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Department Homepage:

<http://www.gvsu.edu/chem/>

2004 Alumna-in-Residence

Our department's Alumna-in-Residence for 2004 was Dana Spence, Associate Professor in the Department of Chemistry at Wayne State University in Detroit, Michigan. Following graduation from GVSU in 1992 with a BS in chemistry, Dana Spence performed his graduate work at Michigan State University from 1992-1997. Dana became an Assistant Professor in the Department of Chemistry at St. Louis University. Dana spent seven years at St. Louis University before accepting his current position in 2004 as an Associate Professor in the Department of Chemistry at Wayne State University. Dana's current interests, funded by the National Institutes of Health, lie in the interface of analytical chemistry and physiology, specifically measurements involving erythrocytes. His research group combines knowledge of spectroscopy, electrochemistry and microfluidics with other such areas as cell physiology, cell culturing and biomaterials to create biomimics of *in vivo* environments and processes relating to hypertension, multiple sclerosis, and diabetes.



A Word from the Chair

As I begin my second year as Chair of the Chemistry Department, I can look back to last year and be proud of the many accomplishments of our faculty, students and staff, as well as look forward to an upcoming year full of change and exciting possibilities. We are especially proud of the many awards earned by our faculty. Be sure to read the articles in this newsletter about the recognition of Laurie Witucki, Bob Smart, Steve Matchett, and Mary Karpen for their outstanding achievement in teaching and research.

I feel this is a period of transition for our department. Of our senior faculty, Gary Richmond, Dave Tanis, and John Gracki are now on phased retirement, working half time for a few years until they fully retire. Linda Roberts and Karl Essenburg have also announced that they plan on retiring after this semester. Linda and Karl have worked as adjunct instructors for many years and despite the "temporary" nature of their positions, each has taught more students than most of our regular full time faculty. We also have a record number of faculty who are away on sabbatical this year (Steve Matchett, George McBane, John Bender, and Dave Leonard). In order to make up for all these departures, we have had to bring in a lot of new faces.

GVSU Chemistry Department Letter

Editor

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Department Members

Sandi Bacon
Ed Baum
John Bender
Todd Carlson
Karl Essenburg
Virginia Goode
John Gracki
Mathew Hart
Julie Henderleiter
Deborah Herrington
Mary Karpen
Dalila Kovacs
Jim Krikke
Jérôme Lavis
Christopher Lawrence
Dave Leonard
Beth Maschewske
Karen Matchett
Stephen Matchett
George McBane
Blair Miller
Felix Ngassa
Harvey Nikkel
Aaron Perry
Min Qi
Montserrat Rabago-Smith
Kent Renkema
Gary Richmond
Sheila Ryan
Stephanie Schaertel
Ellen Siu
Robert Smart
Sherril Soman
Linda Stevens
William Stier
Dave Tanis
Janet VanRhee
Brad Wallar
Randy Winchester
Laurie Witucki
Ellen Yeziarski

A Word from the Chair

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We welcome Matt Hart as our newest tenure track faculty. Also this year we have hired an unusually large group of new visiting faculty (Jerome Lavis, Montserrat Rabago-Smith, Karen Matchett, and Bill Stier). This brings to a total of 13 the number of faculty (tenure track and visiting) who have joined us in just the last three years. As always we are still looking for more. This year we hope to interview for a new analytical chemist and biochemist. If you know of any qualified and interested candidates, please send them to our web site for more information.

Also new this year is our Department's most significant foray into graduate studies to date. Last year, Deb Herrington and Ellen Yeziarski put together a new Chemistry Concentration for the Masters of Education Program. This program is designed for secondary education teachers with chemistry degrees who want to enhance their chemistry knowledge and teaching ability. These students will spend a summer working on an independent research project in the lab of one of our Chemistry faculty. Then they will take graduate-level chemistry education courses to learn how to translate this real-life research experience into learning opportunities for their own High School students. Deb and Ellen have obtained a major grant for the Camille and Henry Dreyfus Foundation to help implement the program.

Finally, I would like to thank Felix Ngassa for taking over as our Department Newsletter editor this year. He will strive to keep you up to date on all the newsworthy events of our Department.

Todd A Carlson
Chair, Department of Chemistry

Chemistry Faculty Receive Teaching and Research Awards

The chemistry faculty continues a tradition of excellence in teaching and research as evidenced by various teaching and research awards received during the 2004-2005 school year. **Laurie Witucki** (Assistant Professor) received the "Outstanding Teacher Award" for 2004-2005. **Steve Matchett** (Professor) received the "Pew Teaching Excellence Award" for 2005. **Mary Karpen** (Associate Professor) received the "Pew Teaching with Technology Excellence Award" for 2005. **Robert Smart** (Associate Professor) received one of the "Governor's University Awards for Commercialization Excellence" for 2005.

Chemistry Club is Back in Action!

The GVSU Chem Club started the year off with an organizational meeting followed by a Student vs. Faculty softball game. A rainy morning threatened to force us inside for a 3rd year in a row; however, the afternoon brought sun and just the right temperature for softball.

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Department chair in action!



Todd at the softball game



Students at the game



Gary & Randy at the game



Bob, Brad, Debbie & Randy



Student using the NMR

Chemistry Club

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As you can see from the smiling faces, fun was had by all. The Chem Club also had a game night on Sept. 27th, and participated in activities for Super Science Saturday on Oct. 29th. Exam help sessions and social events are planned throughout the year.



Faculty and students posed for photograph at the softball game

Update on Chemistry Department Instrumentation

Several new additions were made to the Chemistry Department's list of instrumentation. A new autosampler has been installed on the Thermo Focus/DSQ GC/MS. This addition should simplify the use of the instrument as well as allow classes to queue up a rack of samples to be run on "off-hours" so that the results may be examined later. A new polarimeter was also purchased and installed. This unit is very portable and can be moved from lab to lab for teaching purposes. An ATR (attenuated total reflectance) accessory was installed on the New Perkin Elmer FTIR.



Visiting Faculty



Jérôme Lavis, teaches CHM 102 & 115



Montserrat Rabago-Smith, teaches CHM 232 & 241 Lab



William Stier, teaches CHM 109

New Faculty 2005-2006

Matthew Hart has joined our faculty as an Assistant Professor of Organic Chemistry. A native of Michigan, Matthew was raised in South Lyon. He attended Eastern Michigan University for several years before graduating with honors from Michigan State University with a degree in chemistry in 1995. Matthew attended the University of California Irvine for graduate school, obtaining his Ph.D. in 2001 working under the guidance of Professor Chamberlin in the area of Biological Organic Chemistry. For the past four years, Matthew has held several positions including an NIH Postdoctoral Fellowship at the University of California in San Francisco, and a Postdoctoral Teaching Fellowship jointly through UCSF and San Francisco State University. Matthew is teaching introductory organic chemistry lecture and labs this semester. His research interests include utilizing organic chemistry to study receptor activation as it pertains to thyroid hormone and estrogen signaling pathways.



In addition to the tenure track position, our department also has four new Visiting Assistant Professors joining us this fall. **Jérôme Lavis** received his Ph.D. in Organic Chemistry from Michigan State University. He is currently teaching CHM 102 and CHM 115. **Karen Matchett** has been with us for many years as an adjunct instructor. She received a Visiting Assistant Professor status this fall and is teaching CHM 115. **Montserrat Rabago-Smith** is an ABD from Michigan State University and teaches CHM 232 lecture and labs as well as some sections of CHM 241 laboratory. **William Stier** has a Ph.D. in Physical Chemistry from the University of Washington, Seattle. He is currently teaching CHM 109.

Three Department Members on Sabbatical Fall 2005

John Bender is currently on sabbatical at the University of Notre Dame, working in the group of Kenneth Henderson. He is working on a project on the structural characterization of Group II organometallics.

Dave Leonard is currently on sabbatical at Case Western Reserve University in Cleveland, Ohio. He is doing research on β -lactamases.

George McBane is spending the second half of 2005 on sabbatical leave in Goettingen, Germany, at the Max Planck Institute for Dynamics and Self-Organization. He is working in the group of Dr. Reinhard Schinke, doing computational studies on reactions of small molecules. He will return to GVSU for winter semester 2006.

Winter 2004 Graduates

Andrea Behrens
Paul Cook*
Jaime Curtis
Jessica DeMeuse
John Frazine
Erick Johnson
Angela Karst
Dana Klope
Dan Kroll
Tanya Leeuw**
Steven Mouch
Andrea Rice
Jeffrey Schrag
Brian Vu

Summer 2004 Graduates

Charles Bliss
Kelly Engelman
Jaime Halm
Ajdin Kavara
Patrick Kiessel
Michael Stephenson

Fall 2004 Graduates

Justin Bach
Steven Kolb
Rebecca Knaggs

Winter 2005 Graduates

Douglas Feenstra
Kimberly Gardiner
Erin Harris
Ryan Hoekstra**
Caryn Lehner
Kathryn Morstadt
Jodie Novotny
Jonathan Osborn
Randy Roundhouse
Lauren Sanford*
John Schwartz
Chad Stoike***
Danielle Wheeler
Lindsey Wing

* Outstanding Senior Award

**American Institute
of Chemistry Award

***Chem. Education Award

New Chemistry Concentration Launches in January 2006

The Chemistry Department is pleased to offer a new and innovative concentration area for the existing Master of Education degree (middle/high school emphasis). This concentration, known as *Target Inquiry (TI)*, is designed for high school chemistry teachers with an undergraduate chemistry major (or the equivalent) who wish to earn a Masters of Education (middle/high school emphasis) or complete the certificate program consisting of seven new graduate chemistry education courses.

Designed to improve the frequency and quality of inquiry instruction in high school chemistry, TI coursework is structured around three key experiences: 1) Engaging in scientific inquiry through an authentic chemistry laboratory research experience; 2) Integrating this research experience into the classroom through the design and implementation of inquiry-based curriculum; and (3) Evaluating the new curriculum and student outcomes through action research.

A generous award from the Camille and Henry Dreyfus Foundation Special Grant Program in the Chemical Sciences will provide summer stipends, travel funds, and school awards for teachers who begin the concentration in winter 2006 and complete the courses in three years. More information about TI can be found by visiting the web site at <http://www.gvsu.edu/chem/concentration> or contacting chemistry faculty Deborah Herrington or Ellen Yeziarski.

Department Faculty News

Julie Henderleiter earned tenure last year and was promoted to associate professor. She and her husband had a son, Luke, on April 23.

Blair Miller was promoted to full professor. He also continues to handle some of the departmental administrative duties as Assistant Chair.

Robert Smart received the Governor's University Award for Commercialization Excellence, June 15, 2005. He was also interviewed by Wood TV-8 on July 13, 2005 in regards to NASA's continuing problems with the Space Shuttle's Exterior Tanks. The interview aired that evening.

Dave Tanis has begun a four year planned phased retirement from teaching. He plans on teaching a full load during the next four winter semesters. He is enjoying this fall semester traveling and playing as much golf as he can before the snow flies.

Departmental Research Update

Debbie Herrington and Ellen Yeziarski are continuing their research this fall on Target Inquiry. Brittlund Winters is working with Debbie Herrington and Ellen Yeziarski this fall, evaluating Target Inquiry, the new Chemistry concentration for the M.Ed. degree. Brittlund will use a statistical software package (SPSS) to organize and analyze quantitative test data involving over 1000 high school students.

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Laurie & student helpers at Science Olympiad 2005



Research students at work



Julie & Stephanie at Science Olympiad 2005



Aaron Perry, Lab. Supervisor

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She will also conduct classroom observations of more than a dozen teachers using the Reformed Teaching Observation Protocol, an instrument typically used by chemistry education graduate students and faculty.

Dalila Kovacs conducted research with three students this summer: Katie Cornish (Transfer hydrogenation in aqueous media), Cynthia Luxford (Heterogeneous hydrogenation of cyclic diols) Jesse Lutz (Modeling metal cluster interaction with small molecules)

Jim Krikke was a busy man this summer. In addition to instrument work, Jim Krikke also spent much of the summer doing research in conjunction with Karel Rogers of Biology.

Min Qi is continuing her research project "Behavioral and Kinetic Studies of Non-planner PCB-52 and 153 Injected Goldfish". Two research students Adam Westsa and Anna Smitterberg have been working with her since the summer of 2005. Part of their work was presented at the 8th Kinetics and Luminescence Conference, July 2005, Beijing China. Students will finish all the fish injections and analysis in the fall semester of 2005.

Christopher Lawrence worked with two students this summer. Aranda Slabbekorn received an S3 grant to work on a project entitled "Combined Molecular Mechanics/Electronic Structure Examination of the Ultrafast Vibrational Spectroscopy of Carbonmonoxymyoglobin". Nathan Siladke worked on a project entitled "Water Evaporation from Tropospheric Aerosols" which was funded by the Michigan Space Grant Consortium.

Steve Matchett and his research student J.D. Bouwman received a summer research grant from the S3 program at GVSU. This project, entitled "Form follows function, the relationship between metal olefin bond asymmetry and reactivity", is part of an on-going research avenue in the Matchett group. The project involves using NMR kinetics to compare the relative reactivities of a series of asymmetry metal olefin complexes.

Felix Ngassa worked with chemistry major Kyle DeKorver on a Funded Grant-in-Aid Project titled, "Novel Synthesis of N-Aryl-Modified 2'-Deoxynucleosides: Investigation of Ortho-Substituted Aryl Bromides as Aromatic Substrates". He also worked with 2 undergraduates for CHM 499, Theothora Melistas and Timothy Jelinger, doing projects in the area of modified nucleosides.

Stephanie Schaertel worked with two students on a project entitled: "Development of technologies for monitoring isotope ratios in environmental samples via laser-based vibrational spectroscopy". One student (Andrew Berke) was funded by an S3 grant. The other student (Jerry Fluellen) was funded by a McNair Fellowship.

Robert Smart worked with two students this summer, Lauren Sanford (recent Chemistry graduate) and Tony Schultz, on projects involving Polyimide and PBO Chemistries.

Sherril Soman worked with chemistry major, Brittlund Winters on a project for using the lab practical data to assess the changes in the CHM 115 and CHM 116 lab experience. The project was supported by a Pew Scholar Award from GVSU's Pew Faculty Teaching and Learning Center.

Brad Wallar worked with three students this summer: Brittany Stropich (S3 student) worked on the project "Protein interactions in Diaphanous-related Formins: defining specific biochemical interactions involved in the regulation of important cellular processes".

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Super Science Saturday



Computer simulation using molecular "virtual reality"



Participants at the "slimy science" event



Participants at the "slimy science" event



Dalila Kovacs explaining the concept of mirror image



Some participants at the "Thing-a-ma-bobs" event.

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The Wallar group is currently submitting a paper to the *Journal of Biological Chemistry* on this work. Derek Bergsma and Sara Bakker (CHM 499 students) also worked on independent projects that used site-directed mutagenesis to examine the role of specific amino acid residues in intramolecular protein interactions.

Randy Winchester has an active research program; Emily Blamer worked with him this summer continuing research into the synthesis of chiral silanes. Emily's work was supported by a Student Summer Scholarship and is being continued into the school year with Mike Kuspzit returning. Amy Buth began work on a new project this summer that will investigate platinum complexes of strained allenes as potential antitumor agents. Randy was also busy this summer with the upgrade of the operating system on the department's 300MHz NMR to the latest operating system from JEOL.

Laurie Witucki worked with two Chemistry majors this summer, Beth Girnys and Rebecca Quardokus, on projects in the area Protein Kinase Studies. She also mentored a McNair Scholar, Derrick Kroodsmas, on a project titled "Solid Phase Peptide Synthesis (SPPS): Analysis and Identification of Protein Kinase Substrates".

Alumni Notes

Brian Nolan, a 1996 graduate, obtained his Ph.D. in 2004 in Neuroscience at The University of Iowa and has accepted a position as Visiting Assistant Professor in the Psychology Department at St. Lawrence University Canton, NY.

Brian Wysocki, a 2003 graduate and an advisee of Dave Tanis, has moved to a new school outside the city in Baltimore County at Parkville High School.

Super Science Saturday

The Chemistry Department participated in this year's Super Science Saturday activities held at the Allendale campus on October 29, 2005 (*see photographs on the left*). The activities and presentations this year were part of World Year of Physics 2005. The theme this year was, "Celebrating Phenomenal Physics". Some of the activities presented by chemistry faculty included: "Molecular architect" by Mary Karpen, Chris Lawrence, and Stephanie Schaertel; "Investigate the chemistry and physics of slime and other gooey substances" by Deborah Herrington, and Ellen Yeziarski; "What if? Living in the mirror image land!" by Dalila Kovacs; "Thing-a-ma-bobs and widgets" by Gary Richmond.

Student Scholarship Day 2005

The Chemistry Department was well represented at the 10th Annual Student Scholarship Day in April 2005. The full-day event showcased the research and scholarship done by approximately 400 GVSU students. More than a dozen Chemistry students presented their research results in either oral or poster form.

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The following students represented the Chemistry Department for Student Scholarship Day 2005:

Aranda Slabbekoorn. "Molecular dynamics of carbonmonoxymyoglobin". Sponsor: Chris Lawrence

Theo Melistas. "New exploration of the catalyst, ligand, and base effect in the palladium catalyzed synthesis of N^6 -substituted 2'-deoxyadenosine Adducts". Sponsor: Felix Ngassa

Gillian Kupakuwana. "Modeling the conformational preference of peptide helices held by flexible amino acid linkers". Sponsor: Felix Ngassa

Anna Smitterberg. "Determination of chloride and phosphate in water using Ion-Chromatography". Sponsor: Min Qi

Andrew Berke & Jerry Fluellen. "Diode-laser-based method for measuring isotope ratios in environmental samples". Sponsors: Stephanie Schaertel & George McBane

Jessica Schoenherr. "Probing the protein interactions involved in the regulation of the Diaphanous-related Formins". Sponsor: Brad Wallar

Cynthia Luxford. "Biorefinery vs. petroleum refinery". Sponsor: Dalila Kovacs

Cynthia Luxford. "Cyclohexanediols reactivity on palladium catalyst". Sponsor: Dalila Kovacs

Grant Bailey. "Study of C-C and C-O bond cleavage in alcohols". Sponsor: Dalila Kovacs

Michael Schmuker. "How do organic molecules interact with metal catalysts?" Sponsor: Dalila Kovacs

Sarah Cosens & Doug Barth. "Kinetic parameters of an OXA-1 beta lactamase mutant". Sponsor: Dave Leonard

Emily Blamer. "Asymmetric synthesis of chiral silanes". Sponsor: Randy Winchester

Mike Kuszpit. "Asymmetric synthesis of chiral silanes". Sponsor: Randy Winchester

Lauren Sanford. "FAK Tyrosine kinase peptide substrate determination". Sponsor: Laurie Witucki

Elizabeth Girnys. "Peptide synthesis and kinase substrate analysis". Sponsor: Laurie Witucki

John Schwartz. "Structural analysis of a RNA hairpin loop using molecular dynamics simulations". Sponsor: Mary Karpen

Brian Smith. "Synthesis of new benzotrifluoride divalent polymers". Sponsor: John Bender

Brooke Marris. "An examination of performance on final grade chemistry students". Sponsors: Julie Henderleiter & Soon Hong

Please Update Us on News About You!

Name _____ Date: _____

Address _____ Graduation Year: _____

Please return by US Mail or send by e-mail to ngassaf@gvsu.edu . Thanks!