

CAMPUS REPORT FOR MONTANA TECH

DATE: August 23, 2013
TO: Board of Regents
FROM: Donald M. Blacketter, Chancellor, Montana Tech
RE: Campus Report for the September 18 and 19, 2013 Board of Regents' Meeting

STUDENT ACHIEVEMENT

- Electrical Engineering graduate student Ryan Myers presented a professional paper at the 2013 IEEE Power and Energy Society General Meeting in Vancouver BC.
- The Montana Tech Oredigger Hockey team was featured in the Calgary Sun on August 12 (<http://www.calgarysun.com/2013/08/12/albertans-playing-big-role-in-putting-montana-techs-hockey-team-on-the-map>). The team is in the Mountain West League of the American Collegiate Hockey Association Division II. Conrad Smith, a junior Petroleum Engineering student and standout defenseman, was nominated for the ACHA D2 Select team that will compete with teams from Austria, Germany, Slovenia, Croatia and Hungary over Christmas break.
- The Petroleum Engineering Department and 81 sophomore students traveled to the Rock Springs, Wyoming area for a four-day field trip to tour oil and gas field operations. Petroleum companies Anadarko, Williams, Halliburton, and BP hosted the group. The students toured a drilling rig, an enhanced oil recovery (CO₂ injection) project, oil and gas production facilities, a natural gas processing plant and a hydraulic fracturing job. Part of a one-credit course for Pet. Eng. majors, the trip was led by Mary North-Abbott, Dave Reichhardt, Burt Todd, and Sue Schrader.

FACULTY EFFORTS

- Montana Tech's Near-Field Scanning Optical Microscope (NSOM) was successfully demonstrated by Assistant Professor Jack L. Skinner. Recent demonstrations include an impressive topological noise of less than 0.8 Angstroms on a single layer of graphene, simultaneous topological and conductive measurements with three-dimensional graphical reconstruction of gold micro-wires, and simultaneous topological and optical field measurements with three-dimensional reconstruction of a cleaved optical fiber. Montana Tech's NSOM is an important addition to the recently approved Materials Science Ph.D. program in the area of nanotechnology.
- Prof. Chris Gammons (Geological Engineering) and colleagues published a paper in the journal *Applied Geochemistry* (vol. 36, p. 57-69) entitled, "Geochemistry, water balance, and stable isotopes of a "clean" pit lake at an abandoned tungsten mine, Montana, USA."
- Professor Dan Trudnowski's paper was selected as a "Prize Conference Paper" at the 2013 IEEE Power and Energy Society General Meeting (PES-GM). The PES-GM conference includes nearly 1000 refereed papers, and the award designates Dr. Trudnowski's paper as one of the top four papers at the conference. (D. Trudnowski, D. Kosterev, and J. Undrill, "PDCI Damping Control Analysis for the western North American Power System," Paper No. GM1546, IEEE PES General Meeting, Vancouver, BC, July 2013.)
- Keith Vertanen, Assistant Professor of Computer Science, authored two papers, "The Feasibility of Eyes-Free Touchscreen Keyboard Typing" and "A Collection of Conversational AAC-like Communications." Both papers will be presented at the ACM SIGACCESS Conference on Computers and Accessibility.

- Assoc. Prof. Martha Apple (Biological Sciences) conducted field research through funding from the European Union's Interact/Transact program on plant functional traits and climate change in the Cairngorms National Park of Scotland in the summer of 2013. Dr. Apple travelled to Glacier National Park in July 2013 to present an invited talk called, "Life on a Changing Edge: Rare, Peripheral Arctic-Alpine Plants on the Edges of Permanent Snowfields/Glaciers that are Receding Due to Climate Change in Glacier National Park." The talk is based on RECU-funded research conducted in 2012 with Montana Tech math major D.J. Moritz and UM botany major Alice Martin.
- Dr. Hilary Smith Risser (Mathematical Sciences) coauthored a peer-reviewed paper, "Mentoring From the Outside: The Role of a Peer Mentoring Community in the Development of Early Career Education Faculty," which appeared in *Mentoring and Tutoring: Partnership in Learning* 21(2). Dr. Smith Risser is also the sole author of the paper "Virtual Induction: A Novice Teachers' Use of Twitter to Form a Mentoring Network," which will appear in *Teaching and Teacher Education* later this year.
- Dr. Courtney Young was instrumental in organizing the Hydroprocess 2013 conference in Santiago, Chile, attended by 270 people from 18 different countries. Dr. Young presented a plenary address on "Gold Recovery for Thiosulfate Solution using Impregnated Activated Carbon" and his PhD student, Nick Gow, presented their paper on "Raman Spectroscopy and Cyclic Voltammetry for Evaluating EH-pH Diagrams." Both were well received. Conference and Post-Conference details can be found at <http://www.hydroprocess2013.com/english/>.
- Dr. Damian Valles, post-doc with the high-performance computing group and the Computer Science Department, presented his paper "A Numerical Modeling MATLAB Approach to Memory Behavior on a Multi-core Architecture on a Beowulf Cluster Single-Node" at the International Conference on Parallel and Distributed Processing Techniques and Applications.
- Dr. Damian Valles and Jeff Braun, Assistant Professor of Computer Science, received external funding from the National Computational Science Institute to attend the Intermediate Parallel Computing workshop held at the Louisiana State University's Center for Computation and Technology.
- Petroleum Engineering Instructors Rich Schrader and John Getty attended the Stimlab Symposium meeting in Sonoma, CA. Both Rich and John will be working on the update of the American Petroleum Institute standards (RP 19C and 19D) for proppant testing.
- Larry Smith, Geological Engineering, and John Getty, Petroleum Engineering, received a \$20,000 contract to evaluate test cores for possible proppant mining operations.
- The Survey of Native Proppant (SNaP) project, originally funded for one year at about \$125,000, was extended by the Board of Oil and Gas Conservation for two more years. The total funding is now \$383,101. The SNaP project is a collaborative effort between the Montana Bureau of Mines and Geology and Petroleum Engineering and is managed by co-PIs John Getty and Katie McDonald.
- Dr. Suzan Gazioglu of the Mathematical Sciences Department published a peer-reviewed article in the Summer 2013 issue of *Teaching Statistics*, entitled, "Online course design: a statistics course example."
- Dr. Larry N. Smith, Geological Engineering faculty, and former graduate student Tyler Croft presented a paper at the annual Wyoming Geological Association/Tate Geological Museum/SPE Cretaceous Conference (now to be published by the WGA): "Sequence stratigraphy, subsurface mapping, and correlation of the Lower Cretaceous Bow Island Formation, north-central Montana"

- Congratulations to Associate Professor Julie Hart of the Montana Tech Safety, Health, and Industrial Hygiene Department, who successfully defended her dissertation (focusing on activity-based exposure assessments to Libby amphibole) on August 12 and in so doing so completed all requirements for her PhD in Toxicology from University of Montana's Department of Biomedical and Pharmaceutical Sciences. Dr. Hart has become a seasoned researcher and mentor to students whose efforts have provided various student thesis projects and several publications.
- The Montana Tech Safety, Health, and Industrial Hygiene Department (SHIH) is proud to announce accreditation of its B.S. in Occupational Safety and Health by the Applied Science Accreditation Commission of ABET. SHIH Professor Roger Jensen spearheaded this effort. This commission also accredits the on-campus and online M.S. industrial hygiene programs.
- Congratulations to Assistant Professor Theresa Stack, a new hire in SHIH, who recently passed the Associate Safety Professional exam. This globally recognized occupational safety and health certification is a prerequisite for the Certified Safety Professional exam, for which Prof. Stack will sat on August 24, 2013.
- Graduates of the SHIH M.S. in Industrial Hygiene program are the lead authors of a pair of papers on measurement system experiments. Alumna Lea S. Jensen's paper "A Measurement System Experiment to Evaluate the Nosing-to-nosing Method for Measuring Dimensions of Steps" was published in the proceedings of the XXV Annual Occupational Ergonomics and Safety Conference in June. Alumnus Christopher L. Hicks' paper "Stairway Step Dimensions: Replication of a Measurement System Study" will be published in the proceedings of the Human Factors and Ergonomics Society 57th Annual Meeting this September.
- SHIH Assoc. Prof. Sally Bardsley presented a seminar on Total Worker Health, a new NIOSH initiative integrating occupational safety and health protection with overall health promotion, at the American Society of Safety Engineers/Montana Safety Services Council conference in Billings on March 14. Terry Spear, Professor Emeritus and Program Manager for the SHIH Department MS in Industrial Hygiene, presented a seminar entitled, "Expert Witness to Libby Vermiculite Case" at the same conference.
- Dr. Pat Munday, Professor of Science & Technology Studies with the Technical Communication program, recently published the photograph "Cryptogamic Crust" in the newly revised edition of *Microbiology* by Slonczewski and Foster (WW Norton, 2013). Dr. Munday was also a panelist for the forum "Stream Access" and a facilitator for the forum "Restoration of the Clark Fork River," both hosted by the Clark Fork Watershed Education Program at the Montana Folk Festival in Butte.
- Dr. Jack L. Skinner, Assistant Professor of Mechanical Engineering in the General Engineering Department, was notified by the IEEE Sensors Council that the paper entitled "Spatial Sensing Using Electrical Impedance Tomography," in *IEEE Sensors Journal*, Vol. 13, No. 6, June 2013, was one of the most 25 downloaded *Sensors Journal* papers for the month of May. Prof. Skinner, the senior author, is building on the success of this collaborative nanotechnology research conducted between Sandia National Laboratories, the University of California and Montana Tech.
- Dr. Jack L. Skinner co-chaired the Nanophotonics Session at the 57th International Conference on Electron, Ion, and Photon Beam Technology and Nanofabrication held in May in Nashville, TN.

STAFF/PROGRAM ENDEAVORS

- Montana Tech is inaugurating a weekly multidisciplinary speaker series in Fall 2013. These talks will be held Thursday afternoons at 4 pm throughout the academic year, starting September 5th. Our first speaker will be Dr. Sylvester James Gates, Jr. (University of Maryland), mathematical physicist, string theorist, and 2013 National Medal of Science recipient. The public is welcome.

- At the May meeting the BOR learned about the [Create Math Institute](#). The student posters created during that week are online at [Digital Commons @ Montana Tech](#). Digital Commons is the university's site for publishing student and faculty research and making it "discoverable" in Google. Last semester there were 710 downloads from the site. See the array of [faculty](#) and [student work](#).

MONTANA BUREAU OF MINES AND GEOLOGY ACTIVITY

- Between April 1 and July 31, 2013, MBMG sold 1,872 items through its publication and sales office. More than 51,500 items were downloaded from the MBMG publications catalog website.
- In April 2013 Jay Gunderson, MBMG Coal and Energy geologist, gave a presentation on wireline logs and formation evaluation to the 'Oil and Gas' class at Rocky Mountain College in Billings, Montana and a presentation on Energy resources in Carbon County, Montana to a group in Red Lodge, Montana.
- On April 10, 2013, Thomas Patton, MBMG Research Division Chief presented a talk titled "The 2000-2006 drought- groundwater-level response in wells" to the 2013 Montana Nutrition Conference and Livestock Forum in Bozeman, Montana.
- On April 17, 2013, Mike Stickney, MBMG Seismologist and head of the Earthquake Studies Office, presented a paper titled, "The 2005 Dillon, Montana Earthquake; a Moderate-Sized Intermountain Seismic Belt Earthquake on a Blind Normal Fault and its Effects on Local Seismicity Rates" to a meeting of the Seismological Society of America in Salt Lake City, Utah.
- On April 30, 2013, Luke Buckley, MBMG computer software engineer and data systems manager gave a presentation on GWIC- Ground Water Information in Montana to a conference of Great Falls Association of Realtors.
- On May 3, 2013, the American Association of State Geologists announced that MBMG scientists Dr.s Elizabeth Meredith, John Wheaton, and Shawn Kuzara were the recipients of the 2014 John C. Frye Memorial Award for their publication *Coalbed Methane Basics: Ten years of lessons from the Powder River Basin, Montana* released as MBMG Information Pamphlet 6 in 2012. Ten states submitted publications for this national award.
- MBMG was notified by the U.S. Geological Survey that it would receive a FY 2013 State Map award of \$200,365. The funds will be used to complete detailed geologic mapping in the Salmon, Elliston, and Butte North 30' x 60' quadrangles. The project started July 1, 2013.
- MBMG geologists Dr. Kaleb Scarberry (speaker) and Dr. Colleen Elliot presented a paper, "Geology of the Eocene Lowland Creek volcanic field: Butte North 30' x 60' Quadrangle, southwestern Montana," to the 65th annual meeting of the Rocky Mountain Section of the Geological Society of America in Gunnison, Colorado in May. MBMG geologists Jesse Mosolf (speaker), Katie McDonald, and Susan Vuke presented a paper, "Detailed geologic mapping in the Elliston 30' x 60' quadrangle, west-central Montana," at the same conference.
- Thomas Patton, MBMG Research Division Chief, presented a talk, "Climate 2013- groundwater-level response in wells," to the Governor's Water Supply and Drought Committee in Helena, Montana.
- MBMG released the following:
 - Open-File Report 631, *2012 Annual coalbed methane regional groundwater monitoring report: Powder River Basin, Montana* by Dr. Elizabeth Meredith and Shawn Kuzara.

- Open-File Report 632, *Landslide map of the Big Sky area, Gallatin and Madison counties, Montana* by Susan Vuke. The map area covers landslides on which many 'up-scale' subdivisions have been built or planned.
 - Open-File Report 633, *Geologic map of the Fan Mountain, Lone Mountain, and Gallatin Peak 7.5' quadrangles, Madison Range, Madison and Gallatin Counties, Montana* by Susan Vuke.
 - Open-File Report 634, *Geologic map of the Jumbo Mountain 7.5' quadrangle, Beaverhead County, Montana and Lemhi County, Idaho* by Jeff Lonn (MBMG), L.R. Stanford, M.D. McFadden, R.S. Lewis, and R.F. Burmester (Idaho Geological Survey).
 - Open-File Report 635, *Geologic map of the Mount Powell 7.5' quadrangle, southwestern Montana* by Dr. Colleen Elliott, Dr. Larry Smith, and Jeff Lonn.
 - Open-File Report 636, *Hydrogeologic investigation of the Scratchgravel Hills study area, Lewis and Clark County, Montana: Interpretive Report* by Andy Bobst, Kirk Waren, Julie Butler, James Swierc (Lewis and Clark County Water Quality Protection District), and Jane Madison. This report is central to decisions water users and the Montana Department of Natural Resources and Conservation must make regarding groundwater usage in the Helena, Montana area.
 - Geologic Map 64, *Clinker distribution and age in the Powder River structural basin* by E.L. Heffern, P.W. Reinters, and C.A. Riihimaki. The map presents the locations of clinker deposits (aggregates) and discusses the paleo-history of coal bed outcrop fires.
 - Ground Water Atlas 4a, *Groundwater resources of the Lolo-Bitterroot area—Mineral, Missoula, and Ravalli counties, Montana Part A* - Descriptive Overview and Water-Quality Data* by Dr. Larry Smith, John LaFave, and Thomas Patton. This atlas provides general information about groundwater resources.
 - Ground Water Atlas map 5B-04: *Ground-water quality in basin-fill and bedrock aquifers, Deer Lodge, Granite, Powell, and Silver Bow Counties, Montana* by John LaFave.
- John LaFave served as an ex-officio member and technical advisor to the Yellowstone Basin Advisory Council. He also presented at the Shields Valley Energy Workshop in Clyde Park on May 29th, presented an overview of the Montana Ground Water Assessment Program to the Legislative Water Policy Interim Committee on June 18th, and presented an overview of Giant Springs to AmeriCorps, Conservation Corps, and Giant Spring State Park volunteers at Giant Springs State Park on July 23rd.
 - On July 24 2013, MBMG hydrogeologist Garrett Smith met with a group of international students for a tour of the Berkeley Pit and a discussion about the mining history and reclamation efforts in Butte, Montana and the surrounding area. The students came from Saudi Arabia, Iraq, and various parts of the eastern United States as part of a citizen diplomacy tour sponsored by World Montana of Bozeman.

HIGHLANDS COLLEGE HAPPENINGS

- The first ever Honorary Associate of Science degree awarded in Montana was awarded to Gov. Steve Bullock at Montana Tech's Spring 2013 Commencement. The initiative was conceived and developed within Tech's own Highlands College.
- In a wonderful complement to Tech's new artificial turf, there is a building project for a new athletic tradition being constructed in Alumni Coliseum. The project is a decorative arch with the solemn words "Hallowed Ground" incorporated into the arch. The project was designed by Highlands College student William Rees (who graduated in May). The project is being constructed by Bill Ryan, Highlands Faculty Member and Chair of the Trades & Technical Department. The new athletic tradition will include the Oredigger Football Team streaming through the Hallowed Ground Arch upon entering the field for each home game.
- Highlands College will open the Fall semester with three new art exhibits:

- The first exhibit is another poster exhibition from the Smithsonian Institution. Entitled “*I Want the Wide American Earth: An Asian Pacific American Story*,” the exhibit examines the experiences of Asian immigrants and the integral part they played in every chapter of our country’s great chronicle. The main purpose of the exhibit is to encourage dialogue, engagement, respect and participation and thereby create positive social change.
- The second exhibit features artwork from five students from Dr. Grant Mitman’s Biological Illustrations class. This class gives the interested scientist, science student, or art student a chance to study the field of scientific illustration as well as learn several specific illustration techniques.
- The third exhibit features the art of Highlands College staff member Dan Lowney. He has been painting since he was very young. His youthful motivation came from his mother, who encouraged his painting. Working for Highlands College since 2005 has paid the bills, but it is art and music which feeds his soul.