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OSU Chemistry Newsletter

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Subramanian Joins Our Ranks

Dr. Munirpallam (Mas) Subramanian, a native of India, earned his PhD (1982) in Solid State Chemistry (pyrochlore oxides) from the Materials Science Research Center, Indian Institute of Technology, in Madras, India after receiving his BS and MS degrees in chemistry from the University of Madras, India. After the completion of his PhD, he joined the Department of Chemistry at Texas A&M University as a post-doctoral fellow working on superionic conductors for solid-state batteries.

In 1985, Subramanian joined DuPont's Central Research and Development Department as a Staff Scientist and has subsequently held many research positions, including a promotion to a Research Fellow, in recognition of his outstanding contributions to science and technology. During his prolific career, he has authored or coauthored more than 225 publications, including nine articles in *Science* and four in *Nature*, and been named as inventor or co-inventor in 53 US patent applications, 42 of which have already issued. Since



1996, Subramanian has been an active member at the Institut de Chimie de la Matière Condensée de Bordeaux (ICMCB), University of Bordeaux, France as a visiting professor. The breakthrough of the "Direct Synthesis of Fluorobenzene from Benzene using Inorganic Fluorides" by Subramanian and a colleague was selected as one of the notable discoveries of 2002 in *Chemical and Engineering News*. In 2004, Subramanian was the recipient of the DuPont Charles Pedersen Medal (named after DuPont's Nobel Prize winner), a prestigious award given for outstanding scientific, technological and business contributions to the company. He is currently an editor for the journals *Solid State Sciences*,

Progress in Solid State Chemistry, and *Materials Research Bulletin* and served previously on the Editorial Advisory Board of *Journal of Materials Chemistry* and *Chemistry of Materials*.

Subramanian joined the Department of Chemistry as the Milton Harris Professor of Materials Science and the first Signature Faculty Fellow in the Oregon Nanoscience and Microtechnologies Institute (ONAMI), a collaborative effort of OSU, other Oregon universities, agencies and private industry. His presence in our Department as an internationally recognized expert will contribute greatly to Oregon's reputations as one of the best places to study materials chemistry. "Dr. Subramanian recognized the quality, opportunities and excitement surrounding the materials research and educational programs at OSU," said Douglas Keszler, former chair of the Chemistry Department. "We believe his enormous scientific talents and high-energy, visionary leadership will accelerate very powerful ONAMI collaborations for the benefit of all Oregonians." His research interest is primarily focused on designing new inorganic solid state materials using both rational design and an understanding of crystal structure/property relationships for emerging applications with super-

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From the Chair....

Dear Friends:

Thanks for taking some time to hear about the Department. This is a time of transition, for me in particular, but also for my colleagues. I took over as Chair in late June, and have been pleased to rediscover a lot of the skill and professionalism I knew we had as I have started to "learn the ropes." One of my goals is to continue the connections my predecessors have made with you, and where possible strengthen them.

You will see some of our transitions as you read through these pages. One very significant change is the hiring of Mas Subramanian into the Milton Harris Chair for Materials Chemistry. Mas follows closely in the tradition set by Art Sleight; he, too, is coming from DuPont Central Research. Mas has a distinguished record, being a regular contributor to *Science*, *Nature* and a number of materials journals. He is collaborating closely with Oregon's premier center for micro- and nanotechnology, ONAMI, and is spearheading the rejuvenation of the OSU Materials Science Center. You will read more about Mas' program on page 1. I think Art's and Mas' contributions to Chemistry highlight the strong and enduring impact Milton Harris has left for us.

Doug Keszler is returning to "civilian" life after three years as Chair. He has my personal thanks for leaving the Department in strong shape as a result of his leadership, and I am looking forward to his continued contributions through his strong research program, excellent teaching and his collaborative interactions on and off campus.

Doug Barofsky moved to emeritus status in May, but is maintaining an active research group in the mass spectrometry facility. We have unfortunately said good-bye to David Horne, who moved to the City of Hope medical school in Los Angeles.

We celebrated Joe Nibler's long contribution to the Department in August with a day-long symposium and evening reception. Many of you were able to come for one or both; it was a pleasure for me to renew old friendships and to meet many of Joe's early students. The event for me was a poignant lesson in how we affect our students lives in positive ways.

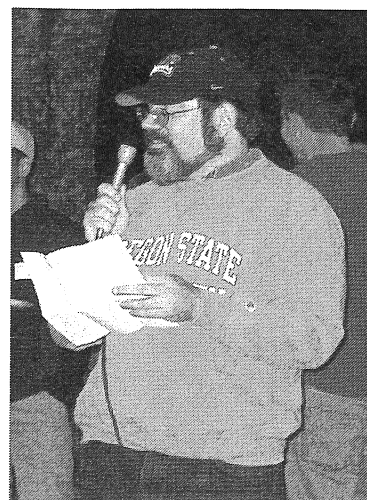
2005-2006 was a signature year with respect to the undergraduate program. We had not only the largest number of undergraduate degrees ever from the Department, but also the largest number of ACS-certified graduates. This tells me a lot

about the success of our curriculum revision several years ago. We are being very successful not only in attracting students to the major, but in doing so we are also inspiring many of those new students to engage in the most challenging curriculum we offer. Placement rates into permanent jobs and graduate study continue to be extraordinarily high, confirming for me the value we impart to our students' skill sets.

As I look forward, there are major opportunities I hope to capture. A priority will be faculty hiring; I have been pleased to receive Administration support for regular recruiting and hiring of tenure-track faculty in the coming years. This will have a strong impact on Chemistry at OSU. We will be bringing in new cutting-edge research; this will allow us to increase the graduate program (already one of the largest at OSU) and attract the best students regionally, nationally and internationally. Expansion of the faculty will also reduce pressures in the instructional arena, where a shrinking faculty has forced us to restrict course offerings (a particular problem when the number of majors is expanding!).

I hope that through this period of change, you will maintain your connection to the Department. We are interested in learning where your life has taken you, and in sharing that through the newsletter. Send us your stories! You can keep up with the life of the Department through the year by periodically checking the Web site (<http://www.chemistry.oregonstate.edu>) for news and the seminar schedule. You are always welcome to come by.

Kevin



Department News

Douglas Keszler was selected as a "Distinguished Professor", the highest honor given to outstanding faculty who have achieved national or international stature as a result of their research, scholarships, teaching or service. Keszler is a member of the leadership team for the Oregon Nanoscience and Microtechnologies Institute (ONAMI) and currently involved in the revitalization of the Materials Institute (OSUMI). Known for his contributions to research on the optical properties of new solid state materials and the development of nanotechnology initiatives, Keszler's research brings in about \$1 million annually and has led to the establishment of two new companies in Corvallis. This spring, collaborative research with **John Wager** (Professor of Electrical Engineering) and **Janet Tate** (Professor of Physics) yielded a new class of materials used to create safe, inexpensive, and transparent electronic circuits. The exclusive rights to develop and market products based on this technology have been licensed to Hewlett Packard.

James D. White was awarded the *2006 Outstanding Scientist Award* by the Oregon Academy of Science (OAS) in February for his outstanding work in the area of organic synthesis.

The Department had a few promotions this year - **Douglas Barofsky** was promoted to emeritus, **Michael Lerner** was promoted to Professor, and **Staci Simonich** was promoted to Associate Professor with indefinite tenure. Staci welcomed a new addition to her family - a lovely Korean baby girl.

Douglas Barofsky was bestowed an honorary Doctor of Philosophy by the Faculty of Science and Technology at Uppsala University in Sweden. He will travel to Sweden in January for the ceremony.

Philip R. Watson, received the Frederick Horne Award for Excellence in Teaching Science.

Emile Firpo was awarded the Lloyd Carter Award for Outstanding and Inspirational Undergraduate Teaching at the 2005 College of Science award ceremony. In May 2006, Firpo was selected for the Top Professor designation by the OSU chapter of

Mortar Board Society. He was nominated by a former student. Firpo also won the Top Professor distinction in 2005.

Richard Nafshun was awarded a LL Stewart Grant to facilitate Learning Communities in a general chemistry sequence. Nafshun participated in the Learning Community Institute at Evergreen College and while there are many structures of Learning Communities, the participants ran a program in which small groups of students enrolled in a curricular structure that linked together several existing courses. This provided students with opportunities for deeper understanding and integration of the material and also facilitated interaction between students, between students and teachers, and between teachers.

Margie Haak has been given an additional title of General Chemistry Lab Coordinator as of September 1, 2006 with a 12 month appointment. As Outreach Coordinator, Haak has once again been very active in a variety of outreach activities. The Department was a major participant in ten Family Science and Engineering Nights where students and faculty present chemical demonstrations and oversee hands-on activities at local elementary schools. Haak and **Nafshun** were the presenters at several Family Math Nights for parents and children in grades K-2 and 3-5. The Department, along with colleagues from Chemical Engineering and Physics, hooked students on the physical sciences with numerous very cool (think liquid nitrogen and dry ice) demonstrations, hands-on activities, and experiments at Discovery Days. Discovery Days is a high-profile biannual event attended by over 4000 students and several hundred teachers and parents each year. The Department also hosted a number of school groups, from as far away as Woodburn and Medford, who came to tour the OSU campus and do chemistry experiments in our teaching labs. Chemistry Days were held at three local elementary schools. Haak instituted a Summer Science Camp for middle school students in collaboration with Saturday Academy with activities from many areas of science; this proved so popular that it will be expanded next summer.

Alan Richardson has taken a position as Instructor in the General Chemistry program.

Joey Carson was the first recipient of the new Gladys Valley Exemplary Administrative Support Award to recognize outstanding job performance and dedication at the 2005 College of Science award ceremony. Joey has worked for the Chemistry Department for 17 years and her importance to the Department is immeasurable as exemplified by her nominating letters.

Rich Carter's research group has had a series of important papers published recently. Earlier this year, he reported the synthesis of the entire northern portion of azaspiracid-1. This natural product has generated considerable interest as it is a potent toxin found in edible shellfish. No method currently exists to screen for the presence of this compound, and total synthesis remains the only effective method to provide material to develop an assay. Carter's group has played a critical role in assigning the correct stereochemistry for this complex molecule (containing 20 stereocenters and 9 rings). Recently, his lab also completed the total synthesis of the entire southern portion of azaspiracid. Both of these papers were published in *Angewandte Chemie*. This work is funded by a grant from the National Institute of Health. In addition, Carter's laboratory disclosed the synthesis of highly substituted phosphorus-containing biaryls via a novel Diels-Alder approach. This work, funded by the National Science Foundation, provides access to tetra-ortho-substituted biaryl compounds with complete orthogonal functionality. The compounds are important for the development of new metal catalysis and pharmaceutical targets. This work was also published in *Angewandte Chemie*.

Vince Remcho's group has had several high points this year including the acceptance of several book chapters: "Molecularly Imprinted Polymers as Sorbents for Separations and Extractions" (**Myra T. Koesdjojo, Yolanda H. Tennico & Vincent T. Remcho**) in *HPLC Method Development of Pharmaceuticals*, "Capillary Electrochromatography" (**Carlos F. Gonzalez, M. Koesdjojo & V. Remcho**) in *Principles and Practice of Capillary Electrophoresis*, and "Aptamers as Molecular Recognition Elements in Chromatographic Separations" (**Daniela Hutanu & V. Remcho**) in *Advances in Chromatography*. Remcho's group also

submitted the following papers to/in press at the *Journal of Chromatography*: "Development of a Semi-automated Procedure for the Synthesis and Screening of Large Groups of Molecularly Imprinted Polymers" (M. Koesdjojo, H. Rasmussen & V. Remcho) and "Imprinted Polymer Sorbents for Selective Extraction of the Active Pharmaceutical Ingredient in Pharmaceutical Formulations: Facilitating Impurity Profiling" (M. Koesdjojo, H. Rasmussen & V. Remcho). There is a paper in press for the cover article in the *Journal of Capillary Electrophoresis*: "Dielectrophoretic Sorting of Cells, Fine Particles, and Macromolecules in the Microchip Format" (C. Gonzalez & V. Remcho). Remcho gave an oral presentation at the 2006 American Institute of Chemical Engineers (AIChE) annual meeting: "Convergent Synthesis of Dendrimers Using a Continuous Flow Microreactor" (Shuhong Liu, C.-H. Chang, Brian K. Paul, V. Remcho, Bindiya Abhinkar). Remcho's group presented posters at the 30th International Symposium on High Performance Liquid Phase Separations and Related Techniques (HPLC2006) in June 2006: "In-situ Preparation of a Hybrid Stationary Phase for Chromatographic Applications" (D. Hutanu & V. Remcho); and "Development of a Semi-automated Procedure for the Synthesis and Screening of Large Groups of Molecularly Imprinted Polymers" (M. Koesdjojo, H. Rasmussen & V. Remcho).

A compound, synthesized in **Jim White's** lab by former graduate student **Kurt Sundermann** and postdoctoral associate (now Associate Professor) **Rich Carter** has been licensed to Kosan Bioscience in Palo Alto, California, as KOS-1584. The compound is a synthetic relative of the epothilone family of antitumor agents and successfully completed Phase I clinical trials this year. It will progress to Phase II trials in the near future where its effectiveness as a drug for treating certain cancers can be assessed in a larger group of patients. KOS-1584 has an effectiveness that surpasses taxol, the most widely prescribed drug for cancer treatment, and its clinical development is being watched closely in the pharmaceutical industry.

Graduate Student, **Annette Richard**, was the recipient of the 2006 Minority Pipeline fellowship for her exceptional promise as a leader. Her research is a collaborative project with Chemistry, Physics, Electrical Engineering, and Computer Science, focusing on measuring the electrical and optical properties of anisotropic p-type conductors.

Department News - continued from page 5

Heather A. S. Platt and **Peter Hersh** attended the 2005 U.S. Dept. of Energy NREL Solar Energy Technologies Program Review Meeting in Denver, CO in November. Hersh presented their collaborative project, "Novel Material Development for Thin Filmed Solar Cells".

Several students attended American Chemical Society (ACS) conferences this year, supported by the Christensen Fund. In attendance at the 61st Regional ACS Meeting in Reno, NV in June were: **Brad Ashburn** - "Synthesis and application of a Diels-Alder approach to 2, 2, 3-functionalized biaryl templates", **Damien Kuiper** - "Improved synthesis of C13 to C19 fragment of azaspiracid-1: Exploiting matched/mismatched relationships in Sharpless dihydroxylation on chiral oxazolidinone-containing alkenes", **Liang Lu** - "Synthetic studies toward the southern portion of Azaspiracid-1", **Michael Naffziger** - "Rapid synthesis and application of highly functionalized biphenyls via [4+2] cycloaddition", **Johanna Perkins** - "Synthesis and application of a Diels-Alder approach to 2',2', 3-functionalized biaryl templates", and **Lauren Rathbone** - "Synthetic efforts toward TMC-95: A Diels-Alder approach to the western portion". **Jeremy Anderson** presented, "Dense oxide films and laminates via low-temperature solution processing". He attended several presentations on nanostructure and organic materials, and physical studies of surfaces. Following his own presentation, he received questions from a variety of disciplines and the nature of the questions revealed that his new research was relevant to a broad audience.

In September, several students attended ACS National Meeting in San Francisco with the assistance of the Christensen Fund: **Luke Ackerman** - "PBTs in high places: Western U.S. national parks focusing on the accumulation of atmospherically deposited anthropogenic semi-volatile organic compounds in fish from high elevation ecosystems in U.S. National Parks", **Heath Giesbrecht** - "Assessing the efficacy of the modified Julia alkenation for the synthesis of alpha, beta-unsaturated lactones", **Carl Isaacson** - "Activated carbon solid phase extraction method developed for the analysis of 1,4-dioxane and tetrahydrofuran in ground water by GC-MS/MS", **Chad Teters** - "Transient Electric Birefringence and the Optical Kerr Effect in Aqueous Solutions of Carbon

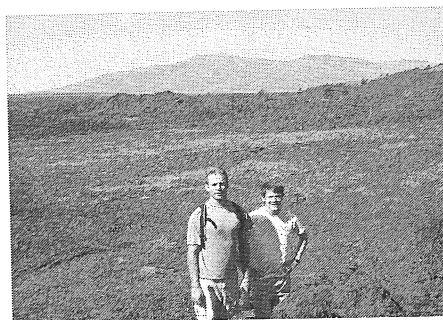
Nanotubes and Smectite Clay", and **Jie (Jessica) Zhang** - "ZEKE Spectroscopy of p-amino benzoic Acid by Laser Desorption". Other students that presented at the conference were **Toby Primbs** - "Trans-Pacific atmospheric transport of PBTs from Asia to the Pacific Northwest of the U.S.A. in Spring 2004" and **Xia (Sam) Zeng** - "Photochemical degradation of decabrominated diphenyl ether and GC-MS study of the products".

Several students attended the 54th American Society for Mass Spectrometry (ASMS) in May in Seattle: **Ben Bythell** - "Modeling the fragmentation of protonated AGG in a TOF/TOF mass spectrometer", **Juan Chavez** - "Protein targets of oxidative stress in cardiac mitochondria", **Hong Ji** - "Distinction of cis and trans isomers of monounsaturated fatty acid by FAB MS in negative ion mode", **Jing Wang** - "Development of a mass spectrometric approach for mitochondrial thio proteins", **Jianyong (Walter) Wu** - "Modification of Peptides by Lipid Peroxidation Products studied by MALDI-MS/MS using a TOF/TOF instrument", and **Ji Eun Yi** - "H/D Exchange MS Study of Peroxiredoxin".

Myra T. Koesdjojo received an ALZA Pharmaceuticals Summer Fellowship and Internship.

Jim Neeway and **Brent Matteson** received internships at Idaho National Laboratory this summer. Brent's research is related to the Yucca Mountain Repository and Jim worked on research for a project at OSU but needed the facilities and materials that a national lab could provide. Both received fellowships from the Office of Civilian Radioactive Waste Management and attended a meeting in Las

Vegas this September. Below is a picture of both students visiting the Craters of the Moon National Monument.



Jim attended the Fifth RIA Summer School on Exotic Beam Physics in July.

Rich Carter and his wife, Mary had their first son, Harrison. Graduate student, **Daniela Hutanu** and her husband, Alin had their first son, Marc Ovidiu.

Honors and Awards

College of Science

Undergraduate Scholarships for 2006/2007

Peter C. Culter Memorial Scholarship
Katherine Fordyce Jeff Wong

Carroll DeKock Scholarship
Addison Rutter Eric Titus

Colleen Spurgeon Scholarship
Ian Elliott

Linda May Oleson Chemistry Scholarship
Ian Elliott

Milton Harris
Grant Farr

Hach Scientific Foundation Scholarship
Education - Ryan M. Kanter
David F. Crawford
Chemistry - Marcus A. Chiodo
Maryam Moussaoui

Andy Aitkenhead Memorial Scholarship
Jeff Wong

Chemistry Department Awards, Sept. 2005

'04/'05 Employee of the Year Award
Linda Adams

'04/'05 Milton Harris Teacher of the Year Award
Margie Haak John Loeser

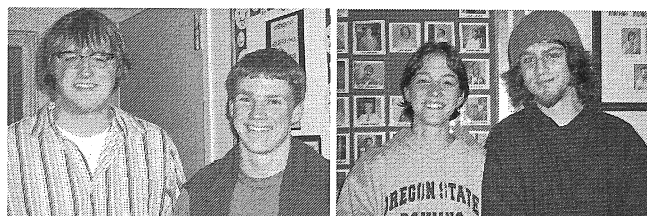
'04/'05 Harris Graduate Teaching Assistant Award
Johanna Perkins Gretchen Clark-Scannell

Chemistry Department Awards, June 2006

William J. Ingram Memorial Fellowship
Hasini Perera

Courtney & Dorothy Benedict Fellowship
Kai Jiang

Fall 2005 Laboratory TA Awards
David Crawford Eddie Lee
Lauren Rathbone



Eric Titus and Colin Shear

Katherine Fordyce and
Paul Heflinger

Winter 2006 Laboratory TA Awards
Robynne Kirkpatrick Corey Koch
Gang Wang

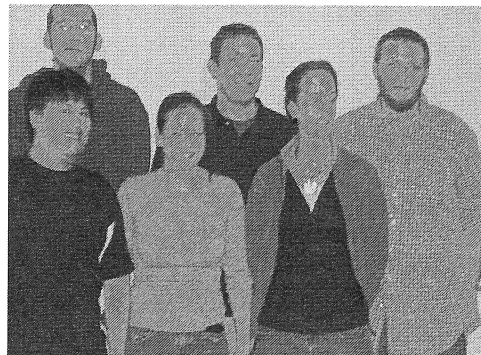
Spring 2006 Laboratory TA Awards
Heath Giesbrecht Somnath Jana
James Neeway

Shirley Kuse Fellowship
Sheena Strohmeyer

Bend Research Fellowship - Summer 2006
Erik Carlson

Molecular Probes Fellowship - Summer 2006
Erik Carlson

N.L. Tartar Summer Research Fellowships
Bradley O. Ashburn Heath Giesbrecht
Jeremey Gunderson Dana Hutanu
Damien Kuiper Johanna Perkins
Lauren Rathbone Keith D. Schwartz
Chad Teters



Tartar Fellowship Recipients (left to right)
Ashburn, Giesbrecht, Rathbone, Kuiper,
Perkins, and Schwartz

Milton Harris Summer Research Fellowships
Robynne Kirkpatrick Stephen Meyers

David Shoemaker Award
Selena Milicevic Jie (Jessica) Zhang

CRC Press Freshman Chemistry Awards
Manh Cao Colin Shear

PLU Award
Jeff Wong

Analytical Chemistry Award
Katherine Fordyce

American Institute of Chemists Award
Sundara Rector

Merck Award
Mollie Waller

Hypercube Scholar
Kyle Hanson

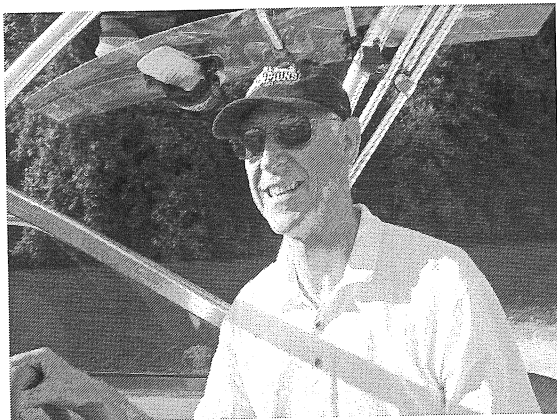
Nibler Symposium

In recognition of his 65th birthday and 40 years of research and teaching at OSU, the Department and Joe Nibler's former students held a symposium in Corvallis on August 11-13. The festivities included the symposium with a retrospective of Nibler's career, presentations by several of his alums detailing their experiences as students and subsequent research, a well-attended reception, and a Saturday picnic with the requisite boating adventures to celebrate the career, collaborations, and friendships of Joe Nibler.



The day-long symposium consisted of scientific talks by eight alumni of the Nibler lab: Doug Coe, Ed Suzuki, Dennis Guthals, Mark Maroncelli, Renee Rodriguez, Rainer Beck, Darren Williams, and Tony Masiello. Among these eight alumni, there were two students present from each decade of his career and additional brief reminiscences from students provided a comprehensive retrospective. Nibler's first student, Doug Coe, Dean of Science at Montana Technical University, started the proceedings with an interesting "Genealogy" chart of Nibler's scientific forefathers and descendants. Other speakers included faculty from numerous universities, including Rainer Beck from far away Ecole Polytechnique Federale de Lausanne in Switzerland and scientists from a diverse assortment of venues, including National Labs, Boeing, and the Washington State Crime Lab. Titles, photos, and powerpoint slideshows of the lectures can be found on the Department web site at <http://www.chemistry.oregonstate.edu/>.

In the evening, an open reception was held for Dr. Nibler at the CH2M Hill Alumni House. There were about 100 participants present from Chemistry and other Departments to celebrate the event. Many laughs were had, and all enjoyed a roast and toast session by Nibler's colleagues and former students. Updates about alumni can be found on page 11.



On Saturday, many of the former students had a picnic/boating outing at Foster Lake, a long-time activity in the Nibler group. Pictures of all the events can be seen on the Department web page. Nibler's delightful sense of humor and fun can be felt through the photos and materials present on the website.

In addition to the events of the symposium, Nibler has continued to stay busy during the past year with research, ongoing collaborations, mentoring and presentations. In January, Nibler received a Dreyfus Foundation Senior Scientist Mentor Award, one of 14 awarded nationally in

2006. The award provides \$20,000 in support of research with undergraduates. In March, Nibler gave an invited lecture on his research in non-linear optical spectroscopy at the Pittsburgh Conference held in Orlando, Florida. In April, he and **Wei Kong** both gave invited lectures at the University of Southern California in a symposium to honor Peter Toennies, a leader in the study of dynamics and spectroscopy of molecules in molecular beams. During the summer, three undergraduates, **Colin Shear**, **Robert Zaworski**, and **Brian Theobald** worked with Nibler on the development of new physical chemistry laboratory experiments involving liquid crystal displays, dynamic light scattering, and quantum dots. These experiments will be included in the eighth edition of the Shoemaker, Garland and Nibler laboratory text, which is used worldwide. **Dr. Alfons Weber** from the National Institute for Science and Technology in Gaithersburg, MD spent three weeks at OSU this summer, continuing work on a research collaboration with Nibler and **Dr. Art Maki**, former PhD student of OSU **Professor Jack Decius** (dec).

Hedberg honored with Barbara Mez- Stark Prize

Kenneth W. Hedberg, Professor Emeritus, continues to be a wonderful asset to our Department. In addition to being a delightful and interesting person, he continues to contribute to the field of chemistry in a meaningful way. Recently, he received the International Barbara Mez-Starck Prize, was awarded a three-year grant from the National Science Foundation (NSF), and began a Foundation account to support graduate students in the Department of Chemistry.

The grant, titled "Structures and Internal Dynamics of Gas-Phase Molecules" was awarded to Hedberg and **Alan Richardson**, Instructor of General Chemistry, by the NSF Division of Chemistry. Richardson received his PhD under Hedberg's direction and they continue to share a meaningful collaboration. They will use gas-phase electron diffraction as the primary experimental technique. Hedberg has received four decades of support from the NSF, and his research findings have been described in approximately 160 scientific articles over the past 60 years.

The International Barbara Mez-Stark Prize is awarded annually for outstanding contributions in experimental structural chemistry and molecular physics. Nominations are submitted by eminent professionals in these fields. Hedberg was honored for his career work in structural chemistry, including the introduction of the least-squares analysis into gas-phase electron diffraction and his contributions to the conformational analysis of organic compounds. The award includes an honorarium of 3,000 Euros, which will be used to support his research.

In May 2005, Ken and **Lise Hedberg** made a gift to the OSU Foundation to establish the Ken and Lise Hedberg Graduate Student Fund in Chemistry. This scholarship will be awarded to full-time PhD chemistry students who are high achievers, have demonstrated exceptional promise and dedication, and who are engaged in physical chemistry or who are conducting research in an area that follows the work of the Hedbergs.

Hedberg's 85th birthday was celebrated in the Chemistry Office with a cake decorated as a tennis court through the ingenious work of **Joey Carson** and **Renee Freeman**. Hedberg continues to be an inspiration to us all as he still plays tennis at 85. Upon returning from his most recent trip abroad, including a stop in Norway, he commented how grateful he felt that he had made so many friends and colleagues throughout the world as a result of his work. He recognizes the value of these experiences that he might not have had in another line of work.

Hedberg continues to impact our community with his love of music and nature. He is recognized for working as a strong advocate for the Chamber Music Corvallis to keep ensembles coming to town. The Hedbergs also continue to support the Greenbelt Land Trust, working to protect the natural areas around Corvallis. Their love of nature is obvious as they can be found hiking around Mary's Peak. In addition to a wealth of chemistry wisdom, Hedberg has many wonderful stories about the joy of marriage, children, and grandchildren.

Büchi Lectures Shine in Seminar Series

An annual lectureship has been set up by **James D. White** to honor his mentor, Professor George Büchi, a world renowned organic chemist who spent much of his career at MIT. Three of Büchi's PhD students (**James D. White**, **David A. Horne** and **Steven Gould**) have held faculty positions at OSU - making his impact on this Department's success and direction significant. The research carried out by the Büchi group spanned several fields of organic chemistry and included the elucidation of the structure of natural products, the invention and discovery of new methods for organic synthesis, and the total synthesis of complex naturally occurring substances.

This year's Büchi memorial lecturer, **Professor Amos B. Smith, III** from the University of Pennsylvania visited the Department on May 15, 2006. The lecture described some of Professor Smith's latest research on the synthesis of complex natural products including phorboxazole A and spongistatin.

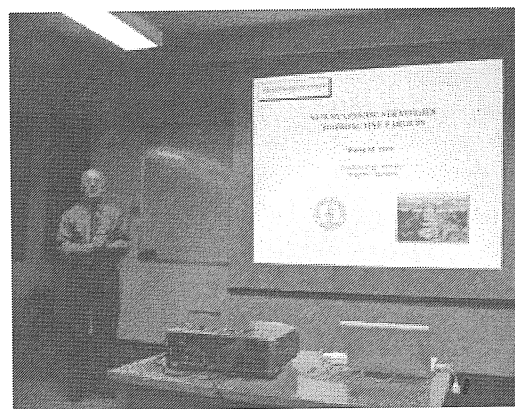
The first Büchi lecture was given in 2004 by **Dr. Barry M. Trost**, a Professor at Stanford University. Trost is honored for discovering new methods of organic synthesis that produce environmentally friendly molecules and compounds, many of which have benefited the drug development industry.

In 2005, **Dr. Gilbert Stork**, a professor at Columbia University was invited as Büchi lecturer due to his contributions to the field including: the invention of a new reagent to solve a specific problem in total synthesis, and the inclusion of stereospecificity in a synthetic design, his many inventions, and his mechanistic studies including the stereochemistry of the SN2' reaction and the stereochemistry of polyene cyclization (Stork-Eschenmoser Hypothesis).

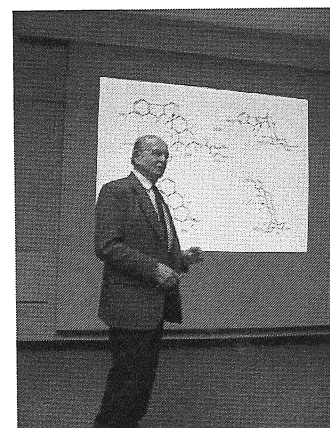
The Department is looking forward to the upcoming Büchi lecturer, **Professor Albert Eschenmoser** from Swiss Federal Institute of Technology (ETH) in Zurich, Switzerland on April 23, 2007. Eschenmoser is known for his many contributions to organic chemistry, including the Eschenmoser fragmentation, a mild method for converting α,β -epoxyketones to acetylenic ketones or aldehydes with *p*-toluenesulfonylhydrazine and the Eschenmoser salt [*N,N*-dimethyl(methylene)ammonium iodide]. In natural products research, his collaboration with Robert Burns Woodward achieved the total synthesis of the incredibly complex Vitamin B₁₂, and of corrins and corphines, chromophoric systems of that molecule.



Professor Amos B. Smith, III (right) receiving an honorary plaque from Professor James D. White.



Professor Barry M. Trost presenting his seminar on new synthetic strategies towards bioactive targets.



Professor Gilbert Stork giving his lecture on the synthesis of resperine.

Alumni News

Chuck Hamilton, BS '82 (Nibler), has taken a position at B. E. Meyers Corporation at Redmond, Washington. His e-mail address is chuck.hamilton@bemeyers.com

Edmund Moses, MS '82 (Freeman), received a PhD from Texas Tech in Physical Chemistry. He is currently an Associate Professor of Chemistry at Hampton University in Virginia.

Steven Bares, PhD '84 (Nibler), is President and Executive Director of the Memphis Bioworks Foundation, a non-profit organization working to develop a major biotech research center in Tennessee.

Marcus Berlin, BS '85 (Yoke), worked for 12 years as a Construction Materials Testing Engineer for the Oregon Department of Transportation. He passed the Oregon State Board of Engineer's Fundamentals and is now providing statewide support for ODOT's Highway Access Management Program.

Nick Hamel, BS '85 (Yoke), is a general chemistry Instructor at Clackamas Community College in Oregon City and teaches organic chemistry at Portland State University in the summer.

Nancy (Triggs) Breen, PhD '90 (Nibler), has taken an Assistant Professor position at Roger Williams University, where she has taught part-time since a family move to Rhode Island two years ago.

Robert Smith, PhD '90 (Keszler), has been a Professor of Chemistry at University of Nebraska at Omaha since 1990. He is married with six children, ages 5 to 14.

Roger Adams, BS '95, is the Lab Operations Manager at Providence Health System's Oregon Medical Laser Center. They are working on several projects including: tissue regeneration using bone marrow derived stem cells (in the porcine model) that are isolated and redirected to form cardiomyocytes for reinjection, the invention of the

chitosan bandages now being used in Iraq, and the harvesting of human tropoelastin from modified e. coli, which is formed into vessel grafts, with an inner endothelial layer grown from adipose derived stem cells. Adams also managed the build out for a bioimaging suite housing a Zeiss LSM (laser scanning microscope) 510 Meta. This facility is used for collaborations with InvitroGen's Molecular Probes in imaging and organelles and a collaboration with Intel in coating stints with drugs and imaging them.

Marshall Crew, PhD '97 (Nibler), has been promoted to the position of Vice President of Chemical and Biological Sciences at Bend Research Corporation. Marshall, his wife Lan, and son and daughter have lived in Bend since his graduation and enjoy very much the boating and camping activities in the area.

Steve Mayer, PhD '97 (Nibler), has been promoted to Associate Professor with tenure in the Chemistry Department at the University of Portland, where he and his wife Shannon (OSU PhD in Physics, 1996) moved in 2002. Shannon is also an Associate Professor in Physics. Starting this fall, Steve will serve as Chair of the Chemistry Department.

Pat Woodward, PhD '97 (Sleight), has been an Associate Professor at Ohio State for several years now. He was very recently named an Associate Editor for the Journal of Solid State Chemistry.

Pooya Tadayon, PhD '98 (Nibler), spent July and August enjoying a sabbatical leave program at Intel, where he has worked since graduation. Pooya and his wife Amy were married last winter in Portland.

Wenxin Ke, MS '98 (Nibler), and his wife Nuria (OSU Postdoctoral Research Associate, '98) have started a company, QVPUSA, which produces and markets small electronic devices, including a miniature TV remote, MP3 player, and battery-less flashlights (<http://www.tvremote.tvgo12.com/6.html>).

Alumni News continued from page 11

Christian Kranemann, Postdoctoral Research Associate '01 (White), is working as a Project Leader for Ciba Specialty Chemicals, Inc. in northern Italy near Bologna. He and his wife are expecting their second child.

Eric Brown, PhD '02 (Gable), is starting this fall as Assistant Professor at Boise State University.

Scott Allen, PhD '03 (Gable), is starting this fall as Assistant Professor at the University of Tampa.

Kim Hageman, PhD '03 (Field), worked as a Postdoctoral Research Associate for Dr. Simonich after completing her degree. She moved to New Zealand in September to accept a position as an Assistant Professor at the University of Otago.

Cheol-Hee Park, PhD '05 (Keszler), is working on XRD analysis, the development of new optical and battery materials at LG Chem in Daejeon, Korea.

Melissa Schultz, PhD '05 (Barofsky) is an Assistant Professor at the College of Wooster in Ohio.

Subramanian continued from page 1

conductivity, colossal magnetoresistive materials, temperature independent high and low K dielectrics, ferroelectrics, magnetodielectrics, thermoelectrics, green chemistry, catalysis, fast ionic conductors and materials exhibiting negative thermal expansion. Subramanian is no stranger to playing a strong advisory role in the work of students with his experience at ICMCB as well as advising summer students in the NSF program and working closely with DuPont's postdoctoral fellows.

Some of Subramanian's recent breakthrough discoveries include: temperature independent colossal dielectrics (e.g. $\text{CaCu}_3\text{Ti}_4\text{O}_{12}$), ferromagnetic semiconductors with a Curie temperature close to room temperature (e.g. $\text{La}_2\text{NiMnO}_6$), a giant magnetodielectric response at room temperature in LuFe_2O_4 , high ZT thermoelectric materials based on skutterudites with indium "rattlers" (e.g. $\text{In}_{0.2}\text{Co}_3\text{Sb}_{12}$) for converting waste-heat to electricity, and a "greener" synthetic route for hydrofluorocarbons via rationally designed inorganic fluorides.

During the recent 2006 Gordon Research Conference on Solid State Chemistry held in New London, New Hampshire, Subramanian was elected to be the next Vice-Chair and Chair of 2008 and 2010 conferences, respectively. The Gordon Research Conferences provide an international forum for the presentation and discussion of frontier research in biological, chemical, and physical sciences and their related technologies.

Subramanian's research group is developing as **Dr. Moumita Ghosh** has recently joined the Chemistry Department as a Post-Doctoral Research Associate. She got her PhD (2006) in Nanoscience dealing with nanocrystals and nanocrystalline films of metal oxides from the Solid State Chemistry and Structural Unit, Indian Institute of Science, Bangalore, India. **Dr. Hiroshi Mizoguchi** arrived in Corvallis in October and has also joined the Chemistry Department as a Post-Doctoral Research Associate in Subramanian's group. Mizoguchi received his PhD in Materials Science from the Tokyo Institute of Technology in Yokohama. He has worked as a Post-Doctoral Research Associate at both Northwestern University and Ohio State University.

Philanthropy

We wish to thank the following donors whose generous contributions funded our seminar series, the Pauling Lecture Series, graduate recruiting, the scholarships and fellowships for chemistry students, and supported the research efforts of our faculty. Many of the donors below contributed to the Department of Chemistry Unrestricted fund, which enables us to make strategic investments across the Department as opportunities arise. The Department benefits in the best possible way from your gifts and we are deeply grateful.

3M

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The Impact of Your Philanthropy

The Department is fortunate to have been given the following funds, which are designated with a specific purpose. Many were established as endowment funds, meaning we receive a reliable source of income from the principal, and that we will continue to benefit from this fund in perpetuity. Here's an update on what these funds made possible this year.

American Institute of Chemists is awarded to a promising undergraduate student who is graduating.

Bend Research Graduate Fellowship recognizes promising graduate students and can be used for summer support or as a fellowship throughout the year.

Courtney and Dorothy Benedict Award for Research is awarded to an outstanding second year graduate student based upon their GPA.

Bert Christensen Fund is used to support graduate student travel when they make professional presentations at meetings.

Büchi Lectureship supports an annual lecture by a leading figure in organic chemistry.

Peter Culter Scholarship is awarded to undergraduate students with a junior or senior standing with the highest GPA. Special consideration will be given to students with financial need.

Ray Dandeneau Fellowship is used for graduate student support.

Carroll DeKock Scholarship recognizes a first or second year undergraduate student who has demonstrated scholastic achievement, interest in chemistry, possible financial need, and recommendations from faculty.

Excellence in Graduate Education supports stipends for graduate students.

Bruce Graham Memorial Scholarship is used to provide graduate students with summer support.

Hach Scientific Scholarship provides scholarships for students who are undergraduate chemistry majors with a commitment to becoming chemistry teachers. They must have a 3.0 GPA, and must sign a yearly agreement committing to become a teacher.

Milton Harris Graduate Fellowship Fund provides fellowships to graduate students for summer support.

Milton Harris Scholarship is awarded to an undergraduate student who demonstrates scholastic aptitude and enthusiasm for chemistry.

Kenneth and Lise Hedberg Graduate Student Fund provides support to graduate students engaged in research relating to physical chemistry.

William Ingram Memorial Fellowship is awarded to an outstanding first year graduate student who has shown great promise in their research and progress on their cumulative exams.

Instrumentation and Facilities funds support for instrumentation and facilities, often as matching funds for external grants.

Arnold Johnson, Jr. Fellowship is used to support a doctoral candidate with financial assistance.

James H. Krueger Fund for Excellence in Chemistry Education is awarded to a professor, instructor, or teaching assistant who exhibits excellence in teaching.

Shirley Kuse Fellowship recognizes an outstanding female graduate student who has begun her research. It may be paid in addition to her graduate stipend and may be used for travel to conferences and other professional development.

Chemistry MRF Fund supports materials research in the Department.

Merck Outstanding Senior Award is awarded to a graduate senior who has demonstrated scholastic achievement.

Molecular Probes Graduate Fellowship is used to provide support for graduate fellowships and internships in the Department of Chemistry in the organic area of research.

Linda M. Oleson Scholarship is used to provide scholarships for outstanding undergraduate students with senior standing majoring in Chemistry, who demonstrate potential for success in post-graduate studies and/or a career in Chemistry.

Linus Pauling Chemistry Lectures supports a regular invited lectureship in honor of Linus Pauling. Normally, this will be an internationally-known figure in chemistry, and the fund supports hosting the lecturer for up to a week at OSU.

David Shoemaker Memorial Fellowship is used to support a graduate student, who has been successful in research and has demonstrated academic achievement, during the summer.

Colleen Spurgeon Scholarship is awarded to the Chemistry major with the highest GPA.

Leslie Stout Memorial Fund supports an undergraduate ACS affiliated group SAACS.

Nicholas Tartar Research Fellowship recognizes graduate students who are making significant progress in their research related to human health with summer support.

James D. White Graduate Fellowship is used to support PhD students.

David Wong Chemical Research Internship provides undergraduate students in chemistry with internship support.

We appreciate your generous contributions for student support. Many of the funds featured above are directed to undergraduate scholarships. Although the cost of attendance at OSU is a bargain compared with peer institutions, it's notable that the total cost of attendance (including tuition, fees, textbooks, room and board) has risen to \$17,000 this year. Students are faced with a staggering work and/or loan burden when they decide to attend a university. This inevitably affects their choice of major, the amount of time they can spend on their studies, whether they take one or more part-time jobs, and in the end, the quality of their experience at OSU. Every scholarship that we can offer to undergraduates is very helpful in off-setting this burden. Undergraduate scholarships help us recruit and retain the right students in the Department of Chemistry. Thank you.

Philanthropy continued from page 15

Other student support funds are dedicated to graduate education. Currently, our graduate students receive a stipend of \$18,545 for year, plus \$750 to offset fees. In addition to paying this stipend, the Department also contributes 75% of the cost for their health insurance and current resident tuition (\$11,808). Your gifts help underwrite these costs, or add to the stipend we offer to recruit the best and brightest graduate students. The Department receives a tuition waiver from the University when a graduate student is supported with private funds-so your gifts for graduate fellowships have a nice domino effect. Thank you.

Summer fellowships are a great benefit to the Department. During the summer, we offer a reduced curriculum, so there are fewer teaching assistant positions available (which would normally provide the salary and benefits for our graduate students). Advisors must fund their students out of their grant budgets. Summer fellowships allow for grant funding to go farther toward the intended purpose of research as they provide three months of stipend, health insurance, and tuition. At under \$6,000 per summer stipend, this is a nice way to make a big impact.

A Note About Endowments

As the University moves toward the kickoff of a comprehensive campaign in October 2007, we are particularly interested in exploring endowment gifts (\$25,000 or more). These endowments generate income for the Department in perpetuity, providing an added level of reliability as a funding source. They can be named and designated for a specific purpose, or they can be left unrestricted, to be allocated strategically by the Department. If you have questions about your philanthropy, or how you can make an impact at the

Department of Chemistry, please contact Anne Ruggiero, our Director of Development at ann.ruggiero@oregonstate.edu or 541-737-3603.

The Pension Protection Act of 2006

With the passage of a new law this year, donors age 70 1/2 and older have a unique opportunity to make gifts through an IRA Rollover, enabling a tax free withdrawal from your traditional or Roth IRA for a gift to the Department of Chemistry. Prior to the law, you would have to report any amount taken from your IRA as taxable income, then take a charitable deduction for a gift, but only up to 50 percent of your adjusted gross income. In effect, this caused some donors to pay more in income taxes than if they didn't make a gift at all. Fortunately, now these IRA gifts can be accomplished simply and without tax complications. This benefit can be realized through December 31, 2007. For more information, contact Elizabeth Shumaker, OSU Foundation Planned Giving Assistant at 1-800-336-8217.

Advanced Degrees 2005/2006

Master of Science

- Robert E. Alumbaugh** *Measuring In Situ Biotransformation in BTEX-Contaminated Groundwater* (Field). Rob is working as the Lab Coordinator at the University of Otago in New Zealand.
- Elliot G. Ennis** *Fluorinate and Deuterated Surrogates for Quantifying Microbial Transformation of Chlorinated Ethenes and Ethanes in Anaerobic Groundwater* (Field). Elliot is pursuing his PhD in Education at Middle Tennessee State University.
- Danielle Robitelle Fox** Danielle completed her non-thesis MS (Field).
- Zhongliang Huang** Zhongliang completed his non-thesis MS (Loveland).
- Stephen Meyers** Stephen completed his non-thesis MS and he is continuing to work towards his PhD at OSU (Keszler).
- Heather A. S. Platt** Heather completed her non-thesis MS, and she is continuing to work towards her PhD at OSU (Keszler).
- Anthony Scott** Tony's MS project title was, *Development, Testing, and Application of the Operationally Automated Syringe Injection System (OASIS) for Automated Aqueous Sampling and Analysis* (Ingle). He is currently working at Pacific Northwest National Labs in the Excise Forensics Lab.
- Michael Shoemaker** Michael completed his non-thesis MS (Keszler).
- Jason Stowers** Jason completed his non-thesis MS, and he is continuing to work towards his PhD at OSU (Keszler).
- Yolanda H. Tennico** *Development of Materials and Devices for Separation of Polyamidomine Dendrimers* (Remcho). Yolanda will return in the Spring 2007 term to complete her PhD.
- Yunzhu (Judy) Wang** *Analysis of Semi-Volatile Organic Compounds in High Elevation Lake Sediments* (Simonich). Judy is living in San Francisco, CA.

Doctor of Philosophy

- Karen Radakovich** *Quantifying in Situ [Beta]-Glucosidase and Phosphatase Activity in Groundwater* (Field). Karen is teaching at Portland Community College.
- Peter A. Ruiz-Haas** *Monitoring Redox Conditions with Redox Indicators During Microbial Reductive Dechlorination in Microcosms and Bioaugmented Columns* (Ingle). Peter is currently working as a Postdoctoral Associate at Duke University.
- Guoqiang Wang** *Studies Towards the Total Synthesis of (-)-Gymnodimine* (White). Guoqiang is working as a Postdoctoral Associate at the University of Michigan.
- Wei Zhang** *Synthetic studies toward the total synthesis of amphidinolide B* (Carter). Wei is working as a Postdoctoral Associate under the direction of Professor Dan Romo at Texas A&M University.

2005/2006 Bachelor of Science

Summer 2005

- Jesse Allen** (BS, ACS certified, advanced chemistry option, ACS certified advanced biochemistry option, forensic option) is a graduate student studying inorganic chemistry at Montana State University.
- Jennifer Braucht** (BS, forensic science option) is working at CH2M Hill, Inc. in Corvallis, OR.
- David Hartmann** (BS, ACS certified, advanced chemistry option) is working at AVI-BioPharma, Inc. in Corvallis, OR.
- Brandon James** (HBS, ACS certified, advanced chemistry option, ACS certified, advanced biochemistry option, pre-medicine option) is a biochemistry graduate student at Montana State University.

Fall 2005

- Raymond Carl** (BS, ACS certified, advanced chemistry option) is working at AVI-BioPharma, Inc.
- Ryan Kanter** (HBS, chemistry education option) is currently working on his MS in Science and Mathematics Education (SMED) at OSU.
- Rebecca McElroy** (BS, forensic science option).
- Kirk Rensmeyer** (BS, environmental science option) is working at the EPA in Corvallis, OR.
- Jeffrey Tengwall** (BS, ACS certified, advanced chemistry option) is working as a Laboratory Assistant at OHSU in Portland, OR.

Winter 2006

- Sarah Basset** (BS, forensic science option) is working for a laboratory in Bend, OR.
- Aurea Chiaia** (BS, environmental science option) is currently working on her MS in Chemistry with Dr. Field. She spent the summer doing research measuring fluorochemicals and methamphetamine in municipal wastewaters under Dr. Field's direction.
- David Chan** (BS, business option) is attending dental school in Boston, MA.
- Jeremy Turner** (BS, business option).

Spring 2006

- William Adrian** (BS, chemistry education option) is currently working on his MS in Science and Mathematics Education (SMED) at OSU.
- David Burford** (BS, general science option, biochemistry option) is working at CH2M Hill, Inc. in Corvallis, OR.
- David Crawford** (BS, chemistry education option) is currently working on his MS in Science and Mathematics Education (SMED) at OSU.
- Kimberly De Morrow** (BS, ACS certified, advanced chemistry option) has returned to Los Angeles and is applying to be an officer in the US Army as a chemical specialist.
- Kelly Dick** (BS, pre-medicine option) is currently in the Materials Science graduate program at UO/OSU.
- John Dollhausen** (BS, ACS certified, advanced chemistry option) is working as a free-lance musician.
- Jeremy Robert Gerszyn** (BS, ACS certified, advanced chemistry option) is taking a year off and then applying for graduate school.
- Tiffany Graville** (BS, ACS certified, advanced chemistry option) is working at CH2M Hill, Inc.
- Kyle Hanson** (BS, ACS certified, advanced chemistry option, computer science option) is working as a Programmer at Agilent in Denver, CO.
- Tuan Minh Nguyen** (BS, forensic science option) is working in a laboratory in Utah.
- Kim Pak** (BS, biochemistry option) is currently in the Materials Science graduate program at UO/OSU.
- Troy Pittenger** (BS, environmental science option) is working at CH2M Hill, Inc.
- Sundara Rector** (BS, ACS certified, advanced chemistry option) is working at AVI-BioPharma.
- Rebecca Schutz** (BS, forensic science option) is working as a Pharmacist Assistant and is applying to the Pharm D program at OSU.

Bachelor of Science Graduates (continued)

Rashelle Simmons (BS, ACS certified, advanced chemistry option) is working at AVI-BioPharma.

Elizabeth Spree (BS, pre-medicine option) has returned to Missouri and is applying to dental school.

Meliani Stone (BS, forensic science option, microbiology option) is working at SIGA Technologies in Corvallis, OR.

Jeffrey Torgerson (BS, ACS certified, advanced chemistry option) is working as a Lab Assistant at OHSU in Portland, OR.

Daniel Tremblay (BS, environmental science option) is working in a laboratory in Portland, OR.

Jonathan Van Dyke (BS, ACS certified, advanced chemistry option) is working as a Lab Assistant at OHSU in Portland, OR and will apply to graduate school.

Mollie Waller (BS, ACS certified, advanced chemistry option) is working at AVI-BioPharma.

Amanda Wilson (BS, pre-medicine option) has joined the Air Force and is working in Intelligence.



The Atoms, the women's softball team placed first and received a trophy in the Corvallis Parks and Rec Women's D Team playoffs.

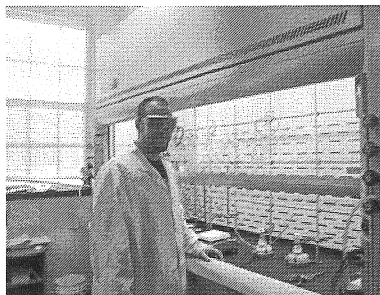
Congratulations!



The Isotopes, the Department's co-ed team

New Laboratory Space for Organic Synthesis Research Brought On-line in Gilbert Hall

After more than a year of planning, design, and execution, the long awaited remodel of Gilbert Hall laboratory 350 was recently completed. The **Blakemore** Research Group were quick to take advantage of their valuable new space and the lab was up and running in June. Since then, the lab has been bustling with the activities of post-doctoral associate, **Dr. Matt Burge** and graduate students, **Heath Giesbrecht** and **J. Gunderson** (pictured). Research in the laboratory is focused on the development of new methods for enantioselective synthesis, including the unified synthetic theory of stereospecific reagent controlled homology (StRetCH) recently introduced by Dr. Blakemore (*Org. Lett.* **2006**, *8* (4), 773-776). The



\$120,000 remodel of Gilbert 350 included complete reconfiguration of the center of the laboratory, installation of two state-of-the-art eight foot wide Labconco X-Stream fume cupboards, and much needed refurbishment of benches and general redecoration.

