego, NY, M.S., 1977
State University of New York at Oswego, Oswego, NY, B.S., 1974

2016 Teaching

Spring: Chemistry 116 – Chemistry for the Sciences 2 Lecture Course #: 1632 Lab Course #: 1629

Fall: Chemistry 116 – Chemistry for the Sciences 2 Lecture Course #: 2923 Lab Course #: 2920

2016 Service Activities

Department
Coordinator – Chemistry for the Sciences 1 and 2 laboratory programs 2007-present

University
Strategic Enrollment Management Task Force – Graduate Programs Workgroup
Chemistry and Biochemistry Department Chair
Teacher Education Liaison

Community
Member of the Board of Directors of Eos Therapeutic Riding Center, Inc.

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Gregory H. Zimmerman, Ph.D.

Professor of Chemistry & Biochemistry

Scholarly Interests

Measurement and modelling of the physical properties of aqueous electrolytes at high temperatures and pressures, with a specialty on electrical conductivity measurements using flow techniques.

Education
University of Delaware, Newark, DE, Ph.D., 1994
Millersville University, Millersville, PA, B.S.Ed., 1986

2016 Publications
Arcis, H.; Ferguson, J. P.; Applegarth, L. M.; **Zimmerman G. H**.; Tremaine, P. R., "Ionization of Boric Acid in Water from 298 K to 623 K by AC Conductivity and Raman Spectroscopy" *J. Chem. Thermodynamics,* **2016**, Accepted, August 16, 2016

Arcis, H.; Ferguson, J. P.; **Zimmerman G. H.;** Tremaine, P. R., "The Limiting Conductivity of the Borate Ion and its Ion-Pair Formation Constants with Sodium and Potassium under Hydrothermal Conditions" *Phys. Chem. Chem. Phys.*, **2016**, 18, 24081-24094.

2016 Presentations
"A New Flow Conductivity Cell for High Concentration Aqueous Solutions", Tyler Behrent and **Gregory Zimmerman,** 251st National Meeting of the American Chemical Society, San Diego, CA, March 13-17, 2016

2016 Funding

2016 Teaching
Spring: Chemistry 362 – Physical Chemistry 2 Lecture Course #: 1654 Lab Course #: 1653

Fall: Chemistry 115 – Chemistry for the Sciences I Lab Course #: 2918
Chemistry 361 – Physical Chemistry I Lecture Course #: 2936 Lab Course #: 2935 & 2983
Chemistry 493 – Chemical Research 2 Course #: 3037

2016 Service Activities
Department Sabbatical Committee Chairperson

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