



**The Dean's Corner**—February 24, 2003

As you can see from the size of the current issue of *Science Scene*, it either has been a long time since our last issue, or there has been a large number of activities in the College of Science the last few months. Although this issue is later than usual, I favor the second explanation. Looking through the draft version of the newsletter, our faculty and students had an extremely productive summer and fall making numerous presentations at professional meetings; authoring numerous publications in outstanding journals; and from all the CG-01's I've signed, submitting numerous grant proposals. I applaud you for your efforts and successes.

Our Science undergraduate and graduate advisory/awards committees have recently completed their review of nominations for the various spring awards to faculty and students. I want to mention how much I appreciate the time and effort that went into the nomination packets and the willingness of faculty to be nominated, often repeatedly. We have outstanding faculty teachers and researchers throughout the College of Science, which makes selecting only one individual a year an extremely difficult and challenging task. Not only are these packets read by the committee, but also by Associate Dean Baumgardner and me. Please be assured that we are well aware of the high caliber of our faculty and none of the nominees should ever consider themselves "losers."

This past week, our newly formed COS Image and Marketing Committee met for the first time. Membership consists of a faculty representative from each department, two students from the Science Council, and our college development director, Joel Kincart, who chairs the committee. I have indicated to the committee that the message coming from the College of Science needs to effectively communicate who we are and what we do. Recently, I have had a chance to articulate some of our accomplishments via the new deans' video clips on the USU website and we will be using some spot announcements in late March and early April on Utah Public Radio. Most immediately, the committee will be seeking notable highlights or accomplishments from each department to use as "bullet points" in recruiting. Please contact your department head or Joel Kincart if you have any suggestions or ideas.

Our first cycle of compact planning is drawing to a close and we will be signing off soon on departmental and college compacts. As you know, one of the immediate outcomes of this process is a more focused campus-wide research effort in applied genomics and in the College of Science, faculty in four departments (Biology, Chem & Biochem, Computer Science, and Math & Stat) are starting to develop some specialized courses and degree emphases to support this effort. In hindsight, I think we will see that we have accomplished a lot this past year as a result of the compact planning process. All of this has occurred because of the willingness of both faculty and departments to work together, not only in the College but with other units on campus, for the overall good of Utah State University and its students.

I look forward to seeing all of you at our college awards ceremony on April 17 in the ESLC Emert Auditorium and I wish you all the best for a successful semester.

**College of Science Calendar**  
— 2003 —

**College Coffee Break**  
20 Mar ESLC Dumke Room, 2:30 - 4:00 pm

**College Awards Program**  
17 Apr ESLC 130 Emert Auditorium, 3:30 - 4:30 pm

**University Graduation**

2 May Graduate Student Activities  
NO College Open House!

3 May Undergraduate Student Activities

9:00 am USU Commencement - Spectrum

12:00 College Graduation - TSC Ballroom

Light Refreshments — Sunburst Lounge

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***Update!!!—Revised College Website***  
[<http://www.usu.edu/science>]

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We are pleased to announce that our College website has recently been redesigned by **Stacie Gomm**.

**Science Scene Online**

Some of you have mentioned that you would prefer receiving your College newsletters in an electronic format, while others still prefer to receive their copy by regular mail.

**Please Note: We will automatically switch you to receive an electronic copy of *Science Scene* (e-mail notification that it is on our website) unless you e-mail us at [colette.yates@usu.edu](mailto:colette.yates@usu.edu) that you would prefer a paper copy.**

Please take a few minutes to look at our new website. Remember to submit your information to your departmental newsletter representative. Please coordinate with them regarding the proper formatting of all submissions. [The deadline date will remain the same for submitting information to the Dean's Office on the 3rd Monday of each month.] In the near future, there will be a place as well for you to submit this information electronically and you will be notified by e-mail when this is up and running.

If there are any questions, please call Colette Yates at 797-3515.

**College of Science**  
**2003 Award Recipients**

Teacher of the Year—**David Peak**—Physics

Advisor of the Year—**George H. Emert**—Chemistry and Biochemistry

Valedictorian—**Lara B. Anderson**—Physics

Scholar of the Year—**Jeffrey T. Leek**—Mathematics and Statistics

Researcher of the Year—**Scott A. Ensign**—Chemistry and Biochemistry

Graduate Student Researcher PhD—**Aleksey E. Kuznetsov**—Chemistry and Biochemistry

Graduate Student Teacher—**Francois A. van Heerden**—Mathematics and Statistics

Undergraduate Research Mentor—To Be Announced

**Department of Biology**

National Geographic Television filmed **Joseph R. Mendelson III** (with collaborator, Michael Dorcas, Davidson College, North Carolina) for a feature story on their research on rattlesnakes in southeastern Arizona. The show is expected to air in early 2003.

**Student Activities**

The following posters were presented at the meeting of The International Biogeography Society: Frontiers of Biogeography, Mesquite, Nevada, 4-8 January 2003:

**Chris R. Feldman.** "Comparative Phytogeography of Three California Reptiles."

**Daniel G. Mulcahy.** "Phytogeography of Nightsnakes (*Hypsiglena torquata*): With Implications Concerning Biogeography of Western North America."

The following biology undergraduates presented their research at the Posters on the Hill, Salt Lake City, Utah, 23 January 2003:

**Stephanie Chambers (Brett Adams' lab).** "Structure/Function Relationships of Cardiac RGS Proteins."

**Brandte Esplin (Anne Anderson's lab).** "Activation of Plant Defenses by Ecologically Compatible Methods."

**Julia Nielsen (Michelle Baker's lab).** "Distribution and Quality of Soil Organic Carbon in Rangeland and Forest Soils: Implications for Global Change."

**Camille Swasey and Albert Burns (Jon Takemoto's lab).** "Fungicidal Activity of Ice-Nucleation and Artificial Snow Bacterium."

Biology undergraduates **Amber Williams** and **Kevin Labrum** and Chemistry undergraduate **Suzy Dooley** will be presenting a poster titled "Molecular Identification and Potential Fungicidal Control of Chalkbrood Disease in Alfalfa Leafcutting Bees" at the 2003 national Posters on the Hill session in Washington, DC, 1 April 2003. The alfalfa leafcutting bee is the primary pollinator of the alfalfa seed crops in western North America. Under the supervision of **Rosalind James**, their research seeks to answer questions regarding identification and control of causative agents of chalkbrood. They are developing efficient DNA extraction and species-specific PCR amplification methods for *Ascosphaera* species to create a DNA fingerprint index that will be used to identify fungal species infecting bees in the field.

**Chris R. Feldman and Greg S. Spicer.** 2002. "Mitochondrial Variation in Sharp-Tailed Snakes (*Contia tenuis*): Evidence of a Cryptic Species." *Journal of Herpetology* 36:648-655.

**James F. Parham and Chris R. Feldman.** 2002. "Generic Revisions of Emydine Turtles." *Turtle & Tortoise Newsletter* 6:30-32.

**Center for Atmospheric and Space Sciences**

**Jan Sojka** visited the National Solar Observatory (NSO), Sac Peak, Sunspot, New Mexico, 19-21 August 2002. USU PhD student, **Dave Byers**, is collecting data for his dissertation using the Dunn Solar Telescope at NSO. Dr. Sojka is his major professor.

**Jan Sojka** is a co-investigator on the solar far EUV spectrometer (EVE) that was selected for the NASA Living with a Star (LWS) program first satellite, the solar dynamics observer (SDO). The satellite launch year is 2007.

**Department of Chemistry & Biochemistry**

**David Farrelly.** Co-author of publication in *Physical Review Letters*, "Statistical Theory of Asteroid Escape Rates," which was the subject of the featured cover article in PRL FOCUS 14 June 2002 and was discussed in C&E News, 12 August 2002.

**Tapas Kar** has been invited to write a review article on BCN Nanomaterials by American Scientific Publishers for Encyclopedia of Nanoscience and Nanotechnology.

**Student Activities**

**Kelly Birch** was awarded a DOE scholarship at UC Berkeley for Summer 2002.

**Suzy Dooley** will be presenting a poster at the 2003 national Posters on the Hill session in Washington, DC, 1 April 2003. (See Biology Department-Student Activities - **Amber Williams and Kevin Labrum**).

**Dewain K. Garner**, undergraduate research student working with **Lisa Berreau**, received a Division of Inorganic Chemistry (American Chemical Society) Travel Award to attend the National ACS Meeting in Boston, Massachusetts, 18-22 August 2002.

**Department of Geology**

**Student Activities**

**William Scott Cragun** has been awarded an URCO grant for spring semester 2003. Scott is an undergraduate student working with **Joel Pederson** on a gully erosion project in the Grand Canyon.

**Natalie Jorgensen**, a senior majoring in geology, WILL present her research results for the 2003 annual Posters on the Hill in Washington, DC, 1 April 2003. Her project examines the controlling factors for the creation of fault scarps in thrust-type earthquakes. Natalie's work was sponsored by a National Science Foundation Research Experience for Undergraduates grant to **Jim Evans**, and was inspired in part by her field work in Taiwan with former USU graduate student **Richard Heermance**. Their work will also be presented at the 2003 fall meeting of the American Geophysical Union, and is of interest to those geoscientists concerned with interpreting past earthquakes throughout the world.

**Isaac Larsen** received honorable mention for the Howard Award given by the Geological Society of America for the best MS research proposal in geomorphology this year titled "Mass-Movement Sediment Delivery to the Green River: Linking Bedrock Geology, Hillslope Processes, and Debris Fans in Dinosaur National Monument" at the Geological Society of America Annual Meeting, Denver, Colorado, 26-30 October 2002.

**Department of Mathematics & Statistics**

**Student Activities**

**Craig Huber**, a senior majoring in statistics, will present a poster at the 2003 Posters on the Hill session in Washington, DC, 1 April 2003. The results he will present are based on an analysis of data from the Cache County Study on Memory and Aging. Under the supervision of **Chris Corcoran**, Craig analyzed patterns of behavioral disturbances among the elderly participants in this study who have been diagnosed with dementia (due mainly to Alzheimer's disease or stroke).

**Jeff Leek**, ASUSU Science Senator and a senior majoring in mathematics, will present a poster at the 2003 Posters on the Hill session in Washington, DC, 1 April 2003. He is working with **Jim Powell** and USDA Forest Service researchers on dynamic modeling of bark beetle populations in western forests.

**Department of Physics**

**Student Activities**

**Jodie Corbridge** will present a poster at the 2003 national Posters on the Hill session in Washington, DC, 1 April 2003; will also make a technical presentation at the American Physical Society March Meeting, Austin, Texas, 3-7 March 2003; and has been selected to give a general interest presentation at the National Council for Undergraduate Research Annual Meeting, Salt Lake City, Utah, 12-15 March 2003.

**Jody Corbridge** presented a poster titled “Secondary Electron Emission of Annealed Graphitic Amorphous Carbon” in conjunction with her Senior Research Project and URCO grant at the Utah State University Student Showcase, Logan, Utah, 18 April 2002.

**Robert Davies** gave the following presentation titled “Applications and Principles of Angle Resolved Secondary Electron Emission Spectra from Solids” at an invited colloquium, Union College, Syracuse, New York, 5 May 2002.

**Robert Davies** gave a presentation by **R.E Davies, Jason Kite, and J.R. Dennison** titled “Measurement of Angle-Resolved Secondary Electron Spectra from Solids” at the American Physical Society Northwestern Section Meeting, Banff, Alberta Canada, 18 May 2002.

**Jason Kite** participated in the NASCAP 2K Beta Users Evaluation Seminar, at the NASA Space Environments and Effects Kickoff Meeting, San Diego, California, 20 January 2002.

**Jason Kite with J.R. Dennison**, received a NASA Rocky Mountain Space Grant Consortium Graduate Fellowship titled, “Secondary Electron Production and Transport Mechanisms by Measurement of Angle-Energy Resolved Cross Sections of Secondary and Backscattered Electrons” in the amount of \$19,200. It is for the period September 2002 to August 2004.

**Neal Nickles** presented a seminar in the Physics Department titled “The Role of Bandgap in the Secondary Electron Emission of Small Bandgap Semiconductors: Studies of Graphitic Carbon” 23 March 2002.

**Christopher Smithro**, a physics graduate student, was recognized for receiving the Outstanding Student Paper Award from the Space Physics & Aeronomy Division of the American Geophysical Union at the 2002 Fall AGU Meeting, San Francisco, California, 6-10 December 2002.

**Clint Thomson** made a presentation by **Clint Thomson, J.R. Dennison and Ralph Curuth** titled “Experimental Studies of the Secondary Electron Emission Properties of Dielectrics,” in conjunction with his NASA Graduate Student Research Fellowship at the NASA Graduate Student Researchers Program Conference, NASA Marshall Space Flight Center, Huntsville, Alabama, 13 August 2002.

**Clint Thomson** received a NASA Graduate Researcher Fellowship Program titled, “Experimental Study of the Secondary Electron Emission Properties of Dielectrics” in the amount of \$24,000 for the period September 2002 to August 2003).

### *Appointments, Awards & Honors—*

#### Department of Biology

**Brett A. Adams and Peter C. Ruben** have been selected to serve as reviewers for the Western Consortium of the American Heart Association. This review committee provides a critical assessment of fellowship and research grant applications according to American Heart Association standards. Their appointments end in 2006.

**Diane Alston** is currently serving as President-elect for the Pacific Division of the Entomological Society of America. Her term as president begins March 2003 and continues until March 2004.

**Daryll B. DeWald** has been named as Associate Research Director of the USU Biotechnology and Genomics Research Center (BCGR). Dr. DeWald will focus on “bringing genomics, bioinformatics and center-driven research to the BCGR.”

**Joseph K.-K. Li** was an invited guest of the Chinese Academy of Sciences (CAS) in Beijing, China, 14-16 November 2002. He accepted the role of organizer for an international symposium sponsored by CAS, the Chinese Academy of Medical Sciences, and Peking University that is scheduled in Beijing for 16-21 August 2003 and the International Symposium on Biotechnology and Bio-Pharmacology in Shanghai on 23-24 August 2003. He was also an invited guest at the Hong Kong Genome Center, the Institute

of Molecular Biology of the Hong Kong University, the Hong Kong University of Science and Technology, and the Chinese Hong Kong University. While in Hong Kong, he accepted a three-year extension to serve on the Hong Kong Grant Council.

**Joseph R. Mendelson III** was nominated and elected to the Board of Directors of the Society for the Study of Amphibians and Reptiles. His term lasts three years (2002-2005).

The Organizing Committee of the Society for Invertebrate Pathology honored **Donald R. Roberts** at its August 2002 annual meeting in Brazil for his research contributions to insect pathology and microbial control in Brazil.

**Vijendra K. Singh** was honored as one of 12 recipients of the prestigious O. Spurgeon English Humanitarian Award, 5 October 2002, Temple University, Philadelphia, Pennsylvania. Dr. Singh was identified as a pioneer for his research in neuropsychiatric disorders, in particular autism. Other honorees included John Nash (Nobel Laureate), Betty Ford, (former First Lady), Joan Amtoft-Nielson (cancer and environmental medicine expert), and William Rea (world authority on environmental medicine).

**Kimberly A. Sullivan** is on the Scientific Advisory Board for Hawkwatch International. She was also elected as Treasurer of the Cooper Ornithological Society.

#### Center for Atmospheric & Space Sciences

**Dr. Robert W. Schunk** was selected to present the Nicolet Lecture at the 2002 Fall AGU Meeting in San Francisco, California, 9 December 2002. His lecture was titled “Aeronomy—From Exploration to Data Assimilation.” The Nicolet Lecture is part of the Bowie Lecture Series established by the AGU to honor leading scientists. This is the highest honor awarded in the Space Physics and Aeronomy Section.

**Dr Jan J. Sojka** was selected as the 2002 Utah Professor of the Year by the Carnegie Foundation for the Advancement of Teaching. The Professors of the Year program salutes the most outstanding undergraduate instructors in the country. Dr. Sojka received the award in November in Washington, DC.

#### Department of Chemistry & Biochemistry

**Lisa M. Berreau** received the 2002 Merrill Library Faculty Award in recognition of her outstanding support of USU Libraries.

**Scott A. Ensign** was appointed to the editorial board of *Applied Environmental Microbiology*.

#### Department of Geology

**James P. Evans** served as a panel member on the US Geological Survey National Earthquake Program Grants, Process and Theory Panel, 22 July 2002.

**Department of Biology**

**Edmund D. Brodie, Jr. and Edmund D. Brodie III** gave an invited talk titled “Evolutionary Response of Predators to Dangerous Prey: Coevolution of Garter Snakes and Newts” at the 16th Annual Roland D. Pinkham, Maryland, Basic Science Lectureship: Beyond Darwin: Evolution in a New Millennium sponsored by the Swedish Medical Center, Seattle, Washington, 15 November 2002.

**James H. Cane** gave an invited symposium talk titled “DoseResponse Relationships Between Pollination and Fruiting Refine Pollinator Comparisons” at the Fifth Latin American Bee Research Meeting, Ribeirao Preto, Brazil, 4-7 September 2002.

**Jay B. Karren** gave a talk titled “2002 Cereal Leaf Beetle Biological Control in Utah” at the 62nd Annual Pacific Northwest Insect Management Conference, Portland, Oregon, 13 January 2003.

**Joseph K.-K. Li** gave an invited seminar titled “Viral Proteomics: Analysis of Functional Domains of the Bluetongue Virus NS2 Protein That Determines Viral Replication, Antigenic Epitopes, and ssRNA-specific Binding” at the Genome Institute of Singapore, Singapore, 7 November 2002.

**Dina Mandoli, Richard Olmstead, Brent Mishler, Jeffrey L. Boore, Alan R. Smith, Karen Renzaglia, Paul G. Wolf, Michael J. Donoghue, and Charlie O’Kelley** presented a poster titled “Toward Resolution of the Fuzzy Nodes in Green Plant Phylogeny” at the Plant and Animal Genome Conference, San Diego, California, 12 January 2003.

**Joseph R. Mendelson III** gave an invited talk titled “Herpetological Research at Utah State University” at the 2nd Symposium on Research on the Herpetofauna of the Sonoran Desert, Tucson, Arizona, 5 April 2002.

**Joseph R. Mendelson III** gave an invited talk titled “Marsupial Frogs: Phylogeny, Biogeography and Natural History” at the Southwestern Research Station of the American Museum of Natural History, Portales, Arizona, 2 August 2002.

**Joseph R. Mendelson III** gave an invited talk titled “Evolutionary Natural History of the Marsupial Frogs” for the Department of Biology, San Diego State University, San Diego, California, 11 October 2002.

**Michael E. Pfrender** gave an invited talk titled “Evolution and Diversification in Response to Novel Selection Pressures” at the Daphnia Genomics Consortium (DGC) Meeting at Indiana University, Bloomington, Indiana, 3-5 October 2002. (The meeting was

sponsored by The Center for Genomics and Bioinformatics at IU).

**Vijendra K. Singh** gave an invited talk titled “Neuro-Immunology of Autism” at Arizona State University, Tempe, Arizona, 28-29 September 2002. (The conference was co-sponsored by Arizona State University and Phoenix Chapter of the Autism Society of America.)

**Paul G. Wolf** gave a seminar titled “Phylogenetics: Inferring Plant Phylogeny Using Complete Chloroplast Genome Sequences” at Idaho State University, Pocatello, Idaho, 6 February 2003.

The following posters and presentations were given at the Northwestern Alfalfa See Grower Conference, Reno, Nevada, 21 January 2003:

**Jordi Bosch and William P. Kemp** presented a poster titled “Alfalfa Leafcutting Bee Population Dynamics, Flower Availability, Pollination Rates, and Seed Yields: A Case Study from Eastern Oregon.”

**James Cane** gave a presentation titled “Alkali Bees: Less Water, More Forage, New Crops.”

**Christelle Guedot, Jordi Bosch, and William P. Kemp** presented a poster titled “Improving Next Location of Megachile rotundata in Commercial Alfalfa Pollination.”

**Craig Huntzinger and Rosalind James** presented a poster titled “Testing Fungicides on *Ascospaera aggregata* for Potential Chalkbrood Control.”

**Rosalind James and Craig Huntzinger** gave a presentation titled “An On-farm Look at Chalkbrood in 2002.”

**Theresa Pitts-Singer** presented a poster titled “Analysis of ‘Pollen Balls’ in the Cells of the Alfalfa Leafcutting Bee *Megachile rotundata*.”

The following papers were presented at the Annual Meeting of the Entomological Society of America, Ft. Lauderdale, Florida, 17-21 November 2002:

**Diane G. Alston and Sherman V. Thomson.** “Influence of Fungicide and Chloronicotinyl Insecticide Residues on *Tetranychus urticae* (Acari: Tetranychidae) and *Galendromus occidentalis* (Acari: Phytoseiidae) Survival, Reproduction and Prey Consumption.”

**Carol D. von Dohlen.** “The Evolution of Aphid-Hostplant Relationships and Life Cycles (Aphidoidea).”

**Carol D. von Dohlen and Nancy A. Moran.** “Evolution of Endosymbionts in Sternorrhyncha.”

**Center for Atmospheric & Space Sciences**

**Lie Zhu, Robert W. Schunk, and Jan J. Sojka** presented a paper titled “Alfvén Waves of Ionospheric Origin and the Associated Plasma Dynamics and Electrodynamics” at the International Union of Radio Science XXVII General Assembly, Maastricht, Netherlands, 17-24 August 2002.

**Lie Zhu, Jan J. Sojka, and Robert W. Schunk** presented a paper titled “A Self-Consistent M-I Coupling Approach” at the NSF/GEM Meeting, Telluride, Colorado, 24-28 June 2002.

The following papers were presented at the Fall American Geophysical Union meeting, San Francisco, California, 6-10 December 2002:

**Abdallah R. Barakat, Robert W. Schunk, and Howard G. Demars.** “Seasonal and Solar Activity Dependence of the Generalized Polar Wind with Low-Altitude Auroral Ion Energization.”

**Hamed A. Bekerat, Robert W. Schunk, and Ludger Scherliess.** “On Using the Weimer Statistical Model for Real-Time Ionospheric Specifications and Forecasts.”

**Michael David, Jan J. Sojka, Robert W. Schunk, John C. Foster, and Hien B. Vo.** “A Modeling Study of the Ionospheric Response to SAPS.”

**Howard G. Demars and Robert W. Schunk.** “Effect of Equatorial Plasma Bubbles on the Thermosphere.”

**Bela G. Fejer.** “Low Latitude Ionospheric Storm Time Electric Fields.”

**Geonhwa Jee and Robert W. Schunk.** “The Analysis of TEC Data From the TOPEX/Poseidon Mission.”

**Ludger Scherliess, Robert W. Schunk, Jan J. Sojka, and Donald C. Thompson.** “A Physics-Based Kalman Filter for the Ionosphere in GAIM.”

**Robert W. Schunk.** “Aeronomy: From Exploration to Data Assimilation.”

**Robert W. Schunk, Ludger Scherliess, and Jan J. Sojka.** "Data Assimilation into Physics-Based Models Via Kalman Filters."

**Christopher Smithtro, Jan J. Sojka, Judith Lean, and Robert W. Schunk.** "Ionospheric Sensitivity to Different Representations of EUV Spectra."

**Jan J. Sojka, Michael David, Lie Zhu, Robert W. Schunk, and Timothy J. Fuller-Rowell.** "Resolving MIT Electrodynamic Processes by Analyzing GEC Data Sources."

**Michael J. Taylor, Yucheng Zhao, Alok Taori, and Xinzhao Chu.** "Ground Based Measurements of Mesosphere Temperature and Gravity Wave Structure as Part of the TIMED-CEDAR Collaborative Program."

**Lie Zhu, Robert W. Schunk, Jan J. Sojka, and J. Liang.** "The Closure of the Hall Currents During Substorms and Its Ground Magnetic Effects."

#### Department of Chemistry & Biochemistry

**Stephen E. Bialkowski** was invited to present a paper titled "Photothermal Lens Spectrometry in Micro- and Nano-Sized Sample Cells" at the Gordon Research Conference on Photoacoustic and Photothermal Phenomena, Oxford, United Kingdom, August 2001.

**Stephen E. Bialkowski** was invited to present a paper titled "Photothermal Signals in Small Liquid Channels" at the 3rd International Conference on Analytical Science, Tokyo, Japan, August 2001.

**Stephen E. Bialkowski, Lynn Dudley, and Dani Or** presented a paper titled "Using Expectation Maximization to Obtain Dielectric Relaxation Time Spectra of Aqueous Montmorillonite Clay Suspensions" at the 4th Conference on Electromagnetic Wave Interaction with Water and Moist Substances, Weimar, Germany, May 2001.

**Alex I. Boldyrev** presented a talk titled "Aromaticity Beyond Organic Chemistry" at the American Chemical Society, 223rd National Meeting, Orlando, Florida, 7-11 April 2002.

**Cheng-Wei T. Chang** presented a poster titled "Unusual Sugars and Drug Development" at the Gordon Conference, Bioorganic Division, Andover, New Hampshire, June 2002.

**Alvan C. Hengge** presented a seminar titled "Are Phosphorothioates Valid Mechanistic

Probes for Enzymatic Phosphoryl Transfer?" at the Department of Biochemistry and Molecular Biology, Mayo Foundation, Rochester, Minnesota, 4 September 2002.

**Tapas Kar** presented a paper titled "Boron and Nitrogen Rich BCN Fullerenes: A Theoretical Study" at the International Conference on the Science and Application of Nanotubes at Boston College, Chestnut Hill, Massachusetts, 6-11 July 2002.

**Tapas Kar** presented a seminar titled "Tuning Properties of Carbon-Nano-Materials by BN Doping" in collaboration with Wright-Patterson Air Force Base, Dayton, Ohio, 23-24 September 2002.

**Aleksey E. Kuznetsov** presented a poster titled "Aromaticity: From Organic Systems to All Metal Systems and Back" at the ICPOC16 Structure and Mechanism in Organic Chemistry Meeting sponsored by IUPAC, San Diego, California, 4-9 August 2002.

**Steve Scheiner** presented a seminar titled "The CH...O Interaction: Is it a True Hydrogen Bond" at Brigham Young University, Provo, Utah, March 2002.

**Steve Scheiner** presented research results titled "Tunable Optical Properties of Metal Porphyrins" at the Annual Meeting in Tunable Optical Polymers, Cambridge, Massachusetts, March 2002.

**Steve Scheiner** as an invited speaker, presented a talk titled "Tunable Optical Properties of Metal Porphyrins" at the Symposium on Chromogenic Phenomena in Polymers: Tunable Optical Properties at the National ACS Meeting, Orlando, Florida, April 2002.

The following presentations were made at the 102nd General Meeting of the American Society for Microbiology, Salt Lake City, Utah, 19-23 May 2002.

**Jeffrey M. Boyd, Rachel A. Larsen and Scott A. Ensign.** Published abstract and poster titled "Cloning and Characterization of a Putative Aldehyde Dehydrogenase Required for Growth on Alkenes from *Xanthobacter Autotrophicus* Strain Py2."

**Heather Ellsworth, Jonathan G. Krum and Scott A. Ensign.** Published abstract and poster titled "Kinetic Investigation of the Epoxyalkane: Coenzyme M Transferase."

**Rachel A. Larsen and Scott A. Ensign.** Published abstract and poster titled "Acetone metabolism in *Xanthobacter Autotrophicus* Strain Py2."

The following presentations were made at the American Chemical Society National Meeting, Boston, Massachusetts, 18-22 August 2002:

**Russell A. Allred, Dewain K. Garner, Lisa M. Berreau.** Poster titled "Reactivity Studies of Nitrogen/Sulfur-Ligated Zinc Hydroxide Complexes."

**Lisa M. Berreau, Dewain K. Garner, Atta M. Arif.** Oral presentation titled "Synthesis and Characterization of Nitrogen/Sulfur-Ligated Zinc Alkoxide Complexes."

**Lisa M. Berreau, Magdalena M. Makowska-Grzyska, Atta M. Arif.** Poster titled "Mononuclear Manganese Complexes Possessing Multiple Solvent Occupied Coordination Sites: Interactions with Biologically Relevant Substrates."

**Dewain K. Garner, Atta M. Arif, Lisa M. Berreau.** Poster titled "Synthesis, Characterization, and Reactivity Studies of Nitrogen/Sulfur-Ligated Zinc Alkoxide Complexes." Poster was chosen for presentation in Sci-Mix.

**Magdalena M. Makowska-Grzyska, Atta M. Arif, Lisa M. Berreau.** Oral presentation titled "Modeling Substrate- and Inhibitor-Bound Forms of Liver Alcohol Dehydrogenase: Chemistry of Mononuclear Nitrogen/Sulfur-Ligated Zinc Alcohol, Formamide, and Sulfoxide Complexes."

**Kyle J. Tubbs, Amy L. Fuller, Atta M. Arif, Lisa M. Berreau.** Poster titled "Divalent Copper Complexes of Nitrogen/Sulfur Ligands Possessing an Internal Hydrogen Bond Donor."

#### Department of Computer Science

**Stephen W. Clyde and David L. Rogers** presented "Conducting Tourism Market Research Using Web-Based Surveys: Results of a Year's Study," at NET'2002, Traverse City, Michigan, 16-19 September 2002.

**Linda DuHadway and Stephen W. Clyde** presented a paper titled "A Concept-First Approach for an Introductory Computer Science Course" at the Consortium for Computing in Small Colleges: Northwestern Conference, Seattle, Washington, 4-5 October 2002.

**David L. Rogers and Stephen W. Clyde** presented a paper titled "Web Based Tourism as a Tool for Rural Economic Development" at NET'2002, Traverse City, Michigan, 16-19 September 2002.

**Department of Geology**

**James P. Evans** gave a talk titled “Composition and Structure of Seismogenic Faults: Implications for Earthquake Source Physics” at the Southern California Earthquake Center Annual Meeting, Oxnard, California, 8 September 2002.

**James P. Evans** gave a talk titled “Flow of CO<sub>2</sub> in the Colorado Plateau, and Implications for CO<sub>2</sub> Sequestration Strategies” at the University of Oregon at Eugene, Eugene, Oregon, 10 May 2002.

**James P. Evans** gave a talk titled “Geologic Evolution of the San Rafael Swell” at the Emery County/State of Utah/BLM Resource Forum on the San Rafael Swell, Castledale, Utah, 19 September 2002.

**James P. Evans** gave a talk titled “Progress in Understanding Natural CO<sub>2</sub> Emissions along Faults, and Implication for Sequestration Strategies” at the Carbon Capture Project Technical Workshop, Seymour Marine Science Lab, Santa Cruz, California, 21-22 October, 2002.

**Jason Heath, Thomas Lachmar, Zoe Shipton, Stephen Nelson and James P. Evans** gave a presentation titled “Hydrogeochemical Analysis of Leaking C<sub>2</sub>-charged Fault Zones: the Little Grand Wash and Salt Wash Fault Zones, Emery and Grand Counties, Utah ... Wash and Salt Wash Fault Zones, Emery and Grand Counties, Utah” at the Geological Society of America Annual Meeting, Denver, Colorado, 27-29 October 2002.

**Richard Heermance, Zoe Shipton, and James P. Evans** gave a presentation titled “Analysis of Faulting Along the 1999 Rupture of the Chelungpu Fault, Taiwan” at the DOESECC Annual Meeting, Hilo, Hawaii, May 2002.

**Peter T. Kolesar** gave an invited presentation titled “Devils Hole Paleoclimate Records” at the US Geological Survey-Hosted Devils Hole Workshop, Pahrump, Nevada, 29 May 2002.

**Bradley Ritts** presented a paper titled “Initiation and Long-Term Slip History of the Altyn Tagh Fault, Northwest China” at the China University of Geosciences, Beijing, China, 23 May 2002.

**Bradley Ritts** presented a paper titled “Structural and Sedimentary Evolution of the NW Ordos Basin” at the China University of Geosciences, Beijing, China, 23 May 2002 and at Stanford University, 9 December 2002.

**John W. Shervais** presented a Distinguished Lecture titled “Multi-Stage Origin and Age of the Coast Range ophiolite, California:

Implications for the Nevadan Orogeny” at the Department of Geology and Geophysics, University of Utah, Salt Lake City, Utah, 5 September 2002.

**Yongjun Yue, Bradley Ritts, and Steve Graham** presented a paper titled “SHRIMP Zircon Dating of the Gneissic and Granitic Clasts in the Xorkol basin Places an Upper Bound on the Long-Term Slip Rate of the Latyn Tagh Fault, China” at Stanford University, Palo Alto, California, 9 December 2002.

The following papers and posters were presented at the 114th Geological Society of America Annual Meeting, Denver, Colorado, 26-30 October 2002:

**Matt Anders and Joel Pederson.** “Distinct Responses of Local Catchments and the Colorado River to Quaternary Glacial-Interglacial Fluctuations in Eastern Grand Canyon – Augmenting a Working Model for Drylands.”

**Adrian Berry, Bradley Ritts, Cari Johnson, Brian Darby, and Lynde Nanson.** “Structural Controls on Sedimentation in Supradetachment Basins: An Example From the Early Cretaceous Hohhot Detachment, Inner Mongolia, China.”

**Kelly K. Bradbury and James P. Evans.** “Structural Investigations of Faulted Bishop Tuff: Analog for Non-Welded Paintbrush Tuff, Yucca Mountain.”

**Stephanie M. Carney and Susanne Janecke.** “Miocene-Pliocene Low-Angle Normal Faults Were Active at Low Angles: Bannock Detachment System, Southeast Idaho.”

**Ron Counts and Joel Pederson.** “Climatic Controls Evident in the Late Cenozoic Record of the Eastern Uinta Mountains.”

**Laura J. Crossey, Karl E. Karlstrom, P. Jonathan Patchett, David Hilton, Tobias Fischer, Warren Sharp, Joel Pederson, Dwight L. Schmidt, Ronald C. Antweiler, and Amanda C. Reynolds.** “Active Springs and Quaternary Travertines in Grand Canyon: Linking Modern and Paleohydrologic Systems.”

**Brian Darby and Bradley Ritts.** “The Enigmatic Western Ordos Fold-Thrust Belt, China: Intraplate Formation and Subsequent Dismemberment.”

**Carol M. Dehler, Laura J. Crossey, Viorel Atudorei, John D. Bloch, and Karl Karlstrom.** “Characterization of the Red Pine Shale, Uinta Mountain Group: Mid Neoproterozoic Paleogeography of Northeastern Utah.”

**Rebecca Dorsey and Susanne U. Janecke.** “Late Miocene to Pleistocene West Salton Detachment Fault and Basin Evolution, Southern California: New Insights.”

**Jason Heath, Thomas Lachmar, Zoe Shipton, Stephen Nelson, and James Evans.** “Hydrogeochemical Analysis of Leaking CO<sub>2</sub>-charged Fault Zones: the Little Grand Wash and Salt Wash Fault Zones, Emery and Grand Counties, Utah.”

**Susanne U. Janecke, Betty Skipp, and William Perry.** “Out-of-Sequence and Folded Short Thrusts Produced by Protracted Foreland-Thrust-Belt Interactions, Southwestern Montana.”

**Peter T. Kolesar.** “Using Geology-Based Problems to Improve Students’ Quantitative Skills.”

**Elizabeth Langenburg, W. David Liddell, and Carol Dehler.** “Geochemistry and Sequence Stratigraphy of the Middle Cambrian Wheeler Formation: Support for Trilobite Chronostratigraphy.”

**Isaac Larsen, Joel Pederson, Jack Schmidt, and Jen Martin.** “Wildfire and Debris Flow Initiation in the Canyons of the Eastern Uinta Mountains—Does a Link Exist?”

**Rob Mackley, Joel Pederson, and James Eddleman.** “Quantifying Uplift and Erosion on the Colorado Plateau in a GIS—Your Input Requested.”

**William W. McFarlane, Joel L. Pederson, and Paul A. Petersen.** “Testing the Limits of Photogrammetry to Monitor Erosion of Archeological Sites in Grand Canyon.”

**Lynde Nanson, Bradley Ritts, Brian Darby, Andrew Hanson, and Adrian Berry.** “Sedimentology, Stratigraphy and Paleogeography of Triassic Strata, Northwest Ordos, North-Central China.”

**Joel Pederson and Frank Pazzaglia.** “Middle Cenozoic Quiescence and Late Cenozoic Exhumation-How Base-Level Change Through Drainage Development and Epeirogenesis Has Sculpted the West.”

**Paul A. Petersen, William W. McFarlane, and Joel L. Pederson.** “Testing the Limits of Photogrammetry to Monitor Erosion of Archeological Sites in Grand Canyon.”

**Anthony P. Williams, Zoe K. Shipton, Craig B. Forster, and James P. Evans.** “Structural Analysis of Co<sub>2</sub> Leakage Through the Salt Wash and the Little Grand Wash Faults from Natural Reservoirs in the Colorado Plateau, Southeastern Utah.”

**Yongjun Yue, Brad Ritts, and Stephen Graham.** “Provenance Analysis of the Xorkol Basin Deduces Sequentially Younging Tertiary Piercing Points Along the Altyn Tagh Fault.”

#### Department of Mathematics & Statistics

**Chris Corcoran** gave a talk titled “Exact Order-Restricted Inference for Several Binomials” at the Joint Statistical Meeting in New York City, New York, 12 August 2002.

**Piotr Kokoszka** gave an invited talk titled “Subsampling Heavy-Tailed Observations” at the American Mathematical Society Fall Western Section Meeting, Salt Lake City, Utah, 26 October 2002.

**James Powell** gave an invited talk titled “Modelling the Development of Insects, Including Variability of Both Environment and Phenotype” at the Workshop on Transport in Supply Chains, Traffic, and Biology at Arizona State University, Tempe, Arizona, 31 January 2003.

**Xiaofeng Ren** gave a lecture series on block copolymer theory titled “I. Foundations, II. Lamellar Phase, III. Defects” at the Institute on Mathematical Sciences, Chinese University, Hong Kong, 11, 18, and 31 December 2002.

**Zhi-Qiang Wang** gave an invited talk titled “Weighted Sobolev Inequalities and Related PDE’s” in special session in Nonlinear Elliptic PDE’s at the American Mathematical Society Meeting, Salt Lake City, Utah, 26-27 October 2002.

#### Department of Physics

**J.R. Dennison** presented an invited talk by **J. R. Dennison, Albert Chang, Neal Nickles, C. D. Thomson, Jason Kite, and Robert Davies** titled “Ground-Based Measurements Simulating Space Environment Interaction of Materials and SEE Spacecraft Charging Materials Database for Spacecraft Charging Modeling” at the Annual International Union of Radio Scientists (URSI) National Radio Science Meeting 2002, University of Colorado at Boulder, Boulder, Colorado, 10 January 2002.

**T.-C. Shen** attended the Building for Advanced Technology workshop at Gaithersburg, Maryland, 14-16 January 2003.

**J. R. Dennison, Mark Riffe, Jason Kite, Jodie Corbridge, and Vladimir Zavyalos** attended the Four Corners Section Meeting for the American Physical Society in Salt Lake City, Utah, 4-5 October 2002. Mark Riffe served on the Science Advisory Committee, acted as chair

of the session on “Condensed Matter Theory/Experimental Optics,” and was a judge for the student awards selection committee. Two presentations were made at the meeting:

**Jodie Corbridge, Neal Nickles, Clint Thomson, Robert Berry, and J. R. Dennison.** “Secondary Electron Emission of Annealed Graphitic Amorphous Carbon.”

**D. Mark Riffe.** “Modeling of Nonequilibrium Electron Dynamics in Metals at Ultrafast Time Scales.”

The following presentations were given at the 49th International Symposium of American Vacuum Society in Denver, Colorado, 7 November 2002.

**T.-C. Shen, J.Y. Ji, and T.T. Barus.** “Preparation of Atomically Flat Si(100) Surface by Ion Etching.”

**T.-C. Shen, J. Kim, J.Y. Ji, J.S. Kline, and J.R. Tucker.** “Si Deposition on H Terminated Si(100) Surfaces.”

The following publications were given at the NASA Space Environments and Effects Kickoff Meeting, San Diego, California, 20 January 2002:

**J.R. Dennison, Albert Chang, Neal Nickles, C. D. Thomson, Jason Kite, Robert Davies, Jodie Corbridge and Carl Ellsworth.** “Database of Electronic Properties of Spacecraft Materials for the SASA SEE Spacecraft Charge Collector Knowledgebase.”

**J.R. Dennison and Robb Frederickson.** “Proposal for Measurements of Charge Storage Decay Time and Resistivity of Spacecraft Insulators.”

The following presentation were given at the American Physical Society March Meeting, Indianapolis, Indiana, 19 March 2002:

**Jason Kite, J. R. Dennison and R. E. Davies.** Oral presentation titled “Angular Dependence of Secondary Electron Emission Spectra from a Polycrystalline Au Surface.”

**Clint Thomson, Albert Chang, J. R. Dennison, and Neal Nickles.** Poster titled “Charge Particle Induced Secondary and Backscattered Electron Emission from Insulators.”

### College Awards Program

**17 April 2003**

**ESLC 130**

**George H. & Billie Bush**

**Emert Auditorium**

**3:30 - 4:30 pm**

**Department of Biology**

**Roger Bannister, Karim Melliti and Brett Adams.** 2002. Reconstituted Slow Muscarinic Inhibition of Neuronal L-type (CaV1.2c) Ca<sup>2+</sup> Channels. *Biophysical Journal* 83(6): 3256-3267.

**Maureen A. Brandon, Dana C. Mahadeo, and Gregory J. Podgorski.** 2002. Galph $\alpha$ 3 and Protein Kinase A Represent Cross-Talking Pathways for Gene Expression in *Dictyostelium Discoideum*. *Development, Growth and Differentiation* 44(5):457-465.

**Edmund D. Brodie, Jr., Benjamin J. Ridenhour, and Edmund D. Brodie III.** 2002. The Evolutionary Response of Predators to Dangerous Prey: Hotspots and Coldspots in the Geographic Mosaic of Coevolution Between Garter Snakes and Newts. *Evolution* 56(10):2067-2082. This paper was featured on the cover.

**Luis Canseco-Marquez, Joseph R. Mendelson III, and Guadalupe Gutierrez-Mayen.** 2002. A New Species of Large *Tantilla* (Squamata: Colubridae) from the Sierra Madre Oriental of Puebla, Mexico. *Herpetologica* 58:492-497.

**Joseph R. Mendelson III.** 2002. [Review of] The Amphibians of Honduras, by J. R. McCranie and L. D. Wilson. *Copeia* 4:1166-1168.

**Joseph R. Mendelson III, Luis Canseco-Márquez, and Guadalupe Gutiérrez-Máyen.** 2002. Rediscovery of the Rare Treefrog *Hyla cembra* Caldwell, in Oaxaca, Mexico. *The Southwestern Naturalist* 47:459-461.

**Daniel G. Mulcahy, Michelle R. Cummer, Becky E. Williams, Joseph R. Mendelson III, and Paul C. Ustach.** 2002. Status and Distribution of Two Species of *Bufo* in the Northeastern Bonneville Basin of Idaho and Utah. *Herpetological Review* 33:287-289.

**James P. Pitts and Joseph V. McHugh.** 2002. Review of *Acrophotopsis* (Mutillidae: Sphaerop-thalminae), with a New Species from Baja California. *Journal of Hymenoptera Research* 11:363-374.

**James P. Pitts and Frank D. Parker.** 2002. Description of the Female and Larval State of *Odontophotopsis succinea* Viereck (Hymenoptera: Mutillidae), with a New Synonymy and Notes on the Species. *Zootaxa* 137:1-10.

**Carol D. von Dohlen, Utako Kurosu, and Shigeyuki Aoki.** 2002. Phylogenetics and Evolution of the Eastern Asian-Eastern North American Disjunct Aphid Tribe, Hormaphidini (Hemiptera: Aphididae).

*Molecular Phylogenetics and Evolution* 23:257-267.

**Center for Atmospheric and Space Sciences**

**Stanislav Sazykin, Bela G. Fejer, Yu I. Galperin, L. V. Zinin, S. A. Grigoriev, and Michael Mendillo.** 2002. Polarization Jet Events and Excitation of Weak SAR Arcs. *Geophysical Research Letters* 29(12): 26-1-26-4.

**Jan J. Sojka, Michael David and Robert W. Schunk.** 2002. A Mid-Latitude Space Weather Hazard Driven Directly by the Magnetosphere. *Journal of Atmospheric and Solar-Terrestrial Physics* 64 (5-6): 687-695.

**Lie Zhu, Robert W. Schunk, and Jan J. Sojka.** 2002. Alfvén Waves of Ionospheric Origin and the Associated Plasma Dynamics and Electrodynamics. *Proceedings of XXOVII URSI Assembly*.

**Department of Chemistry & Biochemistry**

**Mustaffa Al-Shemali, Alexander I. Boldyrev.** 2002. Search for Ionic Orthocarbonates. Ab Initio Study of Na<sub>4</sub>CO<sub>4</sub>. *Journal of Physical Chemistry A* 106:8951-8954.

**Irina E. Catrina, Przemyslaw G. Czyryca, Alvan C. Hengge.** 2002. Isotope Effects on Enzymatic and Nonenzymatic Reactions of Phosphorothioates. *Nukleonika* 47(1): S17-S23.

**Cheng-Wei T. Chang, Hung-Wen Liu.** 2002. Synthesis of TDP-3-amino-3,4,6-trideoxy-a-D-xylo-hydropyranose, the Immediate Precursor of TDP-a-D-desosamine. *Bioorganic Medical Chemistry Letters* 12:1493-1496.

**Agnès Chartier and Stephen E. Bialkowski.** 2001. Optical Bleaching in Continuous Laser Excited Photothermal Lens Spectrometry. *Applied Spectroscopy* 55: 84-91.

**Agnes B. Chartier and Stephen E. Bialkowski.** 2002. Photothermal Spectrometry in Small Liquid Channels. *Analytical Science* 17:i99-i101.

**H. Chen, H. Yamase, L. Zhao, Cheng-Wei T. Chang, K. Zhao, K. Murakami, Hung-Wen Liu.** N, N-Dimethyltransferases, TylMI and DesVI, Involved in the Biosynthesis of Mycaminose and Desosamine: Expression, Purification and Characterization. *Biochemistry* 29: 9165-9183.

**Daniel D. Clark, Scott A. Ensign.** 2002. Characterization of the 2-[(R)-2-hydroxypropylthio]ethanesulfonate Dehydrogenase from *Xanthobacter* strain Py2: Product Inhibition, pH-Dependence of Kinetic

Parameters, Site-Directed Mutagenesis, Rapid-Equilibrium Inhibition, and Chemical Modification. *Biochemistry* 41: 2727-2740.

**Dewain K. Garner, Russell A. Allred, Kyle J. Tubbs, Atta M. Arif, Lisa M. Berreau.** 2002. Synthesis and Characterization of Mononuclear Zinc Aryloxo Complexes Supported by Nitrogen/Sulfur Ligands Possessing an Internal Hydrogen Bond Donor. *Inorganic Chemistry* 41: 3533-3541.

**Dewain K. Garner, Sarah B. Fitch, Lenore H. McAlexander, Lisa M. Bezold, Atta M. Arif, Lisa M. Berreau.** 2002. Mononuclear Nitrogen/Sulfur-Ligated Zinc Methoxide and Hydroxide Complexes: Investigating Ligand Effects on the Hydrolytic Stability of Zinc Alkoxide Species. *Journal of American Chemical Society* 124:9970-9971.

**Grant D. Geske, Alexander I. Boldyrev.** 2002. Ab Initio Structure of the (Na<sub>2</sub>[CA1<sub>4</sub>])<sub>2</sub> Dimer. Next Step Towards Solid Materials Containing Tetracoordinate Planar Carbon. *Inorganic Chemistry* 41:2795-2798.

**Alvan C. Hengge.** 2002. Kinases. *Encyclopedia of Catalysis* (Istvan Horvath, Editor In Chief), John Wiley & Sons, New York. DOI: 10.1002/0471227617.eoc125.

**Alvan C. Hengge.** 2002. Phosphatases. *Encyclopedia of Catalysis* (Istvan Horvath, Editor In Chief), John Wiley & Sons, New York. DOI: 10.1002/0471227617.eoc171.

**Yu Hui, Cheng-Wei T. Chang.** 2002. A Convenient Divergent Synthesis of A Library of Trehalosamine Analogs. *Organic Letters* 4: 2245-2248.

**Yu Hui, P. Ptake, R. Paulman, M. Pallansch, Cheng-Wei T. Chang.** Accepted 2002. Synthesis of Novel Guanidine Incorporated Aminoglycosides, Guanidinopyranmycins. *Tetrahedron Letters*.

**Tim Humphry, Marcello Forconi, Nick H. Williams and Alvan C. Hengge.** 2002. An Altered Mechanism of Hydrolysis for a Metal-Complexed Phosphate Diester. *Journal of the American Chemical Society* 124: 14,860-14,861.

**Charles Jaffé, Shane D. Ross, Martin W. Lo, Jerrold Marsden, David Farrelly, T. Uzer.** 2002. Statistical Theory of Asteroid Escape Rates. *Physical Review Letters* 89:01101.

**Jonathan G. Krum, Heather Ellsworth, Ryan Sargeant, Gregory Rich, Scott A. Ensign.** 2002. Kinetic and Microcalorimetric Analysis of Substrate and Cofactor Interaction in Epoxyalkane:CoM Transferase: a Zn-Dependent Epoxidase. *Biochemistry* 41: 5005-5014.

- Aleksey E. Kuznetsov and Alexander I. Boldyrev.** 2002. A Peculiar Transformation of Non-Aromatic  $Al_4Cl_4(NH_3)_4$  Into Aromatic  $Na_2Al_4Cl_4(NH_3)_4$ . *Inorganic Chemistry* 41: 3596-3598.
- Aleksey E. Kuznetsov, Alexander I. Boldyrev.** 2002. Theoretical Evidence of Aromaticity in  $X_3^-$  ( $X=B, Al, Ga$ ) Species. *Structural Chemistry* 13(2): 141-148.
- Aleksey E. Kuznetsov, Alexander I. Boldyrev, H.-J. Zhai, X. Li, L.S. Wang.** 2002.  $Al_6^{2-}$  Fusion of Two Aromatic  $Al_3^-$  Units. A Combined Photoelectron Spectroscopy and Ab Initio Study of  $M^+[Al_6^{2-}]$  ( $M=Li, Na, K, Cu, Au$ ). *Journal of American Chemical Society* 124:11791-11801.
- X. Li, L.-S. Wang, Nathan A. Cannon, Alexander I. Boldyrev.** 2002. Electronic Structure and Chemical Bonding in Nonstoichiometric Molecules:  $Al_3X_2^-$  ( $X=C, Si, Ge$ ). A Photoelectron Spectroscopy and Ab Initio Study. *Journal of Chemical Physics* 116: 1330-1338.
- Meng-Sheng Liao, Steve Scheiner.** 2002. A Comparative Study of Metal-Porphyrins, -Porphyrazines, and -Phthalocyanines. *Journal of Computational Chemistry* 23: 1391-1403.
- Meng-Sheng Liao, Steve Scheiner.** 2002. Electronic Structure and Bonding in Metal Porphyrins, Metal = Fe, Co, Ni, Cu, Zn. *Journal of Chemical Physics* 117: 205-219.
- Meng-Sheng Liao, Steve Scheiner.** 2002. Electronic Structure and Bonding in Unligated and Ligated  $Fe^{II}$  Porphyrins. *Journal of Chemical Physics* 116: 3635-3645.
- Magdalena M. Makowska-Grzyska, Peter C. Jeppson, Russell A. Allred, Atta M. Arif, Lisa M. Berreau.** 2002. Modeling Substrate- and Inhibitor-bound Forms of Liver Alcohol Dehydrogenase: Chemistry of Mononuclear Nitrogen/Sulfur-Ligated Zinc Alcohol, Formamide, and Sulfoxide Complexes. *Inorganic Chemistry* 41:4872-4887.
- Boguslaw Nocek, Daniel D. Clark, Scott A. Ensign, John W. Peters.** 2002. Crystallization and Preliminary X-ray Analysis of an R-2-hydroxypropyl-coenzyme M Dehydrogenase. *Acta Crystallographica* 58: 1470-1473.
- Boguslaw Nocek, Se Bok Jang, Mi Suk Jeong, Daniel D. Clark, Scott A. Ensign, John W. Peters.** 2002. Structural Basis for  $CO_2$  fixation by a Novel Member of the Disulfide Oxidoreductase Family of Enzymes: 2-ketopropyl-coenzyme M Oxidoreductase/Carboxylase. *Biochemistry* 41: 12907-12913.
- Jayasree Pattanayak, Tapas Kar, Steve Scheiner.** 2002. Boron-Nitrogen (BN) Substitution of Fullerenes:  $C_{60}$  to  $C_{12}B_{24}N_{24}$ CBN Ball. *Journal of Physical Chemistry A* 106: 2970-2978.
- Steve Scheiner, S. J. Grabowski.** 2002. Acetylene as Potential Hydrogen-Bond Proton Acceptor. *Journal of Molecular Structure* 615: 209-218.
- Steve Scheiner, Tapas Kar.** 2002. Red Versus Blue-Shifting Hydrogen Bonds: Are There Fundamental Distinctions? *Journal of Physical Chemistry A* 106: 1784-1789.
- Steve Scheiner, Tapas Kar.** 2002. Substituent Effects Upon Protonation-Induced Red Shift of Phenyl-Pyridine Copolymers. *Journal of Chemical Physics* 106: 534-539.
- Steve Scheiner, Tapas Kar, Jayasree Pattanayak.** 2002. Comparison of Various Types of Hydrogen Bonds Involving Aromatic Amino Acids. *Journal of the American Chemical Society* 124(44): 13257-13264.
- Miriam K. Sluis, Rachel A. Larsen, Jonathan G. Krum, Ruth Anderson, William W. Metcalf, Scott A. Ensign.** 2002. Biochemical, Molecular and Genetic Characterization of the Acetone Carboxylases from *Rhodobacter capsulatus* and *Xanthobacter* Strain Py2. *The Journal of Bacteriology* 184: 2969-2977.
- Sonia R. Sousa and Stephen E. Bialkowski.** 2001. Comparison of Detection Limits and Relative Responses for Alternative Fluorocarbons by GC-ECD, GC-AED, and GC-MS. *Analytical Chimica Acta* 43(2): 181-186.
- Krzysztof Swierczek, John Peters and Alvan C. Hengge.** 2003. A Convenient Synthesis of Phosphonothioic Acids. *Tetrahedron* 59/5: 595 - 599.
- Jinhua Wang, Jie Li, David Tuttle, Jon Takemoto, Cheng-Wei T. Chang.** 2002. The Synthesis of L-Aminosugar and the Studies of L-pyranoses on the Ring III of Pyranmycins. *Organic Letters*.
- H.-J. Zhai, L.-S. Wang, Anastassia N. Alexandrova, Alexander I. Boldyrev.** 2002. On the Electronic Structure and Chemical Bonding of  $B_5^-$  and  $B_5$  by Photoelectron Spectroscopy and Ab Initio Calculations. *Journal of Chemical Physics* 117: 7917-7924.
- H.-J. Zhai, L.-S. Wang, Aleksey E. Kuznetsov, Alexander I. Boldyrev.** 2002. Probing the Electronic Structure and Aromaticity of Pentapnictogen Cluster Anions  $Pn_5^-$  ( $Pn = P, As, Sb, and Bi$ ) Using Photoelectron Spectroscopy and Ab Initio Calculations. *Journal of Physical Chemistry A* 106: 5600-5606.
- H.-J. Zhai, X. Yang, X.-B. Wang, L.-S. Wang, Ben Elliott, Alexander I. Boldyrev.** 2002. In Search of Covalently-Bound Tetra- and Penta-Oxygen Species: A Photoelectron Spectroscopic and Ab Initio Investigation of  $Mo_4^-$  and  $Mo_5^-$  ( $M = Li, Na, K, Cs$ ). *Journal of American Chemical Society* 124:6742-6750.

Department of Computer Science

**Stephen W. Clyde, and Angelique E. Crane.** 2002. Experiences Using 'Design-n-code Fests' as Capstone Projects for an Object-oriented Software Development Course. *Proceedings of the OOPSLA Educators Symposium*.

**Vladimir Kulyukin and N. Morley.** 2002. Integrated Object Recognition in the Three-Tiered Robot Architecture. *Proceedings of the 2002 International Conference On Artificial Intelligence (IC-AI 2002)*.

**Vladimir Kulyukin and A. Steele.** 2002. Input Recognition in Voice Control Interfaces to Three-Tiered Autonomous Agents. *Proceedings of the 2002 International Lisp Conference*.

**Vladimir Kulyukin and A Steele.** 2002. Instruction and Action in the Three-Tiered Robot Architecture. *Proceedings of the 2002 International Symposium On Robotics and Automation (ISRA-2002)*.

Department of Geology

**Brian Darby and Bradley Ritts,** 2002. Mesozoic Contractual Deformation in the Middle of the Asian Tectonic Collage: The Enigmatic Western Ordos Fold-Thrust Belt: Earth and Planetary. *Science Letters* 205:13-24

**James P. Evans.** 2002. Evolution of Fault Structure and Composition at the Base of the Seismogenic Zone. *American Geophysical Union* 83(47) Fall Meeting Supplemental Abstract T62E-05.

**James P. Evans and Dawn Martindale.** 2002. Historical Analysis of the 1884 Bear Lake Earthquake, Northern Utah and Southern Idaho: Slip on Basin and Range Faults. *Eos Trans. American Geophysical Union* 83(47) Fall Meeting Supplemental Abstract S11B-1144.

**K. Jill Hammond and James P. Evans.** 2003. Geochemistry, Mineralization, Structure, and Permeability of a Normal-Fault

Zone, Casino Mine, Alligator Ridge District, North Central Nevada. *Journal of Structural Geology* 25:717-736.

**Richard Heermance, R.V. Lee, Y. Hung, James P. Evans.** 2002. Geometric Evolution of the Sanyi/Chelungpu Fault and the Effects of Ramps on Fault Structure. *American Geophysical Union 83(47)* Fall Meeting Supplemental Abstract T62D-04.

**Dawn Martindale and James P. Evans.** 2002. Historiographical Analysis of the 1857 Ft. Tejon Earthquake, San Andreas Fault, California: Preliminary Results. *Eos Trans. American Geophysical Union 83(47)* Fall Meeting Supplemental Abstract 12C-05.

**Matthew A. Pachell and James P. Evans.** 2002. Structural Analysis of the Gemini Strike-Slip Fault Zone, Central Sierra Nevada, California. *Journal of Structural Geology* 24:1903-1924.

**Joel L. Pederson, Karl Karlstrom, Warren Sharp, and William McIntosh.** 2002. Differential Incision of the Grand Canyon Related to Quaternary Faulting—Constraints from U-Series and Ar/Ar Dating: *GSA Bulletin* 30(8):739-742.

**Joel L. Pederson, Rob D. Mackley, and James L. Eddleman.** 2002. Colorado Plateau Uplift and Erosion Evaluated Using GIS: *GSA Today*: 12(8):4-10.

**Zoe Shipton, James P. Evans, Jason Heath, Anthony, Williams, and Ben Dockrill.** 2002. Interactions of Fluid and Gas Movement and Faulting in the Colorado Plateau, Southeastern Utah. *American Geophysical Union 83(47)* Fall Meeting Supplemental Abstract 12G-05.

**Zoe K. Shipton, James P. Evans, Kim R. Robeson, Craig B. Forster, and Stephen Snelgrove.** 2002. Structural Heterogeneity and Permeability in Faulted Eolian Sandstone: Implications for Subsurface Modeling of Faults: *AAPG Bulletin*: 86(5):863-883.

#### Department of Mathematics & Statistics

**Raj Bhansali and Piotr Kokoszka.** 2002. Computation of the Forecast Coefficients for Multistep Prediction of Long-Range Dependent Time Series. *International Journal of Forecasting* 18:181-206.

**Jim Cangelosi.** 2003. *Classroom Management Strategies: Gaining and Maintaining Students' Cooperation*. Ed. 5th. John Wiley & Sons.

**Jim Cangelosi.** 2003. *Teaching Mathematics in Secondary and Middle School: An Interactive Approach* Ed. 3rd. Prentice Hall.

**Chris Corcoran.** 2002. Trend Tests for Binary Data. *Encyclopedia of Environmetrics* 4:2260-2264.

**Chris Corcoran and Cyrus Mehta.** 2002. Exact Level and Power of Permutation, Bootstrap, and Asymptotic Tests of Trend. *Journal of Modern Applied Statistical Methods* 1:42-51.

**Chris Corcoran and Louise Ryan.** 2002. Exact Dose-Response Inference. *Topics in Modeling of Clustered Data*. pp. 195-206.

**Liudas Giraitis, Piotr Kokoszka, Remis Leipus, and Gilles Teyssiere.** 2002. Rescaled Variance and Related Tests for Long Memory in Volatility and Levels. *Journal of Econometrics* 112: 265-294.

**Lajos Horvath and Piotr Kokoszka.** 2002. Change Point Detection with Non-Parametric Regression. *Statistics* 35:9-31.

**Lajos Horvath, Agnieszka Jach, and Piotr Kokoszka.** 2002. Change Point Detection Based on Empirical Quantiles. *Statistical Data Analysis Based on the L<sub>1</sub>-Norm and Related Methods* 229-240.

**Lajos Horvath and Piotr Kokoszka.** 2002. Change Point Detection with Non-Parametric Regression. *Statistics* 35:9-31.

**Piotr Kokoszka and Remis Leipus.** Detection and Estimation of Changes in Regim. *Theory and Applications of Long-Range Dependence* 325-337.

**X. Ren and J. Wei.** 2002. Concentrically Layered Energy Equilibria of the Di-block Copolymer Problem. *Euroean Journal of Applied Mathematics* 13:479-496.

**Zhi-Qiang Wang and Antonio Ambrosetti.** 2003. Positive Solutions to a Class of Quasilinear Elliptic Equations on R. *Discrete and Continuous Dynamical Systems* 9:55-68.

**Zhi-Qiang Wang, Jaeyoung Byeon.** 2002. Standing Waves with a Critical Frequency for Nonlinear Schrodinger Equations. *Archive for Rational Mechanics and Analysis* 165:295-316.

**Zhi-Qiang Wang and Shujie Li.** 2002. Dirichlet Problem of Elliptic Equations with Strong Resonances. *Communications in Partial Differential Equations* 27:2007-2030.

**Zhi-Qiang Wang and Shujie Li.** 2002. Lusternik-Schnirelman Theory in Partially Ordered Hilbert Spaces. *Transactions of the American Mathematical Society* 354:3207-3227.

**Zhi-Qiang Wang and Jiaquan Liu.** 2003. Soliton Solutions for Quasilinear Schrodinger Equations, I. *Proceedings of the American Mathematical Society* 131:441-448.

**Zhi-Qiang Wang, Jiaquan Liu, and Yaqi Wang.** 2003. Soliton Solutions for Quasilinear Schrodinger Equations, II. *Journal of Differential Equations* 187:473-493.

**Zhi-Qiang Wang and Francois van Heerden.** 2003. Schrodinger Type Equations with Asymptotically Linear Nonlinearities. *Differential and Integral Equations* 16:257-280.

#### Department of Physics

**J. R. Dennison, W.-Y. Chang, Neal Nickles, Jason Kite, C. D. Thomson, Jodie Corbridge and Carl Ellsworth.** 2002. Electronic Properties of Materials with Application to Spacecraft Charging. *Final Report Part III: Materials Reports*, NASA Space Environments and Effects Program Grant Published by NASA electronically at <http://see.msfc.nasa.gov/scck/>, the work is comprised of 16 individual Materials Reports with a combined length of 672 pages.

**Lara Gamble, J. R. Dennison, B. Wood, Jim Herrick, and James S. Dyer** 2002. Calculation of Spectral Degradation Due to Contaminant Films on Infrared and Optical Sensors. *Proceedings, International Society for Optical Engineering* 4774:111.

**D. Mark Riffe,** 2002. Temperature Dependence of Silicon Carrier Effective Masses with Application to Femtosecond Reflectivity Measurements. *Journal of the Optical Society of America B* 19:1092.

**Ali J. Sabbah and D. Mark Riffe,** 2002. Femtosecond Pump-Probe Reflectivity Study of Silicon Carrier Dynamics, *Physical Review B* 66:165217.

**Charles G. Torre,** 2002. Quantum Dynamics of the Polarized Gowdy Model, *Physical Review D* 66, 084017.

**Department of Biology**

**Anne J. Anderson, Charles Miller, and Joan McLean**

US Environmental Protection Agency

1 May 2003 – 30 April 2006, \$330,000

“Metal Biosensors: Development and Environmental Testing.”

The work concerns the development of biosensors that provide light output when they sense a heavy metal. Responses to copper and cadmium will be examined as these metals are representative of problem metals from mine sites, industries, and landfill runoff. Both of these metals are toxic to life forms and their presence in soils and water constitutes health problems. The influence of different chelates on bioavailability will be evaluated as this may better reflect cellular toxicity than chemical assessment of total metal content.

**Mary E. Barkworth and Frank J. Smith**

US Civilian Research and Development Foundation

1 January 2003 – 31 December 2004, \$5,600

“Taxonomic Investigation of Armenian Grasses.”

Armenia has a rich grass flora, including many representatives to wheat and stipoid grasses, both of which are well represented in Utah. This research will develop a taxonomic account of the grasses of Armenia to become a part of the Flora of Armenia series. Strategies will be developed for the conservation of rare species. Additionally, herbarium specimens will be collected.

**Jay B. Karren**

USDA/APHIS, PPQ

1 July 2002 – 30 June 2003, \$82,350

“Cooperative Agricultural Pest Survey (CAPS) and Homeland Security Activities.”

Surveys will be conducted for exotic insect, weed, and disease pests that might disrupt and impact Utah agriculture. USU’s pest diagnostic lab will also be supported.

**Joseph R. Mendelson III**

California Department of Parks & Recreation

1 May 2002 - 31 May 2003, \$40,028

“Genetics of the Flat-Tailed Horned Lizard at Ocotillo Wells State Vehicular Recreation Area.”

This project will examine the fine-scale population genetics of a threatened species occurring in a high-use off-road vehicular recreation area. Results will help land managers delimit and manage various areas of the park, with respect to putative populations of this species inhabiting them.

**Joseph R. Mendelson III**

US Department of Navy

1 May 2002 - 31 May 2004, \$20,000

“Genetics of the Flat-Tailed Horned Lizard.”

This project will examine the range-wide population genetics of populations of this threatened species and determine evolutionary relationships among them. Results will help focus conservation areas on specific regions of genetic uniqueness, help understand genetic continuity (or lack thereof) between apparently separate populations. This project will also serve to investigate the evolutionary history of a species occurring in a particularly interesting region of the desert that is relatively recent in its origin.

**James P. Pitts**

USDA Forest Service

1 January – 31 December 2003, \$13,800

“Taxonomic Support for Studies of Arthropod Diversity in Bottomland Hardwoods and Upland Pine Forests in Georgia and South Carolina.”

This project will complement the ongoing efforts to understand the effects of forest management activities on arthropods, whose diversity and abundance have direct and indirect impacts on forest communities. Specifically, this project will determine the differences in arthropod diversity in areas with varying coarse woody debris, gap size and age, and fire management practices. Results can be used to alter management practices to minimize their adverse effects on beneficial insects, such as pollinators.

**William J. Popendorf**

U.S. Department of Labor

30 September 2002 to 31 December 2003, \$20,542

“OHSa eTools.”

The purpose of this grant is to assist OSHA in developing eTools, which are “stand-alone,” interactive, web-based training tools on occupational safety and health topics. The project will also benefit the education of public health students who participate in the project.

**Donald R. Roberts, Nabil N. Youssef, and Thomas Grover**

Utah Division of Wildlife/Natural Resources

1 July 2002 – 30 June 2003, \$75,000

“Application of Biotechnology to Whirling Disease Control and Research.”

Accepted protocols for identifying the presence of the whirling disease agent (*Myxobolus cerebralis*) in trout are labor intensive, slow, and lethal to significant proportions of fish populations. This project is devising a monoclonal-antibody-based system to rapidly detect *M. cerebralis* in fish (early and late infections), oligochaete alternate hosts, and water.

**Paul G. Wolf**

US Fish and Wildlife Service and Utah State University

(cooperative agreement)

1 August 2002 to 30 September 2007, \$24,869

“Assessment of Genetic Status of *Eriogonum corymbosum* var. glutinosum in the Las Vegas Valley.”

The Las Vegas buckwheat (*Eriogonum corymbosum* var. glutinosum) is endemic to the Las Vegas valley. The grant will examine the genetic structure distinctness of fragmented populations within city limits to entire populations outside the city, using AFLP analysis. The grant will also compare var. glutinosum with other varieties and related species. Results will be used to develop management plans for this taxon.

**Department of Chemistry & Biochemistry**

**Lisa Berreau**

American Chemical Society - Herman Frasch Foundation

01 July 2002 to 30 June 2007, \$200,000

“Investigation of Chemical Pathways of Fungal Resistance in Plants: Manganese-Mediated Oxalate Catabolism.”

The objective of this project is to utilize low molecular weight synthetic compounds to elucidate the mechanistic parameters of reactions catalyzed by manganese containing oxalate oxidases and decarboxylases.

Dr. Berreau was one of only seventeen awardees nationwide of a Frasch Foundation Grant. These grants are given only once every five years.

**Alexander I. Boldyrev**

American Chemical Society - Petroleum Research Fund

01 July 2002 to 31 August 2005, \$120,000

“Advancing the Aromaticity Concept into All-Metal Species.”

The concept of aromaticity in chemistry is used to describe cyclic, planar, and conjugated molecules possessing  $(4n+2)$  pi-electrons and having specific chemical and structural stability. We recently advanced this concept into a new territory in chemistry, into all-metal species. The central theme of this proposal is to expand on this new discovery and exploit its generality and impact on both inorganic chemistry and solid materials.

**Cheng-Wei T. Chang**

Utah State University - Community University Research Initiative Grant

01 July 2002 to 30 June 2003, \$24,500

“Development of Novel Library of Antibiotics Against Infectious Diseases.”

We have developed a library of novel aminoglycoside antibiotics, pyranmycins. This new class of antibiotics shows broad-spectrum and very promising antibacterial activities (low micromolar) against various gram-positive and gram-negative strains of microorganisms including *Escherichia coli*, *Staphylococcus aureus*, *Bacillus subtilis*, *Bacillus megaterium*, and *Mycobacterium smegmatis*. Based on the lead structures of pyranmycin, we are currently using a library approach for the synthesis of next generation of pyranmycins that will be active against drug resistant bacteria.

**David Farrelly**

National Science Foundation: MPS Direct for Mathematical & Physical Science

15 May 2002 to 30 April 2005, \$290,000

“Computational Studies of the Rotational Structure of Atomic and Molecular Clusters with Weak Interactions.”

David Farrelly of Utah State University is supported by the Theoretical and Computational Chemistry Program to use diffusion Monte Carlo (DCM) methods to study the rotational structure of atomic and molecular clusters with weak interactions. The major project goal is to develop new computational approaches for examining large amplitude rotational dynamics of impurity molecules and cluster impurities in liquid helium nanodroplets, as in helium nanodroplet isolation spectroscopy. The new techniques will be generally applicable to rotational structure of assemblages of rigid top molecules in helium droplets or in the gas phase. Also, investigations will continue into ultrahigh molecular Rydberg states, with applications to zero electron-kinetic energy (ZEKE) spectroscopy.

**Department of Computer Science**

**Stephen W. Clyde**

Task Force for Child Survival and Development

1 May 2002 to 31 August 2002, \$12,500

“Five Case Studies of Health-Care-Systems Integration Projects.”

This project aims to develop five case studies that will focus on difference aspects of the software engineering project for integrating Health Care Systems.

**Stephen W. Clyde**

Utah Department of Health

1 June 2002 to 31 August 2002, \$41,258 (\$36,000 + extra \$5,258)

“Development of Common Classes for CHARM Integration Infrastructure.”

The proposed project aims to create a common class library for the production version of the CHARM Integration Infrastructure (CHARM-II). CHARM-II will allow existing health-care databases to share specific pieces of data.

**Department of Geology**

**James Evans**

Southern California Earthquake Center

May 1, 2002 to April 30, 2003, \$25,000

“Examination of Exhumed Faults, San Bernardino Mountains, California.”

This grant supports work to examine the composition and structure of faults that were once deeply buried, but are now at the surface. We examine the geochemistry and structure of these faults to infer the processes that occur at the depths where earthquakes nucleate.

**Bradley Ritts**

Petroleum Research Fund (American Chemical Society)

1 April 2003 to 31 March 2006, \$50,000

“Mesozoic NW Ordos Basin: A Well-Preserved Example of the Giant Intracontinental Oil-Bearing Basins of China.”

This project will define the sedimentary and structural styles of a unique type of sedimentary basin that characterizes the interior of eastern and central Asia. Results of this project will help to determine the influences that tectonics and deformation have on sedimentary style and resource distribution in these basins, as well as the feedback that the sedimentary accumulations exert on the evolving continent.

**Bradley Ritts**

National Science Foundation

1 July 2002 to 30 June 2004, \$85,334

“Collaborative Research: Initiation and Long Term Slip History of the Altyn Tagh Fault: A Tertiary Sedimentary Basins Piercing Point Study.”

This project, in collaboration with scientists at Stanford, will define the timing and location of major deformation associated with the Altyn Tagh fault. The Altyn Tagh fault is a major (San Andreas-scale) strike-slip fault that bounds the northern edge of the Tibetan Plateau, but is poorly understood in terms of the timing and style of its structural development. Results of this project will help to distinguish between two fundamentally different, but currently unresolved, styles of collisional tectonics in the Himalayan-Tibetan mountain belt: crustal shortening and lateral extrusion.

**Department of Mathematics & Statistics**

**LeRoy B. Bealsey Gi-Sang Cheon, Young-Bae Jun, and**

**Seok-Zun Song**

Korea Research Foundation

1 January 2003 to 31 December 2006, \$76,800,000 Won Yearly

“Matrix Perimeters and Representations on Normed Lattice Algebras.”

We investigate properties of matrices over semirings with fixed perimeter and linear transformations on spaces of matrices over

## Grants—

semirings that preserve matrix subsets defined by limitations on the perimeter.

### **Piotr Kokoszka**

National Science Foundation

9 January 2002 to 30 August 2005, \$32,450

"Topics in Change Point and Unit Root Analysis; Rates of Convergence, Permutations and Bootstrap."

The grant will support collaborative research with mathematicians at the Hungarian Academy of Sciences in Budapest.

### **Department of Physics**

### **J. R. Dennison and A. Robb Frederickson**

NASA Space Environments and Effects Program Grant

April 2001 to March 2003, \$322,500

"Measurement of Charge Storage Decay Time and Resistivity of Spacecraft Insulators."

The project funded through the NASA Space Environment and Effects program is a continuation of a previous three-year effort to test electronic properties of spacecraft materials. Tests of the electron emission due to incident electrons, ions and photons are made, in addition to numerous characterization measurements.

### **J. R. Dennison**

Boeing Corporation

September 2001 to June 2002, \$11,000

"Electronic Properties of ISS Materials."

The project funded through the Boeing Corporation is to test electronic properties of critical spacecraft materials used in the construction of the solar arrays and framework of the International Space Station. Tests of the electron emission due to incident electrons, ions and photons are made, in addition to numerous characterization measurements. These tests provide vital input for efforts to model the charging of the ISS and to determine the level of threat this can pose to EVA astronauts.

### **J. R. Dennison**

NASA Space Environments and Effects Program Grant

December 2002 to December 2003, \$55,202

"Electronic Properties of Materials with Application to Spacecraft Charging—Extension of Materials Database."

The project funded through the NASA Space Environment and Effects program is a continuation of a previous three-year effort to test electronic properties of spacecraft materials. Tests of the electron emission due to incident electrons, ions and photons are made, in addition to numerous characterization measurements.

*Science Scene, an internal newsletter for Utah State University, College of Science faculty, staff, administration, and friends, is published regularly throughout the school year. Its purpose is to inform our College of current events and the activities of our faculty, providing a forum for peers to follow one another's careers and professional development. This issue was produced under the direction and layout of Colette Yates. A special thanks to our departmental newsletter representatives—Liz Allred, Biology; Geri Child, Chemistry and Biochemistry; Brandee Halverson, Computer Science; Lori Hirschi, Geology; Jenny Welch, Mathematics & Statistics; Karalee Ransom, Physics; and Melanie Oldroyd, Center for Atmospheric & Space Sciences.*

*—Deadline for submissions to the Dean's Office is the 3rd Monday of each month—*

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