Newsletter

College of Physical and Mathematical Sciences

October 2008

In this issue:

Milton L. Lee

Recipient of the Reed M. Izatt and James J. Christensen Faculty Excellence in Research Award

Milton L. Lee is the first recipient of the Reed M. Izatt and James J. Christensen Faculty Excellence in Research Award.

Dr. Lee received a B.A. Degree in Chemistry from the University of Utah in 1971 and a Ph.D. in Analytical Chemistry from Indiana University in 1975. He spent one year (1975-76) at the Massachusetts Institute of Technology as a Postdoctoral Research Associate before taking a faculty position in the Department of Chemistry and Biochemistry at Brigham Young University, where he is presently the H. Tracy Hall Professor of Chemistry. Dr. Lee is author or co-author of over 500 scientific publications. Since 1980, he has given over 700 presentations on various aspects of his research, of which approximately one-third were invited lectures at major conferences and symposia. He is a member of the Scientific Committee for the International Symposium on Capillary Chromatography. Dr. Lee is best known for his research in capillary separations and mass spectrometry detection.

Dr. Lee's current research activities cover several diverse areas including electric field gradient focusing of proteins, high speed thermal gradient gas chromatography, polymer monolithic column technology for liquid chromatography, sampling and concentration of target organic compounds in air, thermochemolysis/methylation of microorganisms for generation of characteristic biomarkers, toroidal ion trap mass spectrometry, and fluidic sieving of nano-particles. His research is mostly interdisciplinary in nature, involving faculty and students in Chemistry, Chemical Engineering, Statistics, Mechanical Engineering, Electrical Engineering, and Microbiology.

Professor Lee is also an entrepreneur and has been involved in transferring technology from his university research laboratory to the private sector. In 1984, he co-founded Lee Scientific to manufacture and market super- critical fluid chromatographic instrumentation, and in 1991 he co-founded Sensar Corporation to manufacture and market unique time-of-flight mass spectrometric instrumentation. In addition, Dr. Lee acquired ownership of the Journal of Microcolumn Separations in 1991 and became the publisher as well as an editor for the next 8 years. He is listed as a co-inventor on 20 issued or pending patents. His most recent company is Torion Technologies Inc. which offers the world's smallest and most portable Gas Chromatograph-Mass Spectrometer System. It is a small, high-speed capillary gas chromatograph coupled to a miniature toroidal ion trap mass spectrometer (TMS), which provides rapid, high resolution separation and sensitive and selective detection of a wide variety of compounds at unit mass resolution over a range of 50 – 500 m/z.

Important Dates & Events in the College

October 2008

National Security
Nephi Noble
December 4th, 2008
1170 TMCB
4:00 pm

Pittcon 2008

Milton L. Lee received the "Society of Analytical Chemists of Pittsburgh" award and Adam T. Woolley received the "Analytical Chemistry Award for Young Investigators in Separation Science." Prior to the conference, Daniel E. Austin was awarded the "Pittsburgh Spectroscopy Society Starter Grant Award."

Milton L. Lee

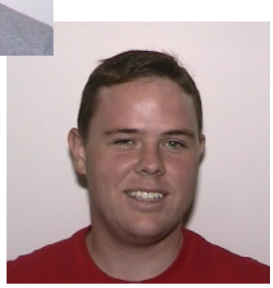
Adam T. Woolley

Daniel E. Austin

BYU Undergrad Receives Student Poster Award

Jordan Smith

Nicole Taylor



John-David McElderry

At the recent international FACSS conference (Federation of Analytical Chemistry and Spectroscopy Societies), Jordan Smith, an undergraduate in Chemistry, was recognized with the Student Poster Award from the Society for Applied Spectroscopy for his presentation, "Effect of Axial Temperature Gradients on Retention in Solvating Gas Chromatography". Joint authors on the poster were two other undergraduates who worked on the project but have since graduated, Nicole Taylor and John-David McElderry, and the supervising professor, Steven Goates. The poster session included about 30 posters by graduate and undergraduate students.

Computer Science Colloquia

- Thursday, November 6—Brian Scassellati, 11:00 am, 1170 TMCB
- Thursday, November 13—Mike Quinn, 11:00 am, 1170 TMCB
- Thursday, November 20—Kentaro Toyama, 11:00 am, 1170 TMCB

A Professor of (NSA) Distinction

The National Security Agency (NSA) recently named Dr. Sean Warnick its 2008 Distinguished Visiting Professor. The position is highly competitive and is offered to a professor with a distinguished record in both decision science applications and student mentoring. Dr. Warnick, an assistant professor in the Computer Science Department, received his Ph.D. from MIT in 2003 in electrical engineering and computer science, with a minor in mathematics. His work focuses on the feedback control of complex dynamical systems; with application, including proteomic network reconstruction; scheduling of batch manufacturing systems; and market power/valuation analyses in merger-and-acquisition studies.

(Falll 2008 Frontiers Magazine)

College Volunteer Leadership Council (CVLC) Meets for Semiannual Meetings

The College of Physical & Mathematical Sciences CVLC recently held their semiannual meeting in conjunction with BYU Homecoming. The CVLC, an advisory council of alumni and friends of the college, met at Aspen Grove to hear reports from the Deans and to participate in committee discussions that resulted in proposals to help further the mission of the college. Following dinner and the meetings of the day, Peter Vidmar, a member of the council and a former Olympic Gold Medalist, regaled the council with a description of his experiences at the Olympics and lessons learned that apply to each person's life.

The following day was spent touring the newly renovated Eyring Science Center underground lab in which the council was briefed on research in acoustics, lasers, and nanotechnology. Upon completion of the underground lab tour, departments hosted dinners and discussions for alumni and members of the CVLC. Attendance at the Homecoming Spectacular completed the day's events —a treat for all in attendance.

The final day of the CVLC visit included a breakfast/meeting hosted by the Department of Geological Sciences in which they commemorated 100 years of scholarship and honored attending graduates from the 1940's and 1950's. The afternoon was spent supporting the football team in its victory over New Mexico.

The next CVLC visit to the college has been set for March of 2009, and will be held in conjunction with the college Spring Research Conference.

The college is grateful for the support of the CVLC and thanks them for their participation in the recent council meetings and Homecoming festivities.

College Publications

Chemistry & Biochemistry

J. Cai, V.L. Damaraju, M. Groulx, D. Mowles, Y. Peng, M.J. Robins, C.E. Cass, and P. Gros, "Two Distinct Molecular Mechanisms Underlying Cytarabine Resistance in Human Leukemic Cells," *Cancer Research,* **68,** 2349-2357 (2008).

J.C. Lashley, R. Stevens, M.K. Crawford, J. Boerio-Goates, B.F. Woodfield, Y. Qiu, J.W. Lynn, P.A. Goddard, and R.A. Fisher, "Specific Heat and Magnetic Susceptibility of the Spinels $GeNi_2O_4$ and $GeCo_2O_4$," *Physical Review B,* **78,** 104406 (2008).

Soane, D.S.; Millward, D.B.; Linford, M.R.; Lau, R.; Green, E.G.; Ware, Jr., W. U.S. Patent No. 7,427,300 "Hydrophilic finish for fibrous substrates" September 23, **2008**.

M.R. Miller, D.W. Healey, S.G. Robison, J.D. Dewey, and A.R. Buskirk, "The role of upstream sequences in selecting the reading frame on tmRNA," *BMC Biology* 2008, **6**:29.

English, A.M.; Hansen, J.C.; Szente, J.J.; Maricq, M.M., "The Effects of Water Vapor on the CH_3O_2 Self-Reaction and Reaction with HO_2," *J. Phys. Chem. A.,* **2008**, 112(39), 9220-9228.

Hansen, J.C.; Friedl, R.R.; Sander, S.P., "Kinetics of the OH + ClOOCl and OH + Cl_2O Reactions: Experiment and Theory," *J. Phys. Chem. A.,* **2008**, 112(39), 9229-9237.

Computer Science

Menke, J. and Martinez, T. R., A Bradley-Terry Artificial Neural Network Model for Individual Ratings in Group Competitions, *Journal of Neural Computing and Applications*, vol. **17**, no. 2, pp. 175-186, 2008.

Zeng, X. and Martinez, T. R., Using Decision Trees and Soft Labeling to Filter Mislabeled Data, *Journal of Intelligent Systems*, vol. **17**, no. 4, pp. 331-354, 2008.

Gashler, M., Giraud-Carrier, C., and Martinez, T. R., Decision Tree Ensemble: Small Heterogeneous is Better than Large Homogeneous, to appear in *Proceedings of ICMLA'08 (International Conference on Machine Learning Applications)*, 2008.

Geological Sciences

Bickmore, B. R., Wheeler, J. C., Bates, B., Nagy, K. L., and Eggett, D. L. (2008) Reaction pathways for quartz dissolution determined by statistical and graphical analysis of macroscopic experimental data, Geochimica et Cosmochimica Acta, 72, 4521-4536.

Dorais, M. J., and M. Tubrett (2008). Identification of a subduction zone component in the Higganum dike, Central Atlantic Magmatic Province: A LA-ICPMS study of clinopyroxene with implications for flood basalt petrogenesis. Geochem. Geophys. Geosyst., 9, Q10005, doi:10.1029/2008GC002079.

Mathematics

Mathematics Education

Physics and Astronomy

Johnathan Goodsell, Stephanie A. Getty, Jon Brame, and David D. Allred, "Thin-film iron-catalyzed "beads on a string" carbon nanotubes," The Journal of the Utah Academy of Sciences, Arts, and Letters-2007, **84,** 130-140. Received 2007 Best Paper Award in Physical Sciences Section (See journal p. iv).

Michael D. Joner, Benjamin J. Taylor, C. David Laney and Francois van Wyk, "Tests of Broadband Photometric Consistency for Standard Starts, the Hyades, and M67" The Astronomical Journal, Vol. 136: pp. 1546-1556, 2008, October.

Statistics

Hathaway, J.E., Schaalje, G.B., Gilbert, R.O., Pulsipher, B.A., Matzke, B.D., "Determining the optimum number of increments in composite sampling," *Environmental and Ecological Statistics,* **15:** 313-327, 2008. DOI: 10.1007/s10651-007-0089-x.