

CHEMISTRY

Professor, students present at national meeting

Professor Lakshmaiah Sreerama, along with Austin Pitcher, Todd Hoffmann, Rainer Grant, Graig Legatt, Aaron Gross, Shanna Scully and Tsering Yanjon, presented their research at the annual meeting of the American Chemical Society, held March 2007 in Chicago.

2007 Student Research Colloquium participation:

With 29 presentations, 37 students and nine faculty sponsors, the Chemistry Department led all other university departments in participation.

Award-winning student research

- Koshali Fernando, Denise M. McGuire Student Research Award (DMMSRA) \$350 for "Synthesis and Characterization of Vanadium Complexes with Potential Insulin-Mimicking Properties." Sponsor: Mohammad Mahroof-Tahir
- Jon Schwenzfeier, Student Research Colloquium Best Poster Honorable Mention \$250 for "Photochemistry of 2-Biphenylisocyanate." Sponsor: Daniel Gregory
- Rainer Grant, DMMSRA \$300 for "Expression, Purification and Characterization of Two Human Aldehyde Dehydrogenases (ALDH3A1 & ALDH9A1)." Sponsor: Lakshmaiah Sreerama
- Aaron Gross, DMMSRA \$400, Student Research Fund Award (SRFA) \$1,500 for "Synthesis of Ethylene Glycol Ether Aldehydes and Their Enzymatic Oxidation by Human Aldehyde Dehydrogenases." Sponsor: Sreerama
- Faith Kabata, DMMSRA \$450 for "Antioxidant Studies of Antidiabetic Vanadium-Flavonoid Compounds." Sponsor: Mahroof-Tahir
- Elizabeth Krekelberg, DMMSRA \$350 for "Interaction of Ruthenium Complexes with DNA." Sponsor: Mahroof-Tahir
- Graig Legatt, DMMSRA Honorable Mention for "Insulin Mimetic Properties of Vanadium-Flavonoid Complexes." Sponsor: Sreerama
- David Petersen, DMMSRA Participation for "Teratogenic Effects of Ethylene Glycol Ethers on *Xenopus Laevis* Development and Role of Aldehyde Dehydrogenases in Determining Teratogenicity." Sponsor: Sreerama
- Raj Bhandari, DMMSRA Honorable Mention for "Combining Principle Component Analysis and Self Modeling of Simple Fluorescence Mixtures: An Analytical Approach to Resolving Chemical Mixtures with No Prior Separation." Sponsor: Michael Dvorak
- Todd Hoffman, DMMSRA Honorable Mention for "Cloning, Purification and Characterization of Human Aldehyde Dehydrogenase ALDH5A1 and Its Ability to Catalyze Detoxification of Certain Chemotherapeutics and Environmental Contaminants." Sponsor: Sreerama
- Austin Pitcher, DMMSRA \$400 for "Cloning, Purification and

Characterization of Human Aldehyde Dehydrogenase 7A1 and Its Ability to Catalyze the Detoxification of Certain Chemotherapeutics." Sponsor: Sreerama

- Rosa Desm, SRFA \$750 for "Potential Latent Fingerprinting Techniques Based on Binding/Complexing Properties of 8-Quinolinol Sulfate and Coomassie Brilliant Blue G Dye." Sponsor: Sreerama

Weekly seminars

Among the alumni who recently returned to present their research as guests of Chemistry's seminar program were Jake Rafferty and Austin Pitcher.

A fourth-year graduate student at the University of Minnesota, Rafferty presented "Monte Carlo Simulations for Complex Chemical Systems: Application to Reversed-Phase Liquid Chromatography."

Prior to Rafferty's graduation from St. Cloud State, he conducted research in collaboration with Professor Dan Gregory and participated in research projects related to organic isothiocyanates.

Pitcher, who is in his first year of grad school at the University of California-Berkeley, presented "Not Another '-omics': Developing Tools to Probe the Roles of Glycosylation in Living Systems."

A 2007 graduate, Pitcher was a member of Professor Lakshmaiah Sreerama's research group, and delved into the mysteries of aldehyde dehydrogenases.

The weekly one-hour seminars, a tradition of the Chemistry Department, are free and open to everyone. Seminar schedules are available online at <http://www.stcloudstate.edu/chemistry/CurrentChemistrySeminars.asp>.

Seniors fulfill final degree requirements

As part of the senior thesis requirement for chemistry majors, 22 students presented seminars based upon either their laboratory research or a literature review. The 2007 seminars took place April 28, and each lasted approximately 40 minutes, including a 10-minute question and answer session. In addition to the seminars, the students completed a research paper on the same topic to satisfy the university's upper-division writing requirement.

Student takes university's top leadership award

The 2007 Dennis M. Thayer Leadership Award went to Allissa Dillman, who is majoring in biochemistry and biomedical science. The award is administered by the Center for Student Organizations and Leadership Development's Excellence in Leadership Committee.

Daniel Gregory, Associate Professor. Ph.D. 1998, Iowa State University.

computational chemistry, photo-organic chemistry, physical organic chemistry

WSB 365

phone: 320.308.2060

ddgregory@stcloudstate.edu

<http://web.stcloudstate.edu/ddgregory>

Michael Jeannot, Professor. Ph.D. 1997, University of Alberta.

analytical chemistry, mass spectrometry, microextraction, sample preparation, separations

WSB 366

phone: 320.308.2046

mjeannot@stcloudstate.edu

<http://web.stcloudstate.edu/majeannot>

Rebecca Krystyniak, Assistant Professor. Ph.D. 2001, University of Northern Colorado.

effect of order of content on student understanding, inquiry-based learning, science process skills, student conceptual understanding of chemistry on the molecular level

WSB 365

phone: 320.308.2024

rakrystyniak@stcloudstate.edu

Mohammad Mahroof-Tahir, Professor. Ph.D. 1992, Johns Hopkins University.

bioinorganic chemistry, cancer and antitumor, coordination chemistry, diabetes and insulin mimetic, medicinal chemistry of metals, natural products, titanium, vanadium

WSB 367

phone: 320.308.3198

mmahroof@stcloudstate.edu

<http://web.stcloudstate.edu/mmahroof/>

Publications

Ashiq, U., R. Ara, M. Mahroof-Tahir, Z. T. Maqsood, K. M. Khan, S. N. Khan, H. Siddiqui, and M. I. Choudhary. Synthesis, Spectroscopy, and Biological Properties of Vanadium(IV)-Hydrazide Complexes. *Chemistry and Biodiversity*, 5 (1) 82 – 92.

Karimov, K. S., I. Qazi, T. A. Khan, P. H. Draper, F. A. Khalid, and M. Mahroof-Tahir. Humidity and Illumination Organic Semiconductor Copper Phthalocyanine Sensor for Environmental Monitoring. *Environ Monit Assess*, Springer Science and Business Media B. V. 2007

Willsky, G. R., M. E. Godzalla-III, P. J. Kostyniak, L-H Chi, R. Gupta, V. G. Yuen, J. H. McNeill, M. Mahroof-Tahir, J. S. Smee, L. Yang, A. Lobernick, S. Watson, D. C. Crans. Comparing Administration Route in Rats with Streptozocin-Induced Diabetes and Inhibition of Myoblast Growth of Vanadium [V(III), V(IV), and V(V)] Dipicolinic Acid Complexes. *ACS Symposium Series*, 2007, 974, 93 – 109.

Ara, R., U. Ashiq, M. Mahroof-Tahir, Z. T. Maqsood, K. M. Khan, M. A. Lodhi, and M. I. Choudhary. Chemistry, Urease Inhibition and Phytotoxic Studies of Binuclear Vanadium (IV) Complexes. *Chemistry and Biodiversity*, 4 (1) 58 – 71.

Maqsood, Z. T., K. M. Khan, U. Ashiq, R. A. Jamal, Z. A. Chohan, M. Mahroof-Tahir, and C. T. Supuran. Oxovanadium(IV) Complexes of Hydrazides: Potential Antifungal Agents. *Journal of Enzyme Inhibition and Medicinal Chemistry*, 21 (1) 37 – 42.

Presentations

Mahroof-Tahir, M.; Gregory, D.; Bushkofsky, J. R.; Swingley, L. E.; Eannelli, M. A. Synthesis and Characterization of Vanadium Flavonoid Complexes in Solid and Solution States. Invited oral presentation: Fifth International Vanadium Symposium on the Chemistry and Biological Chemistry of Vanadium, ACS National Meeting, Sept. 10 – 14, 2006, San Francisco.

Grants

\$23,043 for the development of interactive modules to increase student learning, promote retention and provide flexible learning environment in introductory chemistry courses, from MnSCU, IPESL Institutional Award, 2006 – 2007.

Jack F. McKenna, *Professor*. Ph.D. 1982, Clemson University.

demonstrations (chemical), kinetics, thermodynamics

WSB 364

phone: 320.308.3032

jfmckenna@stcloudstate.edu

<http://web.stcloudstate.edu/jfmckenna>

Mark Mechelke, *Associate Professor*. Ph.D. 1998, University of Iowa.

chemotherapeutic agents, natural products, organic chemistry, synthesis

WSB 370

phone: 320.308.2030

mmechelke@stcloudstate.edu

<http://web.stcloudstate.edu/mmechelke>

Donald Neu, *Associate Professor*. Ph.D. 1993, University of Wisconsin-Madison.

drinking water purification, materials science, quartz crystal microbalance, semiconducting materials, surface modification for selective chemical sensors

WSB 369

phone: 320.308.3989

drneu@stcloudstate.edu

<http://web.stcloudstate.edu/drneu/>

Selected Presentations

Neu, Donald R. "Online Web-based Learning Assignments vs. Written Homework Assignments" ACS National Meeting, March 2007, Chicago.

Lakshmaiah Sreerama, *Professor*. Ph.D. 1991, Bangalore University, India.

aldehyde dehydrogenases, breast cancer, chemotherapy agents, carcinogenesis, drug metabolism and resistance, ethylene glycol ether toxicology, genomics, pharmacogenetics, proteomics

WSB 372

phone: 320.308.2080

lsreerama@stcloudstate.edu

<http://web.stcloudstate.edu/lsreerama/>

Latha Ramakrishnan, *Assistant Professor*. Ph.D. 2001, Indian Institute of Science, Bangalore, India.

neurological diseases and disorders: epilepsy and Alzheimer's disease, nicotinic acetylcholine receptors, small molecule inhibitors of beta-amyloid fibril formation

WSB 368

phone: 320.308.3257

lramakrishnan@stcloudstate.edu

Publications

Sivaprakasam, K. and L. Ramakrishnan, Retigabine: A Novel Anticonvulsant Drug in Development. *Drug Discovery Today* 10 (15) 1072 .

Nathan Winter, *Professor*. Ph.D. 1992, Washington University.

crystallography, protein structure

WSB 358

phone: 320.308.2052

nwinter@stcloudstate.edu