

## CAMPUS REPORT

**DATE:** April 14, 2015  
**TO:** Board of Regents  
**FROM:** Donald M. Blackketter, Chancellor, Montana Tech  
**RE:** Campus Report for the May 21, 2015 Board of Regents' Meeting

### STUDENT ACHIEVEMENT

- Montana Tech student Macy Ricketts, a sophomore majoring in Cellular and Molecular Biology, has been awarded Honorable Mention by the Barry Goldwater Scholarship Foundation. Macy is from Livingston, MT.
- The 2015 Montana Academy of Sciences annual meeting held at Montana Tech April 10-11 featured 19 oral research presentations by 20 Montana Tech undergraduates and two oral presentations by Montana Tech mathematics faculty members. In addition, one graduate student, three undergraduates students, and a faculty member presented posters during the meeting's opening reception.
- An abstract authored by Alicia Kastelitz (Sr, Petroleum Engineering) has been accepted for presentation at the combined Rocky Mountain and Mid-Continent Society of Petroleum Engineers (SPE) Student Paper contest to be held at Oklahoma State University on April 25. Her paper examines the application of automated optical particle analysis methods in qualifying proppant for hydraulic fracturing of oil and gas wells. Her travel is being funded by the Petroleum Engineering Department and the proppant research group.
- In March, seven students from the Metallurgical and Materials Engineering Department participated in the TMS Annual Meeting in Orlando, Florida. The students, who work under the direction of Dr. Jerry Downey and Dr. Bill Gleason are: Sean Dudley (a Materials Science Ph.D. student), Ryan Foy, Bryce Ruffier, and Grant Wallace (M.S. students in the M&ME Dept.), and Maureen Chorney, Katie Lyons, and Kennedy Southwick (undergraduate students in the M&ME Dept.). The students presented five papers and two posters based on the research that they have performed on behalf of the Army Research Laboratory (ARL), the Office of Naval Research (ONR), and Revett Minerals, Inc. The students' papers were published in the symposium proceedings.
- Horiba Scientific and Gary Rawson (Technologies North America, Inc.) donated \$1,250 in support of students working with the proppant research group. Scholarships from these funds were awarded to Alicia Kastelitz (Sr, Petroleum) and Rachael Wilford (Post-Bac, Petroleum).
- The Montana Tech Digger hockey team qualified for the ACHA Division II Western Regionals in Phoenix. Unfortunately, they lost to Denver University and did not advance to the finals.
- The following Digger hockey players were selected to represent the Mountain West Collegiate Hockey League at the ACHA Division II National Allstar Challenge in Philadelphia next weekend: Blaine Bokenfohr (Petroleum Engineering), Ed Schmalz (Petroleum Engineering), James Adamo (Environmental Engineering), Conrad Smith (Petroleum Engineering), Sam Mitchell, (Petroleum Engineering) PJ Lawler (Mining Engineering), and Dunk Abbott (Petroleum Engineering). The MWCHL consists of six teams and is expanding to ten teams next season. The best players from twelve different leagues around the U.S. will compete in five games over three days.
- The first and second place teams at "Start-Up Weekend Butte" hosted by the Mile High Innovation Network over 54 hours from March 27<sup>th</sup> to 29<sup>th</sup> included members from Montana Tech. The event formed developers, designers, marketers, and business persons into nine teams, each developing a startup company around a promising idea. The first place team, "Item Bounty," included Justin Emge, senior in Computer Science, Kirstie McPherson, ASMT president and senior in Business and Information Technology, and Keith Vertanen, associate professor in computer science.
- The Research Office has organized Montana Tech's first Symposium for Undergraduate Public Health Internships, being presented on Friday April 17<sup>th</sup>. The public health internship (PHI) projects, sponsored by Montana INBRE, will be presented by nine students majoring in Health Care Informatics, Nursing, and at Highlands College.

## **FACULTY EFFORTS**

- Dr. Jack L. Skinner, Assistant Professor in the General Engineering Department at Montana Tech, was recently awarded a patent entitled "Carbon Nanotube Composite Materials," US Patent 8986576 B1. This work focuses on the intellectual property associated with polymers containing a mixture of carbon nanotubes with varying surface functionalization. Essentially, plastic materials can be engineered with desired electrical, thermal, and mechanical properties through the application of nanotechnology. Uses of such materials include high-strength, low-weight composites and novel electronic devices with wide-ranging size and shape.
- Karen VanDaveer, MN, RN, the Director of Nursing at Montana Tech, has been presented with the Outstanding Nurse Award for 2015 by the Montana Center to Advance Health through Nursing. Karen has been Director of Nursing/Department Head since August of 1989 and currently holds the rank of Associate Professor.
- Dr. Waleed Al-Rawashdeh, Associate Professor of Mathematics, authored the peer-reviewed papers: "Essential Norm of Weighted Composition Operators on Bargmann-Fock Spaces", that will appear in the journal "Advances in Inequalities and Applications", Vol 2015, pp. 1-15.
- Dr. Jerry Downey of the Metallurgical and Materials Engineering Department participated in the TMS Annual Meeting in Orlando, Florida in March. Dr. Downey was a co-organizer of the Drying, Roasting, and Calcining of Minerals Symposium and co-editor of the published symposium proceedings. In addition to delivering a presentation, "Chlorination Roasting of Rare Earth Element Oxides," he also chaired technical sessions in the DRC Symposium and in the High-Temperature Electrochemistry Symposium.
- Dr. Pat Munday, Professor of Science & Technology Studies (Technical Communication), published a book review of Mimi Sheller, Aluminum Dreams: The Making of Light Modernity (2014) in the journal Environmental History.
- Dr. Chad Okrusch, Associate Professor of Communication (Technical Communication), traveled to China to document the process of growing, harvesting, curing, and selecting bamboo for export to American custom fly rod builders. Dr. Okrusch also met with officials and faculty at Guangdong College of Business & Technology to begin relationship building between that school and Montana Tech.
- Brian Kukay was recently invited by International Code Council and National Structural Engineer's Association to present a webinar on the evaluation of existing buildings. The area of research/expertise was Non-Destructive Testing and Post-Fire Assessments. The webinar will be held in Fall/Winter 2015.
- Dr. Keith Vertanen, Associate Professor in the Computer Science Department at Montana Tech, along with his two students, Haythem Memmi and Justin Emge, received a best paper award for their paper "VelociTap: Investigating Fast Mobile Text Entry using Sentence-Based Decoding of Touchscreen Keyboard Input". The paper will be presented at the ACM Conference on Human Factors in Computing Systems (CHI 2015). CHI Best Paper awards are given to the top 1% of all submissions to the conference.
- Nick Tucci (Montana Bureau of Mines and Geology) and Dr. Chris Gammons (Dept. of Geological Engineering) published a paper in the journal Environmental Science and Technology entitled "Influence of copper recovery on the water quality of the acidic Berkeley Pit lake, Montana, USA." Two other papers were recently published in the journal Applied Geochemistry (1) "Modeling and management of pit lake water chemistry 2: Case Studies" by D.N. Castendyk, L.S. Balistrieri, C. Gammons, and N. Tucci, and (2) "Diel cycling of trace metals in streams draining abandoned mine lands: a review." By C. Gammons, D. Nimick, and S. Parker.

## **HIGHLANDS COLLEGE**

- Highlands College held its Spring Student Research, Creative and Scholarly Activity Celebration on Wednesday, April 1st. The event featured poster presentations from 46 students of various majors. All students, faculty, staff and the greater Butte Community were invited to view the students' poster presentations in the Commons at Highlands College.

## **PROGRAMS**

- The Governor's second Equal Pay Summit convened in Butte April 10-11, 2015 at Montana Tech. "Smart Girls" co-founder Meredith Walker was the keynote speaker. Montana women leaders in science, technology, engineering and math (STEM), women entrepreneurs, Governor Bullock, First Lady Lisa Bullock, and Lt. Governor Angela McLean also spoke. Founded by actor and writer Amy

Poehler and producer Meredith Walker, Smart Girls is dedicated to helping young people cultivate their authentic selves.

- Cfwep.Org has been authorized by the Natural Resource Damage Program to expand programming for high school students and provide outreach for after school programs. Cfwep.Org and Montana Tech's Environmental Engineering Department have partnered with the Butte School District to offer a dual credit science course that offers authentic research experiences for students related to the Superfund sites in Butte. This course will launch in the fall 2016 school year. The programming for after-school students will be offered in partnership with Butte Silver-Bow Parks department. Students will explore trail systems and complete naturalist curriculum with Cfwep.Org and BSB facilitators.
- The Restoration Education Program with NRD is in full-swing for the Spring. The final event of the NRD programming will take place on May 29th, with the Blacktail Creek Clean Up Day, which will host 130 student volunteers and 50 adult volunteers.
- Rayelynn Connole presented at the Equal Pay Summit on April 11th for the STEMinism panel about women in STEM degree programs. Rayelynn Connole will also present at the Clark Fork Symposium on April 23<sup>rd</sup>. Chris Doyle has presented about Cfwep.Org at a number of local events including Kiwanis Club and the George Grant Trout Unlimited Banquet.
- The Montana Partnership with Regions for Excellence in STEM (MPRES) project hosted 70 teachers for professional development regarding engineering practices in the classroom on March 27<sup>th</sup> and 28<sup>th</sup>. This workshop is the 3<sup>rd</sup> in a series of 4 workshops that accompany an online course based on the K-12 Framework for Science Education. The MPRES project partners include MSU-B (Dr. Ken Miller), and MSU-Bozeman (Dr. Peggy Taylor and Dr. John Graves) as well as Cfwep.Org.
- The Bringing Research Into the Classroom (BRIC) project is a partnership with Montana Tech's Biology Department professor, Dr. Marisa Pedulla. This NIH-sponsored project launched in 2014, with classroom visits beginning in Spring of 2015. The classroom visits are currently on-going, reaching students and teachers throughout southwest Montana. The project will serve a total of 1,233 this first year and will provide professional development for 15 teachers this summer. A second cohort of teachers for years 3 & 4 is currently being recruited. There are 5 open spots for teachers. The Billings Gazette and Billings News Stations recently featured the BRIC project team during a classroom visit for Kim Walters at Billings West High School.
- The Institute for Educational Opportunities and Cfwep.Org hosted the 30th annual Montana Tech Science and Engineering Fair which brought over 450 5th-8th grade students and 44 high school students to the Montana Tech campus for two days of STEM competitions. In addition, Montana Tech hosted the Intermountain Junior Science and Humanities Symposium for the first time this year, which brought 75 high school students and teachers from MT, UT, NV, and ID for two days of presentations, campus and Butte tours, as well as a talk from Nobel prize winner, Dr. Martin Karplus.
- Emily Munday published the peer-reviewed original research article investigating aquarium fish collection methods in Hawaii: Munday et al. (2015), "The effects of venting and decompression on Yellow Tang (*Zebrafish flavescens*) in the marine ornamental aquarium fish trade." PeerJ 3:e756; DOI10.7717/peerj.756.
- Two Nobel laureates presented as part of Montana Tech's Public Lecture program this spring. 2013 chemistry laureate, Dr. Martin Karplus (Harvard) spoke on February 25<sup>th</sup> to an audience of 350, including the high school students and teachers participating in Montana Tech's Regional High School Science Fair and the Intermountain Junior Science and Humanities Society meeting being hosted on campus. His talk was on "Motion: the Hallmark of Life from Marsupials to Molecules." On April 23<sup>rd</sup>, 2007 physics laureate, Dr. William Phillips (NIST-Gaithersburg) presented an engaging demonstration on "Time, Einstein, and the Coolest Stuff in the Universe."
- On March 5, 2015, Montana Tech was awarded a cooperative agreement from the Army Research Laboratory, valued at over \$15 million over 5 years. The funding supports Montana Tech's efforts in a broad range of materials processing research and development, with a focus on developing, characterizing and reducing the cost and environmental impact of strategic materials of near-term and long-term importance to the protection and effectiveness of the warfighter and supporting systems. Research funded for \$1.1 million the first year will be carried out on nanomaterials, additive manufacturing, ceramic and composite materials, and other strategic minerals and metals.

## **MONTANA BUREAU OF MINES AND GEOLOGY ACTIVITY**

- MBMG hydrogeologist Shawn Kuzara presented an overview of the hydrology of the Rock Creek Watershed to the Carbon County Conservation District at their meeting on February 15, 2015.
- MBMG hydrogeologist Shawn Kuzara discussed options for potential monitoring wells and protection of the city water supply at a Joliet City Council meeting on February 17, 2015.
- Montana Ground Water Investigations Program leader Ginette Abdo presented a discussion, "Geology and water resources in the Virginia City area" at a public meeting in Virginia City hosted by Montana Rural Water Systems Inc. on March 26, 2015.
- Todd Myse, a Ground Water Investigations Program hydrogeologist, presented, "Findings by the Ground Water Investigations Program in the Bitterroot Valley" to the University of Montana's Bitterroot College's Water Resources class in Hamilton on April 2, 2015.
- James Rose and Kirk Waren, Ground Water Investigations Program hydrogeologists, and Program Leader Ginette Abdo met with the Gallatin Water Quality District Board on April 2, 2015. The MBMG scientists reported on progress in the Big Sky Ground Water Investigations Study and answered questions. The Big Sky Study area is within the Water Quality District's borders.
- Margaret Delaney, MBMG's Mining Archives Program Leader, discussed the Montana Bureau of Mines and Geology's data preservation program which includes acquisition of historic oil and gas and coal exploration data collections at a public seminar in Butte on April, 2, 2015.
- On April 7, 2015 the Montana Bureau of Mines and Geology released Geologic Map 65, "Geologic Road Map of Montana". The full color map shows the geology along many of Montana's highways and offers information about Montana's many geologic highlights. The map is printed on heavyweight paper and folded to be easily viewed while in an automobile.