

EASTERN MICHIGAN UNIVERSITY™  
CHEMISTRY DEPARTMENT NEWSLETTER  
SPRING 2008

## New Department Head



It has been a year of transitions and restructuring in the EMU chemistry department. Former Department Head, Wade J. Tornquist has moved from the position of Interim Associate Dean in the College of Arts and Sciences to the office of Academic Affairs as Executive Associate to the Provost. During the two years Wade was serving in the Dean's office, the Department was headed by interim Department Head, Maria Milletti. As of fall 2007, Maria has chosen to return to the general faculty to make way for new department chair, Ross Nord (top left picture).

Ross has been with the department since 1986 and is a professor of physical chemistry. Ross is joined in his new role by Steve Pernecky who is now the Associate Department Chair. Steve (top right picture) has been with the department as a professor of biochemistry since 1995.

Steve's role as Associate Chair is a new position the department has created. It is hoped that this new role will help distribute some of the Department Head's duties, allowing the Department Head to fill this roll and also maintain a broader range of professional activities such as teaching, service and research.

Both Ross and Steve are adapting to their new roles with ease and are happy to be steering the good ship Chemistry into a bright future!

## Program Review Completed

Although EMU promotes all departments to engage in continuous improvement, the formal Academic Continuous Improvement cycle at EMU reached the Chemistry Department in fall 2007. The program review offered the department the opportunity to examine and evaluate all aspects of both the undergraduate and graduate programs and their related activities and components. The whole department worked tirelessly to identify and suggest how to make improvements in the departmental focus and develop plans to enhance the academic experience of students, faculty and staff both now and in the future.

One outcome of the review was to streamline the undergraduate degree programs. The faculty also suggested a new departmental mission statement and showed how the Chemistry Department supports effective student learning and teaching. The final review documents were submitted to the university in early 2008, and it is hoped that the results provide useful feedback to the department, provide information to the administrative planning offices, and show that Chemistry is among the best departments at EMU.

## Goodbye and Good Luck!

Retired professors Dr. Elva Mae Nicholson and Dr. Michael Brabec were honored Feb. 15, 2008 for their many years of service (33 and 22 years, respectively) to EMU, the Chemistry Department, and their students. About 60 people turned out including current and former EMU faculty and staff, as well as several former students who expressed their heartfelt gratitude to these two remarkable individuals.

Dr. Brabec's expertise was in toxicology and biochemistry while Dr. Nicholson brought expertise in organic and biochemistry. We thank you Mike and Elva Mae for making such a difference here at Eastern! See pages three and six for pictures from the retirement party.

## Welcome New Faculty!



Gavin Edwards joined the department in fall 2007 as an assistant professor in the analytical division. Gavin was born and raised in Wales in the United Kingdom and received his Bachelor's degree and Ph.D. from the University of Leicester, U.K. He comes to us having recently completed a visiting assistant professorship at Eastern Illinois University. Prior to that appointment he completed postdocs at Purdue University and the National Center for Atmospheric Research in Boulder, CO.

Dr. Edwards' research encompasses the broad issues of atmospheric chemistry, composition and dynamics. His focus here at EMU will be to help understand the role the biosphere has in atmospheric chemistry, particularly how biogenic emissions affect the chemistry of ozone and the concentration of atmospheric radicals such as OH and HO<sub>2</sub>. Dr Edwards' will primarily investigate this chemistry by making measurements in the field and then, computer modeling the resulting data in order to understand the complex sources, sinks and reactions of this important atmospheric gas.

He has already gotten the research ball rolling with a Provost's New Faculty Award and a FRF SS&M award. When not working on general chemistry and quantitative analysis course materials or his research, he enjoys reading history books, and watching football and Formula One motor racing. Gavin and his wife recently adopted a dog from the Huron Valley animal shelter, a chocolate Lab named Duncan. Welcome to the department Gavin!

## Science Complex Updates

The design of the new science complex is proceeding as planned. Architects Lord, Aeck & Sargent, Inc. have met several times with the faculty representatives from the Department this winter to outline the latest developments in the project. The architects wish to confirm that the program statement is still valid for the current and future needs of the department and to reaffirm which areas of Chemistry will move to the new construction and which will remain in a renovated Mark Jefferson.

While nothing has been decided, it is likely that all introductory classes and associated labs are to remain in the renovated existing structure, while organic teaching labs and all faculty research labs are likely to move to the new addition. Instrumental and biochemical areas may remain in the renovated building or move, but proximity issues associated with these facilities still need to be worked out. The Chemistry faculty would prefer to have their offices close to laboratories where students are working.

Even though the project is still in the planning stages, work has actually begun with initial soil borings and tests west of Mark Jefferson.



Possible New Organic Laboratory Layout



Elva Mae Nicholson (above) and Mike Brabec (above right) were the center of attention at the retirement reception held in their honor on February 15, 2008 at the EMU Student Center. The crowd included the former department heads who hired them (Clark Spike and Bert Ramsay, both shown in the picture to the right)

---

## GRADUATE RESEARCH FAIR, 2007

The Graduate Research Fair, held on March 26, 2007, proved to be another outstanding success. A number of Chemistry students gave presentations on their research representing the wide array of science being performed by our talented EMU students!

**Mahender Budarapu**, Professor Deborah Heyl-Clegg, sponsor. "Synthesis and Purification of an Isotopically Labeled Fragment of LL-21 Antimicrobial Peptide"

**Roshini Fernando**, Professor Hedeel Evans, sponsor. "Acetylation of the A. aeolicus DHO-ATC Complex Disrupts the Oligomeric Structure"

**Joslyn Kirkland**, Professor Ruth Ann Armitage, sponsor. "Surface Analysis of Plasma-Oxidized Materials: Implications for "Nondestructive" Radiocarbon Dating"

**Maria Puscau**, Professor Cory Emal, sponsor. "Design and Synthesis of 1,2-Amino Alcohols as Antimalarial Agents"

**Shyamprasad Samiseti**, Professor Deborah Heyl-Clegg, sponsor. "Synthesis and Purification of a Fragment of Rat Amylin Peptide"

**Aditi Munmun Sengupta**, Professor Steven Pernecky, sponsor. "Development of a Method To Characterize Fatty Acids And Prostanoids in Mammalian Cells and Cell-Free Systems"

## UNDERGRADUATE SYMPOSIUM, 2007

An impressive number of Chemistry students gave presentations at the XXVII Undergraduate Symposium held in the EMU Student Center on March 30, 2007.

**Rishi Chaudhuri and Rola Kolailat**, Professor Arthur Howard, sponsor. "Synthesis of Novel Nitrogen Containing Heterocyclic Systems"

**Michael Kallio**, Professor Larry Kolopajlo, sponsor. "Kinetics of the Ligand Exchange Reaction between  $\text{Ni}(\text{tren})^{2+}$  and 2,2'-Bipyridine"

**Ingrid Mèyè**, Professor Deborah Heyl-Clegg, sponsor. "Synthesis of Amylin Peptide: A Study of Amylin and its Role in Diabetes"

**Nusibah Altayib, Miguel Perez and Hasina Saraha**, Professor Cory Emal, sponsor. "Design and Synthesis of 1,2-Amino Alcohols as Antimalarial Agents"

**Monica Bame**, Professor Hedeel Guy-Evans, sponsor. "Acetylation of the A. aeolicus DHO-ATC Complex Disrupts the Oligomeric Structure"

**Brian Claxton**, Professor Harriet Lindsay, sponsor. "Development of an Environmentally-Friendly Procedure for Removal of a Common Protecting Group"

**Andrea Dery**, Professor Larry Kolopajlo, sponsor. "Mario Molina and the Discovery of Stratospheric Ozone Depletion"

**Melissa Doolin**, Professor Ruth Ann Armitage, sponsor. "THM-GC-MS Analysis of Possible Binders in Rock Paintings"

**James P. Grinias**, Professor Heather Holmes, sponsor. "Math Modeling of Length Tuning Effects on Gas Chromatography"

**Benjamin F. Johnson**, Professor Harriet Lindsay, sponsor. "An Approach to the Synthesis of Amphorogynine D and Related Alkaloids"

**Andrew Livingston**, Professor Ruth Ann Armitage, sponsor. "THM-GC-MS Analysis of Rock Paintings from Casa de Las Golondrinas, Guatemala: Implications for Radiocarbon Dating"

**Mark Lukowski**, Professor Maria Milletti, sponsor. "Substrate Binding and Kinetic Aspects of the Oxygenation Reaction Mechanism in COX-1"

**Edwin L. Marrero**, Professor Harriet Lindsay, sponsor. "Influencing Diastereoselectivity in the Synthesis of Acylpyrrolidines via an Aza-Cope Rearrangement-Mannich Cyclization"

**Geneve M. Maxwell**, Professor Ruth Ann Armitage, sponsor. "GC-MS for Quantitative Analysis of Lipids in a Coating Associated with Rock Paintings in Idaho"

**Amanda Mortensen**, Professor Larry Kolopajlo, sponsor. "A Chemical Education Experiment in Lipstick Chromatography"

**Bryan Perria**, Professor Arthur S. Howard, sponsor. "Synthesis of an Aza-Analogue of the Cocaine Molecule"

**Allison Rogalski and Carrie Bowen**, Professor Deborah Heyl-Clegg, sponsor. "Synthesis and Kinetic Analysis of an  $\alpha$ -Amylase Inhibitor"

**Claire Tornow**, Professor Maria Milletti, sponsor. "Mechanism of Lipid Peroxidation of Arachidonic Acid: A Theoretical Investigation"

**Janine Van Gemert**, Professor Ruth Ann Armitage, sponsor. "Characterization of Copal Incense from Mesoamerica: Identification of Residues by GC-MS"

# STUDENT AWARDS, 2007



## **The Bert W. Peet Scholarship Award**

## **Perry S. Brundage Scholarships**

## **Collins' Endowed Scholarship in Chemistry**

## **Maurice Decoster Endowed Chemistry Scholarship**

## **Sandra J. Lobbstaal Chemistry Endowed Scholarship**

## **Elva Mae Nicholson Organic Chemistry Endowed Scholarship**

## **Dr. Donald B. Phillips Memorial Endowed Scholarships**

## **John Sullivan Endowed Scholarships**

## **The Ronald M. Scott Memorial Scholarship**

## **ACS Huron Valley Section Undergraduate Award**

## **American Institute of Chemists Award**

## **Biochemistry Achievement Award**

## **Toxicology Achievement Award**

## **ACS Organic Chemistry Achievement Award**

## **John J. Contario Analytical Chemistry Award**

## **Wiley Inorganic Chemistry Award**

## **CRC Press Freshman Chemistry Achievement Award**

## **Hayden/McNeil Chemical Education Award**

## **Graduate Achievement Award**

## **Dean's Award for Research Excellence**

## **Hypercube Scholar Award**

## **Huron Valley Publishing Scholarship**

## **ACS Huron Valley Section Outstanding Graduate Student Award**

## **EMU Chemistry Department Teaching Assistant Awards**

## **EMU Chemistry Department Research Award**

Monica A. Bame  
Benjamin F. Johnson

Melissa L. Cordes  
Fattum A. Mutahr  
Brittney M. Nobles  
Trishta R. Rogers  
Kimberly Rutkowski  
Patrick M. Spoutz

Mark A. Lukowski

Janine A. VanGemert

James P. Grinias

Jennifer J. Vogel

Jennifer I. Payne  
La'Gina T. Taylor

Jennifer J. Vogel  
Nicholas Stoyanovich

Roshini S. Fernando

Nusibah K. Altayib

Bryan G. Perria

Bryan G. Perria

Kyle L. Poulsen

Benjamin F. Johnson

Andrew J. Livingston

Julie L. Carey

Patrick M. Spoutz

Andrew D. Hulbert

Sarah R. Larson

Reshmi Perumplavil

Claire E. Tornow

Mary M. McPhail

Aditi M. Sengupta

Joslyn D. Kirkland  
Wesley A. Turley

Avinash Waghay

## Scholarship News

The Chemistry Department has recently received two very generous donations for student scholarships. Since 1998 the department has awarded Maurice “Pete” Decoster Scholarships to deserving students. Unfortunately, Mr. Decoster, a 1932 graduate, passed away in 2005. However, he left EMU an additional \$25,000 which has been used to endow a Chemistry scholarship, so that future students can benefit from his generosity.

Alice R. Mayor was a 1945 graduate of EMU in Home Economics and Chemistry. She taught Chemistry at the college and high school levels for many years and was one of nine recipients of a National Chemistry Teacher of the Year Award in 1966. Upon her passing in 2006, a donation of \$17,000 was received from her estate. This generous donation will be combined with the endowment of the Bert W. Peet Scholarship Award which will be renamed The Peet-Mayor Endowed Chemistry Award. Bert W. Peet came to EMU in 1899, founded the Chemistry Club in 1910, and served as Department Head from 1916-1941. The Bert W. Peet Scholarship Award was established by his friends and colleagues upon his retirement and has been given to the top graduating Chemistry or Biochemistry major each year. We are grateful for the Mayor family’s donation that will allow us to appropriately recognize our best students, while ensuring the memory of these important members of the EMU Chemistry community.

---

## Congratulations

**Larry Kolopajlo**, who received tenure and was promoted to Associate Professor.

**Harriet Lindsay**, who received tenure and was promoted to Associate Professor.

**Steve Pernecky**, who was promoted to full professor.

**Christa Graham**, who received the “Lecturer Award for Outstanding Performance in the Classroom” from the Holman Learning Center last April. Christa is a 1995 graduate of EMU and served several years as an adjunct lecturer in Chemistry.

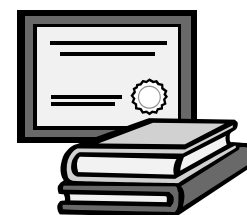
**Brian Claxton** (Lindsay), for the renewal of his Symposium Undergraduate Research Fellow Award.

The eight recipients of Honors Undergraduate Fellowships this year, four of whom received fellowships both semesters. Fall & winter: **Jim Grinias** (Holmes), **Jennifer Vogel** (Emal), **Mark Lukowski** (Milletti) and **Claire Tornow** (Milletti). Winter: **Melissa Doolin** (Armitage), **Louis Lello** (Milletti), **Brooke Raven** (Lindsay), and **Patrick Spoutz** (Milletti).



Mike Brabec and Elva Mae Nicholson chat with some of the many well-wishers gathered at their retirement reception

## FACULTY ACTIVITIES



### Grants

**Harriet Lindsay:** \$250,000 from the Herman Frasch Foundation to synthesize biologically active alkaloids

**Debbie Heyl-Clegg:** \$44,000 Cottrell College Science Grant from Research Corporation with an additional \$9,000 match from EMU. Project proposes to develop Insulin-Based Inhibitors for Human Islet Amyloid Polypeptide, a Protein Implicated in Cell Membrane Destruction in Type II Diabetes

\$2,500 internal, EMU Graduate Research Support Award

**Gavin D. Edwards:** \$2,500 internal, EMU FRF SS&M award for purchase of new computer modeling software

**Heather Holmes:** for her role in EMU's successful application for a \$1.1 million five-year grant from the Department of Education to establish a McNair Scholars Program at EMU. A collaborative effort from biology, chemistry and teacher education. EMU's McNair Scholars Program will provide significant support for students who are either low-income and first-generation, or from underrepresented groups and intend to pursue a doctoral degree. Students will be involved in undergraduate research projects with faculty mentors.

*We also acknowledge the continuation of work on two long-term major grants that began in 2005:*

**Hedeel I. Guy Evans:** Signaling Cascades, Allostery and the Pyrimidine Pathway: four years, \$1,000,904

**Nina Contis:** Creative Scientific Inquiry: Integrated Science Curriculum, National Science Foundation, Scientific Talent Expansion Program, five years, \$1.90 million

---

### Faculty Research Fellowships (FRFs)

**Cory Emal**, received a 100% release-time FRF award during the Winter 2008 semester to focus on collaborative research. Dr. Emal and Dr. Daniel Lawrence of the University of Michigan Medical School are working on research concerning the design and synthesis of inhibitors of plasminogen activator inhibitor-1. Cory is currently working with one graduate and five undergraduate students on different aspects of this project, and is most grateful for the time granted to him by the university, which allows a level of individual attention to, and interaction with, each student that otherwise would not be possible.

**Krish Rengan** spent fall 2007 semester on a 100% release-time FRF award exploring chemical reactions related to the disposal of radioactive waste generated from nuclear power with Prof. Prussin of the Nuclear Engineering Department at UC Berkeley and collaborators at Lawrence Livermore National Laboratory. Prof. Prussin and his collaborators have collected data on the precipitation behavior of neptunium under a variety of conditions, but their results differ from other groups on this observation. Rengan joined the UCN-LLNL group and helped them in the analysis and interpretation of the data. Based on the analysis he suggested additional experiments that will help in the understanding of the results. The additional proposed experiments are expected to be performed in the next several months and the information will be helpful to predict the migration patterns for neptunium and other radioisotopes.

## Publications in 2007: (Student co-authors are underlined.)

D. H. Kotsis, E. M. Masko, F. D. Sigoillot, R. Di Gregorio, H. I. Guy-Evans and D. R. Evans "Protein Kinase A Phosphorylation of the Multifunctional Protein CAD Antagonizes Activation by the MAP Kinase Cascade" *Molecular Cellular Biochem.* **301**(1-2):69-81.

F. D. Sigoillot, D. H. Kotsis, E. M. Masko, M. Bame, D. R. Evans, and H. Guy Evans "Protein Kinase C modulates the upregulation of the pyrimidine biosynthetic complex, CAD, by MAP kinase" *Front. Biosci.* **12**: 3892-3898.

A.M. Sengupta, H.N. Basu and S. Pernecky, "Methyl esterification of fatty acids and prostaglandins with trimethylsilyl diazomethane" *Faseb Journal*, **21**, pp A605-A605.

P. Hsueh, M. Lukowski, H.A. Lindsay, and M.C. Milletti "Factors affecting the relative stability of a series of iminium cation stereoisomers" *Journal Of Molecular Structure-Theochemistry*, **806**, pp.223-230.

H. Desai, B.R. D'Souza, D. Foether, B.F. Johnson and H.A. Lindsay, "Regioselectivity in a Highly Efficient, Microwave-assisted Epoxide Aminolysis," *Synthesis*, 902.

E.L. Marrero, W.A. Turley, B.F. Johnson and H.A. Lindsay, "Controlling Diastereoselectivity in the Tandem Microwave-assisted Aza-Cope Rearrangement--Mannich Cyclization," *Synlett*, 893.

D. L. Heyl, B. Sethi, A. Rogalski, C. E. Bowen, M. Lawrence, L. Beitler, E. Harning, A. Hancer, S. Sreekumar and S. Fernandes, Variation of the pKa in the N-Terminal Tyrosine Side Chain in Octapeptide Analogs of Tendamistat Influences  $\alpha$ -Amylase Inhibition; *Protein and Peptide Letters*, 14, 497-501.

L. Kolopajlo and J. Boston "A Thermostated Holder for a Long-Path Cylindrical UV//Vis Sample Cell," *The Chemical Educator*, **12**, 4, 2007, p. 253-254.

L. Kolopajlo "Chapter 1: Guided Inquiry Animations in General Chemistry," In "Toward Transformations, EMU Faculty Journal into the Scholarship of Teaching and Learning," Editor, Jeffrey Bernstein, Development Center, August, 2007.

R.D. Anderson and M.C. Milletti "Structural and Electronic Characteristics of a Series of Glycosidase Inhibitors" *Letters in Drug Design and Discovery*, 2007, **4**, 587-595.

J.R. Brender, U.H.N. Dürr, D.L. Heyl, M.B. Budarapu and A Ramamoorthy, "Membrane Fragmentation by an Amyloidogenic Fragment of Human Islet Amyloid Polypeptide Detected by Solid-State NMR Spectroscopy of Membrane Nanotubes", *Biochim. Biophys. Acta.*, 1768, 2026-2029.

J. Kirkland and R. A. Armitage "FTIR-ATR Studies of Plasma-Oxidized Materials: Implications for 'Nondestructive' Radiocarbon Dating" *Society for Archaeological Sciences Bulletin*, **30** pp.15-17.

R. Perumplavil and R.A. Armitage, "Surface Analysis of a Black Deposit from Little Lost River Cave, Idaho" In *Archaeological Chemistry: Analytical Techniques and Archaeological Interpretation*; Glascock, M. D., Speakman, R. J., Popelka-Filcoff, R. S., Eds.; *American Chemical Society: Washington, DC*, pp 152-166.

R. A. Armitage, L. Minc, S.D. Hurry, and M. Doolin. "Characterization of building materials from the brick chapel at Historic St. Mary's City" In *Archaeological Chemistry: Analytical Techniques and Archaeological Interpretation*; Glascock, M. D., Speakman, R. J., Popelka-Filcoff, R. S., Eds.; *American Chemical Society: Washington, DC*, pp 364-375.