

EASTERN MICHIGAN UNIVERSITY™

CHEMISTRY DEPARTMENT NEWSLETTER

SPRING 2006

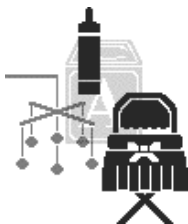
Major Research Instrument Funded by NSF



The Chemistry department acquired a 400 MHz NMR from JEOL. The machine has a superconducting magnet cooled by liquid helium and is controlled by an easy to use software package with a suite of predefined NMR automation experiments for data collection. Funding for the instrument was obtained from NSF through the Major Research Instrumentation program, as well as the University and the Office of Research Development, for a total of \$280,000. Co-PI's on this large grant were Arthur Howard and Tim Friebe. Other project collaborators include Debbie Heyl-Clegg, Harriet Lindsay, Don Snyder, Wade Tornquist, and John Texter of the Coatings Research Institute (CRI) in the College of Technology.

Baby Kennedy has arrived!

Dr. Vance Kennedy and his wife, Annette, had a baby boy named Samuel at 1:39 pm on January 20, 2006. He was 8 lbs 7 oz and 20 in at birth and has blue eyes with reddish blond hair. His hobbies are eating and sleeping! His big sister, Cassandra, wants to be involved in his life all the time, including helping him burp after feeding.



Welcome New Faculty!

The chemistry department welcomed two new faculty members, Cory Emal and Hedeel Evans, this fall. Their contributions to the department have already been seen both in the classroom and in the research laboratories.

Cory Emal came to us from the Walter Reed Army Institute of Research in Silver Spring, Maryland. He is an organic chemist who enjoys teaching and working with students on exciting research projects. His project involves the design and synthesis of compounds that show biological activity against the parasites responsible for causing malaria. He has received grant money from the Dreyfus Foundation Start-up Award Program, a Provost's Research Support Award for New Faculty, and a Spring-Summer Research Award to assist in the synthesis of his anti-malarial compounds. His hobbies include playing tournament Scrabble, obsessing over the rise and fall of the University of Nebraska football team, and (increasingly) discovering the joys of home-ownership.

Hedeel Evans came to us from Wayne State University in Detroit. She is a biochemist who did her postdoctoral work in France and continues a very productive collaboration there; she also collaborates with her husband, David Evans of Wayne State University. Hedeel is originally from France and she visits that country on a yearly basis to continue her research collaborations. She has a four year research grant from the National Institutes of Health, totaling \$1,000,904. Her area of research involves the study of proteins that regulate the supply of nucleotides needed for the growth of cancer cells. Her hobbies include reading, sailing, walking and swimming. A major motivation for coming to EMU was her desire to teach undergraduates and involve them in her research.

Kresge Challenge Grant provides new instrumentation

Eastern Michigan University has received a grant from the Kresge Foundation to purchase scientific equipment. The Chemistry Department has used the funds to acquire instrumentation for our laboratories. The students will gain valuable experience with new methods for synthesis and analysis of chemical compounds. The equipment includes a graphite furnace for atomic absorption allowing for a broader range of compounds to be studied for elemental analysis. A new infrared instrument along with a Raman system will provide our students with increased ability to characterize vibrational spectra. Also purchased with this grant are two microwave reactors for organic synthesis that will be utilized for both research and undergraduate laboratories. The biochemists purchased UV-VIS spectrophotometers to aid in enzyme kinetic studies. The new instruments will enhance our laboratory curriculum by providing opportunities to employ various techniques previously not accessible to students.



Changes in the Department

This year the chemistry department has seen some leadership changes. In August, Wade Tornquist accepted an interim position as Associate Dean of the College of Arts and Sciences and Maria Milletti has been filling in as interim department head. Both are working hard to reach the university goal of providing a quality education for our students.



**Interim
Department Head
Maria Milletti**

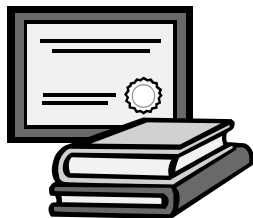
**Interim
Associate Dean
Wade Tornquist**

One last administrative change has affected the department as Heather Holmes has accepted a one-semester position as the interim Honors College Director. The Honors College offers undergraduate students opportunities for a wide range of experiences that aid in the development of their appreciation for creativity, the arts, sciences, critical issues facing contemporary society, and diversity among people and their cultures.

Graduate student wins awards

Jamie Brown, a M.S. research student working with Dr. Ruth Ann Armitage, has received special recognition for her work in developing a GC-MS method for characterization of rock paintings and associated archaeological materials. In early 2005, she was selected for a Graduate School Research Assistantship, which pays her a stipend to do research. Jamie's oral presentation, "Pyrolysis and

THM-GC-MS Characterization of a Black Residue in Little Lost River Cave, Idaho" at the Anachem Symposium in November 2005 was recognized as the best student research presentation. Jamie has received research funding from Sigma Xi, the Scientific Research Society, in the form of a \$500 Grant-in-Aid of Research, and an EMU Graduate School Graduate Student Research Support Fund Award of \$480.



STUDENT AWARDS, 2005

R.W. Peet Award

ACS Huron Valley Section Undergraduate Award

American Institute of Chemists Award

Collins Endowed Scholarship

Decoster Endowed Scholarship

John M. Sullivan Memorial Scholarship

Hypercube Scholar Award

Huron Valley Service Award

Lobbestael Scholarship

CRC Press Freshman Award

Brundage Scholarship

Biochemistry Achievement Award

Wiley Inorganic Chemistry Award

Toxicology Achievement Award

ACS Organic Chemistry Achievement Award

Pfizer Toxicology Scholarship

ACS Division of Analytical Chemistry Award

John J. Contario Analytical Chemistry Award

ACS Huron Valley Section EMU Outstanding Graduate
Assistant

Graduate Teaching Award

Graduate Research Award

Ronald M. Scott Memorial Scholarship

Jennifer Stephens

Elizabeth Quintus

Robert Vogt

Amanda Schalk

Robert Anderson and Michele Lawrence

Staci Boos

Robert Anderson

Ashley Foster and Carrie Fiebig

Nusibah Altayib

Claire Tornow

Mark Diebel, Mark Lukowski,

Mark Miller and Claire Tornow

Rebecca Grimm

Robert Anderson

Timothy Patru

Kathleen Panter

Danielle Bailey and Carissia Holloway

Will Collin

Brahmlin Sethi

Madhavi Lokireddy

Sudeepa Karunaratne and

Vera Popova-Guerguieva

Kiran Gottipati

Nimita Dave

FACULTY ACTIVITIES IN THE DEPARTMENT

Publications



2005 saw several publications by departmental faculty. Student coauthors are underlined.

R. A. Armitage, L. Minc, D. V. Hill, and S. D. Hurry

'Characterization of Bricks and Tiles from the 17th-century Brick Chapel, St. Mary's City, Maryland'
Journal of Archaeological Science. In press, 2006.

Deborah L. Heyl, Steve Fernandes, Leena Khullar, Jennifer Stephens, Elizabeth Blaney, Horacia Opang-Owusu, Benjamin Stahelin, Todd Pasko, Jana Jacobs, Danielle Bailey, Dennis Brown and Maria C. Milletti

' α -Amylase Inhibition Correlation of LUMO Localization with the Inhibition Constant in a Tendamistat-Based Series of Linear and Cyclic Peptides'
Bioorganic & Medicinal Chemistry, 2005, 13/13, 4262-4268.

Kolopajlo, Larry, "The Metal Exchange Reaction between NiMIDA and Copper(II)" Journal of Coordination Chemistry, in press.

Kolopajlo, Larry, "The Crystal Growth of Gypsum: An Automated Laboratory Experiment for Integrated Science Classes,"
Journal of the Michigan Science Teachers Association, Spring 2005.

Christopher Knight and M.C. Milletti

'Theoretical Characterization of Two Reaction Pathways for the Intramolecular Cyclization of 2-(3-Benzylaminopropanoylamino)benzamide'
J. Mol. Struct. THEOCHEM, 2005, 724, 143-153.

H.P. Hratchian and M.C. Milletti

'Determination of 99Ru Chemical Shifts Using Moderately Sized Basis Sets'
Journal of Molecular Structure: THEOCHEM, 2005, 724, 45-52.

A.S.A. Gracon, S.J. Pernecky, M.C. Milletti, J.-A Park, Y. Yuan, and H. Kim

'Computational Characterization of a Series of Eicosanoids'
Letters in Drug Design and Discovery, 2005, 2, 239-244.

Kristyn A. Spangler and M.C. Milletti

'Theoretical modeling of the isopropylum cation: Exploring nonclassical carbonyl behavior'
J. Coord. Chem., 2005, 58, 595.

Sabbaticals

Several faculty members took sabbaticals during 2005, including:

- **Tim Friebe**, who is working at Michigan State University for the 2005-2006 academic year.
- **Vance Kennedy**, who spent the Fall semester working at the University of Michigan.
- **Jose Vites**, who spent the Winter and Spring/Summer semesters at the EPA in North Carolina.

Undergraduate Symposium Presentations in Chemistry

A number of Chemistry students gave presentations at the undergraduate Symposium held in McKenney Union in late March of 2005. Their research represents the array of activities involved with the science being performed by our talented undergraduates.

Robert Daniel Anderson, Professor Maria C. Milletti, sponsor. "Theoretical Study of Structural and Electronic Characteristics of a Series of Glycosidase Inhibitors"

Rishi Chaudhuri, Professor Larry Kolopajlo, sponsor. "Kinetics of the Reaction between 2,2'-Bipyridine and Monoiminodiacetate(II)"

Ayse Hancer, Professor Deborah Heyl-Clegg, sponsor. "Tendamistat-Based Peptide Inhibitors of Alpha-Amylase Containing Phenylalanine, Ornithine and Lysine"

Powen Hsueh, Professor Maria C. Milletti, sponsor. "A Comparison of Thermodynamic and Kinetic Factors in the Aza-Cope-Mannich Reaction of the E and Z Configurations of a Series of Iminium Cations"

Kathryn Jacobs, Professor Maria C. Milletti, sponsor. "Computational Analysis of the Relative Stability of E and Z Stereoisomers of Iminium Cations"

Jennifer Stephens, Professor Deborah Heyl-Clegg, sponsor. "Small Peptide Analogues of the Alpha-Amylase Inhibiting Protein, Tendamistat"

William Collin, Professor Timothy Brewer, sponsor. "Luminescent Temperature and Solvent-Dependent Properties of Ruthenium Complexes"

Rebekah Grimm and Beth Quintus, Professor Steven Pernecky, sponsor. "Comparison of Gas Chromatographic Methods for Measurement of a Lipid Peroxidation Biomarker"

Sandra Haddad, Edwin Marrero and Amanda Schalk, Professor Harriet Lindsay, sponsor. "Use of a Microwave Oven to Shorten Reaction Times in the Synthesis of Five-Membered Rings"

Joel R. Karczewski II, Professor Harriet Lindsay, sponsor. "Stereochemical Issues Involved in the Synthesis of Amino Acid Derivatives"

Anthony Meade, Professor Elizabeth R. Butch, sponsor. "Evaluation of Epidermal Growth Factor Inhibitors"

Horacia Opong-Owusu, Professor Deborah Heyl-Clegg, sponsor. "Alpha-Amylase Inhibition by a Peptide Analog of Tendamistat Containing D-Pro"

Megan Reardon, Professor Michael Brabec, sponsor. "Do Cells Exposed to Dinitrobenzene Die by Apoptosis?"

Christopher Reeves, Professor Arthur Howard, sponsor. "A Microwave Assisted Synthesis of Previously Unreported Tricyclic Nitrogen Heterocycles"

Patricia Sinawe, Professor Harriet Lindsay, sponsor. "Use of Microwave Assisted Aza-Cope Mannich Reaction in Natural Product Synthesis"

New Nicholson Scholarship

Dr. David Jadwin has donated \$10,000 to fund the Elva Mae Nicholson scholarship in organic chemistry. Dr. Jadwin graduated from EMU in 1978 with a degree in biochemistry, and notes that the time he spent at EMU was quite memorable. After receiving his DO from MSU he interned at Lansing Community Hospital and did a residency at Brooke Army Medical Center in San Antonio, TX. Following his military service he served as Chief of Pathology at Kimball Medical Center in Lakewood and Memorial Hospital in Burlington County, both in New Jersey. Since 2000 he has been Chair of Pathology at Kern Medical Center in Bakersfield, CA.

Dr. Jadwin has donated an additional \$1,000 so that we can begin the scholarship this year while we work out the details of the major gift. The Chemistry Department is indebted to Dr. Jadwin for his generosity (and Dr. Nicholson is deeply touched by his thoughtfulness).

Graduate Research Fair Presentations in Chemistry

A number of Chemistry students gave presentations at the Graduate Research Fair Symposium held in McKenney Union in late March of 2005. Sarah Fezzey received special recognition with the Sigma Xi award for the best poster presentation.



Sarah Fezzey, “Characterization of Black Deposit Associated with Rock Paintings in Little Lost River Cave, Idaho, Using Pyrolysis GC/MS.” Sponsor: R. A. Armitage

Kiran Gottipati and Sreeja Sreekumar, “Design and Synthesis of a Cysteine-Deleted-Analog of the Antimicrobial Peptide Tachyplesin I.” Sponsor: D. Heyl-Clegg

Sudeepa Karunaratne, “Preconcentrating Inlet Systems for the Study of Lipid Peroxidation.” Sponsor: H. Holmes.

Naveen Kunaparaju, “Effects of Dinitrobenzenes on Mitochondria and its Role in Apoptosis.” Sponsor: M. Brabec.

Madhavi Lokireddy, “Real-time Monitoring of Volatile Products of Lipid Peroxidation in Myoblast Cells by Gas Chromatography in Connection with an Incubator and Cryofocusing Inlet System.” Sponsors: S. Pernecky and H. Holmes.

Vishwa Mantena, “Do Dinitroaromatics Target Mitochondria?” Sponsor: M. Brabec.

Reshmi Perumplavil, “Depth Profiling and X-ray Photoelectron Spectroscopy Analysis of a Black Deposit Associated with Rock Paintings in Little Lost River Cave, Idaho.” Sponsor: R. A. Armitage.

Sudeepa Karunaratne presents her poster at the graduate symposium in March 2005.

