

COLLEGE OF SCIENCE, ENGINEERING AND TECHNOLOGY
GOOD NEWS
Summer 2009

AUTOMOTIVE AND MANUFACTURING ENGINEERING TECHNOLOGY

Dr. Craig Evers, Assistant Professor, made two presentations at the Institute of Industrial Engineers annual conference in Miami on May 30-31, 2009. The titles were "Using an Enhanced Grading Spreadsheet for Class, Student & Self-Assessment" and "Teaching an Introductory Course of Industry-Based Six Sigma Methods". Both of these were also published as papers in the Conference Proceedings. Dr. Evers also attended a 3-day SAE Vehicle Dynamics course taught at the BMW High-Performance Driving School in Greer, SC. In addition, he took one of our senior design teams to the SAE Mini-Baja competition in Burlington, WI. This was our first year back in this competition since 2003. The team made a good showing for a first-year team, and received many positive comments from far more experienced schools.

BIOLOGICAL SCIENCES

One of our former students in Biological Sciences, Derek Skillings, was featured on the NatGeo Channel (National Geographic TV) recently. Derek is currently a graduate student at the University of Hawaii. Mr. Skillings was discussing his research on limpets (marine gastropods) in the Hawaiian Islands as part of the "America's Wild Spaces: Hidden Hawaii" series. The short clip (<4 minutes long) can be seen here.

<http://channel.nationalgeographic.com/episode/hidden-hawaii-3589/overview#tab-Videos/06872>

Derek worked on independent study projects in Dr. Bob Sorensen's lab for six semesters. During that time, he made presentations at the Undergraduate Research Conference (URC) and at the Annual Midwest Conference of Parasitologists that we hosted here at MSU. Derek and his co-presenter won the award for best presentation at their session of the URC. Derek also participated in an NSF-funded REU in Hawaii between his junior and senior years at MSU, which helped him get started with his current Ph.D. project.

The following presentations were given at the annual Ecological Society of America meeting in Albuquerque in August:

Ruhland C.T., Krna M.A., Strauss S.L. and T.A. Day. Effects of supplemental warming and precipitation on decomposition of Antarctic vascular plant litter.
Day T.A. and C.T. Ruhland. Effectiveness of different wavebands of solar radiation on litter decomposition in the Sonoran Desert.

Dr. Anne-Marie Hoskinson gave a talk and presented a poster at the 16th Annual American Society for Microbiology Conference for Undergraduate Educators (May 28-31, Fort Collins, CO). Her talk was titled, "Improving research and speaking skills one minute at a time: Bio-minute", and her poster was titled, "Cooperative learning lasts: Learning gains from a cooperative mathematical-biological modeling class just keep going and going." The talk was awarded Best of Session.

The National Science Foundation awarded \$199,475 to MSU for a Major Research Instrumentation Grant entitled: "Acquisition of a Scanning Electron Microscope for a Multi-User Core Facility in Science, Engineering and Technology", under the direction of Drs. Michael Bentley, Marilyn Hart, Timothy Secott, and Robert Sorensen. The microscope will be equipped with an energy dispersive spectroscopy system for elemental analysis and will be housed in the Biological Imaging Facility in South Trafton.

Below are three abstracts for posters that have been accepted for the 29th Annual International NALMS (North American Lake Management Society) Conference. The conference is being held in Hartford, CT Oct. 26-31. These abstracts represent the research of seven of our students.

Determination of the Allelopathic Ability of Reed Canary Grass Grown With and Without Tussock Sedge in Three Different Soils--Jordy Veit, Dr. Beth Proctor, Environmental Sciences Program, Minnesota State University @Mankato, Mankato, MN 56001

Potential of Lead Leaching Out of Sporting Clay Ranges
Alison Vikla; Michael DeMars; Cory Denzer; Roland Pavek; Dr. Beth Proctor
Department of Biological Sciences at Minnesota State University, Mankato

The Effect of Nutrient Levels on the Allelopathic Ability of Reed Canary Grass (*Phalaris arundinacea*) on the Germination and Growth of Lettuce,
Selina Pradhan, Joe Hoffmann, Dr. Beth Proctor, Department of Biological Sciences,
Minnesota State University, Mankato, MN 56001

CHEMISTRY AND GEOLOGY

Dr. Steven Losh and co-investigators Drs. Lyudmyla Ardanova, Bryce Hoppie, Jim Wilde, Chad Wittkop, and Youwen Xu (all at MSU Mankato) were awarded \$226,290 by the National Science Foundation's Major Research Instrumentation program for the purchase and maintenance of an X-ray diffractometer. This state-of-the-art instrument will enhance research and teaching in many fields, including geology, chemistry, physics, and civil engineering.

One of our students, Mr. Kyle Makovsky, working with faculty mentor Dr. Steven Losh, presented a poster at the 55th Institute on Lake Superior Geology conference, May 7 & 8 in Ely MN. The presentation, "Fluid movement through the Mesabi Iron Range, Minnesota," won a Best Student Paper award from the Institute.

Drs. Steven Losh, Dan Swart, and Mr. Andrew Dickinson (all of MSU Mankato) submitted a manuscript ("Gas washing patterns and economics in an area of continental shelf offshore Louisiana") to the Transactions of the 59th annual Gulf Coast Association of Geological Societies conference, to be held September 26-28 in Shreveport LA. The manuscript was accepted for publication, and Dr. Losh will present the paper. At the conference, Dr. Losh is co-chairing a session titled Visualization, Geochemistry, and Interpretation of Geologic Systems.

CONSTRUCTION MANAGEMENT

Faculty Updates: Scott Fee is on sabbatical this year, Brian Wasserman has accepted the chair position and Mike Riker (American Industrial Refrigeration) has joined us as a new adjunct faculty.

The CM Department's effort toward accreditation resulted in achieving candidate status with the American Council for Construction Education (ACCE). The preliminary self study was submitted last spring and approved in May. The department goal is to have a formal accreditation team visit in spring 2011.

Check out the updates on the CM website. www.makatoconstructiondegree.com We have a new logo and website banner.

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News & Updates

- Mr. Brian Wasserman is the new Chair for the Department of Construction Management.

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Owner: Construction Management Last Modified: 2009-08-20 © 2005-2009 Minnesota State University · Mankato, Minnesota 56001 · United States of America · Tel: 1-800-722-0544 Minnesota State University, Mankato is a member of Minnesota State Colleges & Universities system and an affirmative action/equal opportunity university.

The CM program rewrite survived the CSET Curriculum Committee and MNSCU last year. It has resulted in a new curriculum this fall. We are opening the year with exciting new classes and a lot of work ahead to form the new curriculum into functional education for our students.

Attached is a link to the Construction Management Student Association newsletter. Students in CMSA, under the direction of Rich Krohn, produced the newsletter in May. <http://cset.mnsu.edu/cm/students/>

The CM Advisory Board is presenting the "Green Construction Exposures" seminar. The seminar will be held in the Atrium at the 7700 France campus on October 14, from 1-4 pm. Faculty from CSET are invited to attend. If interested in more details, email info@constructionmanagement.com

ELECTRICAL AND COMPUTER ENGINEERING AND TECHNOLOGY

Professor William Hudson and Professor William Lewinski of Political Science and Law Enforcement received notification that their patent "System and Method For Monitoring Handling of a Firearm or Other Trigger-Based Device" will be awarded.

Dr. Vincent Winstead, Associate Professor, has coordinated the installation of two wind turbines on campus over the summer and hopefully two additional turbines will be installed sometime during the fall semester. The wind turbines are being installed as part of a Residential Wind Study grant to install and test the performance of different wind turbine designs.

The proposal "Using Commercial Photonic Design Automation (PDA) Software to Promote Interactive Learning in Science, Engineering and Technology" by Dr. Qun (Vincent) Zhang (PI), Associate Professor in ECET, and Ms. Patti Kramlinger, Development Director of CSET, was approved by the Mankato Area Foundation. A total of USD \$7000 was received to purchase optoelectronics system and component design software. The software will be used by professors (in ECET, Mathematics, and Physics) and their graduate students for research, and undergraduate students for learning design automation software, FDTD simulation, modeling, and algorithms development.

Changbao Ma (1), Shengwen Qi (1), Qun Zhang (2) and Edward Van Keuren (1), "High efficiency right-angle bending structures in continuous slot waveguides," J. Opt. A: Pure Appl. Opt. 11 (2009) 105702.

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INFORMATION SYSTEMS AND TECHNOLOGY

During June, MSU's Project Maverick acquired an additional 1000 square feet of office space in University Square. This gives Project Maverick the capability to increase the number of interns with technology majors from twenty to a maximum of thirty.

On August 12, Project Maverick's Director, Dr. Michael Wells, Maverick Software Consulting's VP of Software Testing, and five Project Maverick student interns presented their projects to Thomson Reuters's executives at Thomson Reuters's Eagan, MN location.

Beginning on August 15, 2009, MSU Project Maverick entered into a five year contractual agreement with Maverick Software Consulting (MSC). MSC committed in excess of \$3 million dollars to Project Maverick.

In August, Michael Wells' and Lee Cornell's article, "An Onshore Alternative to Offshore Outsourcing of Software Development and Testing" was accepted by the 2009 National Decision Science Institute.

Dr. Mahbubur R. Syed (Ed): Methods and Applications for Advancing Distance Education Technologies: International Issues and Solutions, Information Science Reference (an Imprint of IGI Global), USA, ISBN 978-1-60566-342-5, copyright 2009, 434 pages.

MATHEMATICS AND STATISTICS

I.-J. Kim and B.L. Shader, Nonsingular acyclic matrices, Linear and Multilinear Algebra 57 (2009), 399-407

Dr. I.-J. Kim, Assistant Professor, attended the Mathematical Sciences Research Institute (MSRI) workshop on "Critical issues on education: Teaching Undergraduates

Mathematics" in Berkeley, CA on May 11-13, 2009, and the American Institute of Mathematics (AIM) workshop on "Research Experiences for Undergraduate Faculty" in Palo Alto, CA on July 20-24, 2009. The trips to both of these workshops were fully supported by MSRI, AIM and NSF.

Dr. Kim presented "Compressed Sensing and Matrix Problems" at the Conference on Linear and Numerical Linear Algebra: Theory, Methods and Applications, held at Northern Illinois University, DeKalb on August 12-14, 2009.

Dr. Chia-chi Tung, Professor, has a paper "On Semisubmedian Functions and Weak Plurisubharmonicity", 24 pp., accepted by "Cubo: A Mathematical Journal" in May (to appear in 2010).

Dr. Tung also presented a paper "On Generalized Gauss and Martinelli-Bochner Means", 24 pp., at the International Conference on Complex Analysis and Related Topics, Turku, Finland, August 17-21, 2009.

Dr. Deepak Sanjel, Assistant Professor in Statistics, presented a contributed paper entitled "On the Distributions of Statistics Useful in Testing Outliers" at the 57th session of the International Statistical Institute, August 16-22, 2009 at Durban, South Africa. Travel support was received from the American Statistical Association.

Mr. Mohammad Lutfur Rahman, Graduate Student in Mathematics and Statistics, presented a poster session entitled "The Application of Periodic Autoregressive Moving Average (PARMA) Models in Water-quality Trend Analysis of Minnesota River" at the Joint Statistical Meeting on August 1-6, 2009 in Washington DC. This is a joint work with Dr. Deepak Sanjel and the Water Resource Center at MSU.

MECHANICAL AND CIVIL ENGINEERING

ASME (American Society of Mechanical Engineers) International Congress and Exposition 2009 accepted Dr. Jin Park, Assistant Professor, and his graduate student's article "The effect of clay/epoxy debonding to the mechanical properties of nanocomposites" for publication and presentation.

Park, J. Y. and Fay, T. A., "The effect of clay/epoxy debonding to the mechanical properties of nanocomposites," ASME International Congress and Exposition 2009, Lake Buena Vista, FL, November 2009

PHYSICS AND ASTRONOMY

Presentations by Dr. Russell Palma, Professor -- "The Early Solar System: Surprises from NASA's Stardust Mission" Keynote Speaker, *Northwoods Starfest 2009*, Chippewa Valley Astronomical Society, Hobbs Observatory, Beaver Creek Reserve, Fall Creek WI, August 22, 2009.

"A Preliminary Light Noble Gas Investigation of Stardust Samples" *72nd Annual Meeting of the Meteoritical Society*. Nancy, France, July 13-18, 2009.

"Carbon Raman Spectroscopy of 36 Interplanetary Dust Particles" *72nd Annual Meeting of the Meteoritical Society*. Nancy, France, July 13-18, 2009.

“Studies of Light Noble Gas in Stardust Samples and Interplanetary Dust Particles,” co-PI with Dr. Robert Pepin of the University of Minnesota, *National Aeronautics and Space Administration*, \$372,531, 2010-12 (in review).

R. L. Palma, R. O. Pepin, and D. J. Schlutter, 2009. A Preliminary Light Noble Gas Investigation of Stardust Samples. Accepted for publication in *Meteoritics & Planetary Science* (in press).

H. Busemann, L. R. Nittler, J. Davidson, I. A. Franchi, S. Messenger, K. Nakamura-Messenger, R. L. Palma, and R. O. Pepin, 2009. Carbon Raman Spectroscopy of 36 Interplanetary Dust Particles. Accepted for publication in *Meteoritics & Planetary Science* (in press).

K. Nakamura-Messenger, L. P. Keller, S. J. Clemett, S. Messenger, J. Jones, R. L. Palma, R. O. Pepin, W. Kloeck, M. E. Zolensky, and H. Tatsuoka, 2009. Brownleeite: a New Manganese Silicide Mineral in an Interplanetary Dust Particle. Accepted for publication in *American Mineralogist* (in press).