EMU Chemistry Department Newsletter

Winter 2003

New Additions to Faculty

Two new tenure-track faculty members were hired for the 2002-2003 academic year. Larry Kolopajlo joins the department as a specialist in chemical education. He received a Ph.D. from Western Michigan University. Dr. Kolopajlo designs experiments and activities for high school students, and investigates ways in which college students learn chemistry. In addition, he maintains a research program in inorganic chemistry that examines the kinetics and mechanisms of metal complexes and multidentate ligands. Finally, Dr. Kolopajlo is involved in measuring inorganic parameters such as mercury, chlorides and nitrates in stream waters, soils and fish.

Harriet Lindsay is the newest member of the organic chemistry faculty. She comes to EMU from University of Arkansas, where she received a Ph.D. in organic chemistry and an Ed.D. in higher education. Her research interests focus on developing new organic reactions to aid in the synthesis of natural products. In addition, she is investigating the factors that affect persistence and achievement in undergraduate chemistry courses.

Professor Phillips Passes Away

We were saddened by the death of Professor Don Phillips on October 29, 2002. He had been a faculty member in the department since 1972, devoting much of his time to the education of elementary science teachers. In recognition of these efforts, he was chosen as the top national award winner in the 1982 National Science Teacher Association Gustav Ohaus Award Program for Innovations in College Science Teaching. Professor Phillips' teaching talents were highly regarded by both students and faculty. This fall, he was recognized by freshman students as one of the faculty members who made a difference in their fall semester.

Dr. Phillips had a passion for sharing the fun of science with elementary school students. He created programs such as the Chemistry Magic Show and Saturday Morning at the Lab, which, over the years, have introduced a vast number of children to the excitement of scientific discovery. His passion and commitment to science education will continue to inspire us.

Saturday at the Lab

To celebrate National Chemistry Week and as part of Family Day at EMU, the Chemistry Department hosted the annual Saturday at the Lab event this past October. Volunteers from the Chemistry Club, the Biology Department, and Pfizer in Ann Arbor joined members of the Chemistry Department in staging a number of entertaining and educational demonstrations for grade school students and their families. This year's event was attended by over 1000 children and parents. The attendance continues to grow. Bring your kids to join the fun next Fall!

DH Wade Tornquist demonstrates the many functions of dry ice at Saturday in the Lab.

Chem Club president Mike Pratt and Instructor David Rodgers perform liquid nitrogen demonstrations for the Saturday crowd.

EMU hosts ACS Regional Meeting

The 34th American Chemical Society Central Regional Meeting was held at Eastern Michigan University from June 26-29, 2002. Professor Don Snyder served as General Chair for the meeting. Other EMU faculty and students also worked on the organizing committee. Don Phillips chaired the poster program, while Steve Pernecky served as short course/workshop chair. The Chemistry Club was responsible for organizing the undergraduate program. In addition, Ruth Ann Armitage served as co-chair of the technical program on archaeological chemistry. A number of faculty and students gave presentations at the meeting (see Presentations article).

Chemistry Club Update

This year's Chemistry Club had another active year. Michael Pratt and Renae Beebe took the lead in organizing the undergraduate program for the 34th Central Regional Meeting of the American Chemical Society, which was held at EMU this past summer. In addition, the Club has continued its tradition of providing science workshops and demonstrations for kids. This year, members volunteered at the Pinckney Science Fair, the Ann Arbor Hands-On Museum, and EMU's Saturday at the Lab. Finally, the Chem Club organized this winter's chemists vs. physicists floor hockey game. Although the physicists won the match, the chemists made a respectable showing. Chemistry Club officers for 2002-2003 are: Michael Pratt (president), Troy Lipan (vice-president), Rochelle Ferrett and Ben Payne (secretaries) RaShawn Rushing and Leslie Scobie (treasurers). This year's sponsors are Drs. Vites, Pernecky, and Kennedy.

Winter 2003 floor hockey team: Front Row: Leann Zelinski, Professor Tim Brewer, Nicole Butterfield. Second Row: John Timm, Troy Lipan, Jason Colaidis, Kelly Mason, Michael Hyde, Mike Pratt
Third Row: Brian Curfman, Ben Payne, Professor Ross Nord, Terry Fulton

Alumni News

According to Dr. Krish Rengan, Graduate Coordinator, a number of recent EMU chemistry Master's students are currently pursuing their doctoral studies: Hemamala Amunugama (Wayne State), Suneel Bandi (Case-Western), Sameera Desari (U of Kentucky), Leo Lucas (Purdue), Chandana Sumithrarachchi (Michigan State), and Karthik Venkatachalam (U of Kentucky). Harsha Jayatillake is a research assistant at Albert Einstein Medical School. All alumni are invited to visit the Alumni Net website to update their whereabouts and contact information: (http://www.emich.edu/public/chemistry/alumni/alumnihome.htm).

Undergraduate Honors Awards

Three students were awarded honors undergraduate fellowships this year. The award recipients, with their advisors' names listed in parentheses, are: Adam Gracon (Maria Milletti), Chris Knight (Maria Milletti) and Veronica Shivachi (Elizabeth Butch). In addition, three students received undergraduate honors senior thesis/project and symposium awards: Adam Gracon (Maria Milletti), Ronique Keane-Dawes (Steve Pernecky), and Chris Knight (Arthur Howard).

Honors and Awards

Each year the Department of Chemistry recognizes outstanding undergraduate and graduate students with awards and scholarships at the departmental banquet. Congratulations to the award winners and scholarship recipients for 2002.

Bert W. Peet Award	*Andrew J. Jones*
ACS Huron Valley Section Undergraduate Award	*Nicole M. Trease*
American Institute of Chemists Award	*Renae L. Beebe*
Maurice Decoster Chemistry Scholarship	*Christopher J. Knight* *Mace R. Mattieson*
Collins' Endowed Scholarship in Chemistry	*Elizabeth J. Blaney*
Sandra J. Lobbestael Scholarship	*Justin E. Bates*
Hypercube Scholar Award	*Nicole M. Trease*
Biochemistry Achievement Award	*Sarah A. O'Brien*
ACS Organic Chemistry Achievement Award	*Christopher J. Knight*
Wiley Inorganic Chemistry Award	*Andrew J. Jones*
ACS Division of Analytical Chemistry Award	*Carré A. Zalma*
John J. Contario Analytical Chemistry Award	*Carré A. Zalma*
CRC Press Freshman Chemistry Award	*Laura A. Kelly*
Perry S. Brundage Scholarship	*Ruth E. Huge* *Allison K. Jarosz* *Laura A. Kelly* *Brian M. Morford*
John M. Sullivan Memorial Research Award	*Troy B. Lipan*
Pfizer Toxicology Scholarship	*Reiko K. Peterson* *Shamelle D. Smith*
Huron Valley Service Award	*Laura A. Scroi*
EMU Chemistry Department Teaching Assistantship Award	*Visa Pawittranon*
EMU Chemistry Department Research Award	*Karthik Venkatachalam*
ACS Huron Valley Section EMU Outstanding Graduate Student Award	*C. Sumithrarachchi*
Ronald M. Scott Memorial Scholarship	*Shakila Tobwala*
Anton Brenner Scholarship	*Lakshman Caldera*
University Fellowship	*Sujith Chacko*
Graduate Meritorious Awards	*Babho Devadoss* *Sameer Kulkarni*

Undergraduate Symposium 2002

A number of chemistry students presented their research at EMU's Undergraduate Symposium XXII. Advisors are listed in parentheses.

Adebimpe A. Adetayo, Computer Applications for the Analysis of DNA Sequence Information. (Drs. Elizabeth R. Butch and Don Hicks of DNA Software, Inc)

Oluwaseun A. Adetayo, Computational Estimates of Temperature Dependence in DNA Duplex Formation.
(Drs. Elizabeth R. Butch and Don Hicks of DNA Software, Inc)

Elizabeth Blaney, Synthesis and Kinetic Analysis of Minimal Sequence Peptide Inhibitors for α-Amylase. (Dr. Deborah Heyl-Clegg)

Adam Gracon, Computational Investigation of Structure-Activity Relationships between Antigens and Antibodies. (Drs. Maria C. Milletti and Steve Pernecky)

Michael J. Hyde, An Efficient Microwave-Induced Acid-Catalyzed Aldol Reaction. (Dr. Timothy Friebe)

Chinenye Iwuchukwu and Kathleen Brooks, Evaluation of Epidermal Growth Factor Receptor Inhibitors in Cells in Culture. (Drs. Elizabeth R. Butch and Scott E. Snyder of U of MI)

Andrew Jones and Renae Beebe, New Phthalocyanine Derivatives. (Dr. Vance Kennedy)

Christopher J. Knight, Microwave Synthesis and Investigation of Medium-Sized Ring Systems Containing Nitrogen Atoms. (Dr. Arthur S. Howard)

Buffey R. Linder and Connie J. Foster, Stability of Radiolabeled Dendritic Polymers. (Drs. Elizabeth R. Butch and Scott E. Snyder of U of MI)

Jacinda M. Lisi, Development of Radiotracers to Monitor Alzheimer's Disease. (Drs. Elizabeth R. Butch and Scott E. Snyder of U of MI)

Mace Mattieson, Acidity Constants of Fluorescein Compounds with Various Substituents. (Dr. Timothy R. Brewer)

Mike E. Pratt, Investigation of Intermolecular Interactions in Gas Chromatography. (Dr. Heather L. S. Holmes)

Carré A. Zalma, Mathematical Modeling of a Length-Tunable Tandem Ensemble. (Dr. Heather L.S. Holmes)

Dean Zdravkovski, An Investigation of Structural and Electronic Characteristics of a Boron Subphthalocyanine Complex and Its Silicon Analog. (Dr. Maria C. Milletti)

Graduate Research Fair, 2002

Five chemistry graduate students participated in the annual EMU Graduate Research Fair. Advisors are listed in parenthesis.

Dammika Nandanie Amugoda, Synthesis and Kinetic Assay of an α-Amylase Inhibitor. (Dr. Deborah Heyl-Clegg)

Suneel Bandi, Laser Surface Thermal Lensing (STL): A Novel Technique for Analysis of Thermo-Mechanical Properties of Polymer Thin Films. (Dr. Donald M. Snyder)

Fumi Ebisu, Biochemical Methods to Examine the Relationship Between Apoptotic Cell Death and Oxidative Destruction of the Lipid Bilayer in T Cells. (Dr. Steve Pernecky)

Chandana Sumithrarachchi, Measurement of Absolute Gamma Emission Probabilities. (Drs. Krish Rengan and Henry C. Griffin of U of MI)

Shakila Tobwala, Minimal Sequence Analogs of the α-Amylase Inhibitor Tendamistat: Design, Synthesis, and Kinetic Analysis. (Dr. Deborah Heyl-Clegg)

Other Graduate Student Accomplishments
(2002-2003)

Shakila Tobwala, a graduate student working with Dr. Heyl-Clegg, received first place honors in the Graduate Dean's Award for Research Excellence.

Babho Davadoss, a graduate student advised by Dr. Pernecky, won financial support through the Graduate School Research Support Fund for his research on the mechanisms of T cell death induced by calcium ionophore.

Fumi Ebisu, also a graduate student with Dr. Pernecky, received a Research Assistantship through the Research Excellence Fund grant with Dr. Stephen McGregor in the College of Education

Faculty News

Publications

Several papers were published in peer-reviewed journals by EMU faculty in 2002-2003. The names of EMU student co-authors are underlined.

Rapid Synthesis of Substituted 5-Phenyl-1,3-dioxolan-4-ones under Microwave-induced Solvent-free Conditions Ferrett, Rochelle R.; Hyde, Michael J.; Lahti, Kimberly A.; Friebe, Timothy L. *Tetrahedron Letters*, **2003**, *44*, 2573-2576.

Microwave-Induced Synthesis of a cis/trans Mixture of 2-Butyl-5-phenyl-1,3-dioxolan-4-ones and Their Stereochemical Determination Using NOESY 2-D NMR Spectroscopy Friebe, Timothy L. *The Chemical Educator*, **2003**, *8*, 1-4.

Ab Initio Investigation of the Synthesis of (3-(2,3,4,5-Tetramethylcyclopentadienyl)propoxy)titanium Dichloride Sonnenberg, J. L.; Milletti, M. C. *Polyhedron*, **2002**, *21*, 2699–2704.

Presentations

A number of EMU students and faculty gave presentations during the past year:

Tim Friebe's students gave poster presentations at two meetings:

An Efficient Microwave-Induced Acid-Catalyzed Aldol Reaction, Hyde, M.J., Friebe, T.L., 34th Central Regional Meeting of the American Chemical Society, EMU, June 2002.

An Efficient Microwave-Induced Acid-Catalyzed Aldol Reaction, Hyde, M.J., Lipan, T., Friebe, T.L., 58th American Chemical Society Fall Scientific Meeting, Midland, Michigan, October 2002.

Debbie Heyl-Clegg gave invited seminars at both Michigan State and Ohio Universities. The title of her presentation was "The minimalization approach applied to the development of a peptide enzyme inhibitor: An overview of the synthesis and characterization of a series of Tendamistat-based analogs."

In addition, she and her students presented a poster at the ACS regional meeting at EMU:

Minimal Sequence Analogs of Tendamistat: Design, Synthesis and Kinetic Analysis, Tobwala, S.; Nandanie, D.; Lucas, L. S.; Blaney, E.; Palamaa, H.; Jarosz, C.; Gillespie, M.; Heyl, D., 34th Central Regional Meeting of the American Chemical Society, EMU, June 2002.

Maria Milletti's student also presented research at the ACS regional meeting:

An Investigation of the Structure of a Series of PCB's Using *Ab Initio* Molecular Orbital Calculations, Zalma, C.; Milletti, M.C., 34th Central Regional Meeting of the American Chemical Society, EMU, June 2002.

Steve Pernecky gave invited seminars at both the Wayne State University Institute for Toxicology and at the University of Michigan Veteran's Administration. The title of his presentation was "Reactive oxygen species and lipid oxidation in the life, death, and proliferation of a T cell."

His research group also gave two poster presentations this past year on work done in collaboration with **Heather Holmes**:

Evaluation of Oxidative Processes in T Lymphocyte Hybridoma Proliferation and Cell Death with Cytochrome P450 Inhibitors and with Measurement of Volatile Compounds by High-Speed, Capillary GC/TOFMS, Pernecky, S.J.; Ebisu, F.; Venkatachalam, K.; Bhaskara, V.; Jayatillake, H.; Holmes, H., Annual Meeting of the Society of Toxicology, February 2002.

Headspace Trapping and Solid Phase Extraction Prior to Rapid GC/TOFMS Analysis of Aldehydes Produced from Lipid Peroxidation, Pernecky, S.; Venkatachalam, K.; Jayatillake, H.; Amunugama, H.; Ebisu, F.; Holmes, H., 34th Central Regional Meeting of the American Chemical Society, EMU, June,2002.

Bert Ramsay, Emeritus Professor, presented a talk on "Developing Students' Chemistry Calculation Skills with the Hand-held (Palm OS)

Chemical Calculator" at the 17th International Conference on Chemical Education held in Beijing, China, August 6-10, 2002. He also presented a poster at that meeting: "Teaching and Learning of Structural Organic Chemistry with Nomenclature/Structure Software."

Don Snyder presented a paper titled "Laser-modified surface reflectivity of transparent polymers: Correlations with thermomechanical properties" at the 34th Central Regional Meeting of the American Chemical Society, EMU, June 2002.

More Faculty News

Steve Brewer and his wife, **Ruby**, traveled extensively again this year. First they visited Aztec and Mayan ruins in southern Mexico, and then traveled to Costa Rica where they spent a lot of time in rainforests, doing whitewater rafting, and sliding from tree to tree suspended from steel cables. While in Costa Rica, Steve learned to imitate the call of the howler monkey, which he will perform upon request. After Costa Rica, Steve and Ruby traveled Belgium, the Netherlands, and then took a riverboat down the Rhine, Main, and Danube rivers. They concluded their trip in Turkey, visiting Istanbul, Cappodocia, and Ephesus, as well as embarking on a cruise on a wooden yacht that traveled the southern Turkish coast.

Harriet Lindsay received a Provost's New Faculty Award and a Spring-Summer Fellowship to study the synthesis of natural and unnatural nitrogen-containing sugar mimics.

Steve Pernecky served as co-investigator on Research Excellence Fund proposal with Stephen McGregor in the College of Education and George Liepa in the College of Health and Human Services to do nutraceutical research. The grant, which was funded in Summer, 2002, has been used to purchase a Thermo-Finnigan liquid chromatograph coupled to an ion trap mass spectrometer.

Dr. Pernecky also completed a sabbatical leave during Winter 2002 in which he studied characterization of oxidation products of low density lipoproteins, partly in collaboration with Dr. Yoichi Osawa at the University of Michigan Pharmacology Department.

Steve's wife, **Sandy**, has gone back to graduate school to obtain her Master's Degree in Human Nutrition in the College of Health and Human Services. Remarkably, she is doing this while managing a 4- and a 6-year old at home.

Don Snyder traveled to the National Science Foundation offices in Washington D.C. during the fall semester to serve on two NSF Phase I SBIR/STTR Peer Review Panels.

In addition, **Dr. Snyder** made two industrial consulting visits to the Corporate Innovation Center, Armstrong World Industries, Inc., Lancaster, PA, as a member of the Critical Mass Technical Consulting Group for the Floor Products Division. At the first meeting, he presented a paper titled "Laser photothermal techniques for analysis of material properties." In conjunction with a company-sponsored research grant, during the second visit he and graduate student **Naveen Raju** toured the Lancaster Floor Plant, Armstrong's single largest facility for the production of residential and commercial resilient sheet flooring and floor tile.

In collaboration with Armstrong World Industries, **Dr. Snyder** and **Naveen Raju** have drafted a formal patent application on "Analysis of Optical Distortions in Laser Beams Reflected from Polymer Surfaces as a Method for Monitoring the Degree of Fusion of PVC Plastisol Films" and submitted it to the U.S. Patent Office. They are currently working with electrical engineers at Armstrong R & D to develop a prototype instrument based on the laser-sensor system for testing on an actual production line in a plant facility later this year.