

COLLEGE OF SCIENCE, ENGINEERING AND TECHNOLOGY
March 2008
GOOD NEWS

AUTOMOTIVE AND MANUFACTURING ENGINEERING TECHNOLOGY

Dr. Bruce Jones, Prof. Gary Mead, and Mr. Paul Steevens released four papers from a two-year study on the compatibility of E20 with automotive, marine, and small engine fuel systems. The papers focused on metals, plastics, elastomers, and fuel pumps. The study was performed for the State of Minnesota to see if E20 would be viable for sale in all gasoline. The papers were released to the Minnesota Department of Agriculture and can be found on their website.

The Minnesota Corn Growers Association and the Minnesota Corn Research and Promotion Council donated \$250,000 toward the new AET emissions facility. This facility will meet the EPA's requirements for emissions and fuel economy testing allowing the AET department to expand their bio-fuels and hybrid research. It will be one of the few emissions labs in the country, and the only one at a university capable of handling newer all wheel drive vehicles.

BIOLOGICAL SCIENCES

Thiele, E.A., Sorensen, R.E., Gazzinelli, A., Minchella, D.J. "Genetic diversity and population structuring of *Schistosoma mansoni* in a Brazilian village" (2008) International Journal for Parasitology, 38 (3-4) pp. 389-399.

Dr. Christopher Ruhland, Associate Professor, gave an invited departmental seminar entitled "Climate Change in Antarctica: Implications for vascular plant communities" to the Department of Horticultural Science at the University of Minnesota on March 26.

Dr. Bill Bessler was honored this past weekend at the MN State Science & Engineering Fair, with a Lifetime Award for his 24-year involvement at the state level. Marilyn Bessler was also honored for her 24-year support with a Lifetime Award.

CHEMISTRY AND GEOLOGY

Dr. Jeff Pribyl, Professor, is a member of the Science Postsecondary and Workforce Readiness Working Group--An initiative sponsored by the Minnesota P-16 Education Partnership.

ELECTRICAL AND COMPUTER ENGINEERING AND TECHNOLOGY

Dr. Han-Way Huang, Professor, submitted the final manuscript of a new textbook to his publisher at the end of this past March.

Dr. Han-Way Huang will be attending the ASEE Annual Conference on June 22-25, 2008, which is held in Pittsburgh, PA. He will present a paper entitled "Experience of Teaching Embedded System Design".

Dr. Vincent Winstead, Assistant Professor, has submitted a grant proposal to the Minnesota Department of Commerce Energy and Telecommunications Division in the Small Wind area. The proposal is for purchasing, integrating and testing four small windmill systems on campus. The proposal also includes generating technical instructional documentation for operating the windmills. The grant request totals \$145,800.

Drs. Vincent Winstead and Bruce Jones (AET) have organized a student team to submit a proposal for acceptance into the EcoCAR competition, a three year competition sponsored by Argonne National Labs and General Motors to modify a conventional vehicle into a high performance hybrid. If selected, Minnesota State University, Mankato would be one of a handful of college and university teams from North and South America participating.

Dr. Vincent Winstead submitted a proposal for a Faculty Research Grant to continue research in Autonomous Robot Control. The grant request is for \$5000.

Drs. Bruce Jones (AET, PI) and Vincent Winstead (ECET, co-PI) have recently been awarded funding from the Minnesota Department of Transportation to convert two Ford Escape Hybrid vehicles to Plug-In Hybrids in partnership with Hybrids Plus, Inc. in Colorado. The funding amount is \$143,800.

Dr. Vincent Winstead will present a conference paper entitled "Applied Engineering with LabVIEW: Experiences From a Plug-In Hybrid Project" at the annual American Society for Engineering Educators (ASEE) conference in Pittsburgh, PA in June 2008.

Dr. Vincent Winstead will present a conference paper entitled "Teaching Optimal Energy Expenditure Using Robotic Platforms and Microcontrollers" at the annual American Society for Engineering Educators (ASEE) conference in Pittsburgh, PA in June 2008.

Dr. Vincent Winstead presented a seminar on the topic of Fuel Cells entitled "Fuel Cells: Theory, Application and Experimentation" at the Science Museum of Minnesota during the MnSTA Conference on February 22, 2008.

INFORMATION SYSTEMS AND TECHNOLOGY

On March 13, 2008, Dr. Christophe Veltsos, Assistant Professor, was awarded the Certified Information Systems Auditor (CISA) designation by the CISA Certification Board. Last year Dr. Veltsos was awarded the Certified Information Systems Security Professional (CISSP) designation as well.

As President of the Mankato Chapter of the Information System Security Association (ISSA), Dr. Veltsos helped organize the 3rd Annual Information Security Seminar. The event, which was held on March 20, 2008, was open to the public and had over one hundred registered participants from all around the state.

INTERIOR DESIGN AND CONSTRUCTION MANAGEMENT

At the Associated Builders and Contractors (ABC) student competition in San Juan, Puerto Rico March 4-10, MNSU-Mankato Construction Management students called "MSU Construction Company" were awarded a trophy for "**Overall**" **Top Fifth Place** with a \$250 check and a trophy for "**Safety Category**" **Third Place** with a check of \$500. Minnesota State University Mankato was recognized as an equal to the other participating universities.

Our student team included presenters Jonathan Graefe, Joe Peterson, Chris Durand and Andreas Buschalla. Student assistants were Cassie Schmidt, Robert Olson and Travis Baukol. They were coached by Assistant Professor Farid Jean Sabongi.

Student teams from 26 universities competed to test their management knowledge, presentation, organizational skills, estimating ability, safety, scheduling, sustainability, finance, accounting, bidding, teaming, competing and innovation.

The team was required to develop a bidding document to build a 64,000 square-foot retail center. The competition simulated a real construction problem, including changes in owner requirements and budget adjustments. The team had to prepare budgets and a construction schedule, and it was responsible for developing a site utilization plan and a safety plan

Students had to demonstrate these competencies:

- Read and understand construction documents and contracts
- Display an understanding of the construction process, including scheduling of labor and materials, marketing, cost estimating and safety
- Demonstrate an understanding of construction materials and their application
- Provide a reasonable construction cost estimate
- Identify potential safety hazards
- Determine solutions to mitigate likelihood of personal injury and property damage
- Demonstrate teamwork
- Solve problems within a specified amount of time

Our student team also participated in educational seminars, networking opportunities and career fair and they enjoyed the conference exhibits.

MATHEMATICS AND STATISTICS

Dr. Brian Martensen, Assistant Professor, presented "Classification of expansive attractors on surfaces" at the 42nd Annual Spring Topology and Dynamical Systems Conference in Milwaukee, WI held March 13-15, 2008.

Dr. Deepak Sanjel, Assistant Professor, jointly with Hyung-Tae Ha and S.B. Provost, has had a paper accepted for publication in the *Journal of the Korean Data Analysis Society*, Vol. 10, No 1. The paper is entitled "On the distribution of a statistic for detecting first order serial correlation".

Dr. Christopher Danielson, Assistant Professor, and the Department of Mathematics hosted 30 higher education faculty from 19 institutions and organizations statewide at the Transforming Teacher Preparation Conference at Minneapolis Community and Technical College on March 17. The conference was the first stage of a MnSCU-funded initiative to recruit elementary education majors to the middle school mathematics specialty license.

Dr. I.-J. Kim, Assistant Professor, was invited to the University of Victoria from March 9 to 15, 2008 for research projects on matrix theory. This trip was hosted by Drs. Olesky (Computer Science) and van den Driessche (Mathematics), and supported in part by an NSERC Discovery Grant.

I.-J. Kim and B.L. Shader, Classification of trees each of whose associated acyclic matrices with distinct diagonal entries has distinct eigenvalues, *Bulletin of the Korean Mathematical Society* 45 (2008), No. 1, pp. 95-99.

Dr. Gary Rockswold, Professor, gave a presentation entitled "The Amazing Impact of Mathematics on Modern Society" at the International Conference on Technology in Collegiate Mathematics in San Antonio, TX on March 7, 2008. Also at this conference, Prof. Nancy Leveille from the University of Houston, gave a presentation that highlighted the improved success rates they are experiencing when using Rockswold's "Essentials of College Algebra with Modeling and Visualization" in conjunction with the text's online system MyMathLab.

Dr. Rockswold participated in an open forum for faculty at Virginia Commonwealth University in Richmond on March 19, 2008 to discuss their experiences using two of Rockswold's textbooks.

A paper titled "Anderson-Darling Statistic in Estimating the Box-Cox Transformation Parameter", by Drs. Mezbahur Rahman and Larry M. Pearson, has been accepted for publication in the *Journal of Applied Probability and Statistics*.

MECHANICAL AND CIVIL ENGINEERING

Drs. Aaron Budge, Assistant Professor, and Jim Wilde, Associate Professor, were invited to present at the Minnesota Department of Transportation Inspector's Conference in Baxter, MN in February. The presentation outlined the objectives of a two-year implementation project funded by Mn/DOT to develop a Test Roller system for subgrade compaction acceptance.

Aaron Budge coauthored a paper presented at Geoamericas 2008 - The First Pan American Geosynthetics Conference and Exhibition held in Cancun, Mexico in March. The paper was entitled "Establishing and Conducting a University

Geosynthetics Course." Dr. David J. Elton, from Auburn University, was the primary author, with Aaron Budge as a coauthor.

Aaron Budge presented a paper coauthored by himself and Jim Wilde entitled "A Modified Method for M_R Testing to Evaluate Temperature Effects in Emulsion-stabilized Gravel " at the GeoCongress 2008 – The Challenge of Sustainability in the Geoenvironment conference of the GeoInstitute of ASCE, held in New Orleans, LA in March. The paper has been published in ASCE Geotechnical Special Publication No. 179 – GeoCongress 2008 – Characterization, Monitoring, and Modeling of GeoSystems (2008.)

PHYSICS AND ASTRONOMY

Dr. Russ Palma, Professor, was co-author on the following abstracts, which were also given as invited presentations at the international 39th Lunar and Planetary Science Conference in Houston, TX, March 10-14, 2008.

- Helium and Neon in a Stardust Track Wall. Lunar and Planetary Science XXXIX, Abstract #1467, Lunar and Planetary Institute, Houston.
- New Manganese Silicide Mineral Phase in an Interplanetary Dust Particle. Lunar and Planetary Science XXXIX, Abstract #2103, Lunar and Planetary Institute, Houston.
- A third presentation was also made at the international NASA Genesis Mission Team Meeting, "Recent Progress Toward a $^{15}\text{N}/^{14}\text{N}$ Solar Wind Value", Houston, TX on March 9, 2008.

Dr. Hai-Sheng Wu, Professor, attended the 1st Int'l Photovoltaic Power Generation Expo *PV EXPO 2008 and FC (Fuel Cell) EXPO 2008* on February 27-29, 2008 in Tokyo Big Sight, Japan.

Dr. Hai-Sheng Wu was invited to give a talk on "Recent Progress on Thin Film Solar Cells" at Gustavus Adolphus College on March 3, 2008.

Louis Schwartzkopf, Professor, gave a presentation, "Renewable Energy, Energy Independence and Climate Change," at the Kasson Library on March 27. His talk was one in a series of Sustainable Rural Communities Forums sponsored by Southeastern Libraries Cooperating (SELCO) in partnership with the University of Minnesota Experiment in Rural Cooperation (ERC).

WATER RESOURCES CENTER

Dr. Shannon Fisher, Director of the Water Resources Center, has been recognized by Ducks Unlimited for his commitment to wetlands and shallow lakes in Minnesota. Dr. Fisher received the Beyond the Call award at the annual Shallow Lakes Forum in Fergus Falls on March 31. The forums bring together diverse groups to protect and improve shallow lakes. Dr. Fisher has coordinated the forums since they began in 2004.