The South Dakota School of Mines & Technology will participate in a three-year, $6 million National Science Foundation (NSF)-sponsored consortium to address strategic national security priorities.

The goal of the collaborative effort is to create new jobs and reduce the United States' dependence on imported oil by developing sustainable resources based on biomass processing.

The Research Infrastructure Improvement (RII) grant will bring together innovators from North and South Dakota in the Dakota Bioprocessing Consortium (DakotaBioCon).

Specifically, the consortium will facilitate the development of novel bioprocessing technologies for the sustainable production of high-value chemicals and materials from renewable resources, with special attention to products derived from crops as economically viable alternatives to imported petroleum-based chemicals.

Spearheading the effort at the School of Mines is Lew Christopher, Ph.D., director of the Center for Bioprocessing Research and Development and associate professor in the Department of Civil & Environmental Engineering. Under the broader research umbrella of lignin bioprocessing, the university will participate in microbial and enzymatic biodegradation and high-temperature hydrotreatment of lignin.

Other DakotaBioCon institutions are North Dakota State University, the University of North Dakota and South Dakota State University.

Aimed at fostering world-class research through regional improvements to research infrastructure, the NSF funds RII Track-2 awards as part of its Experimental Program to Stimulate Competitive Research (EPSCoR).

Together, these RII Track-2 awards involve researchers from institutions in 10 states who address critical research challenges, including the health of coastal lands, sustainable and efficient water use and the development of bioprocessing technologies for alternative production here at home.

With a far-reaching vision to become an intellectual leader for lignin processing, DakotaBioCon aims to enhance collaborative research, build academic infrastructure to increase competitiveness for federal support in this growing research area and enable the adoption and commercialization of the best technologies.

NCAA Division II membership

The South Dakota School of Mines & Technology has been accepted as a full member of the National Collegiate Athletic Association (NCAA) Division II program.

The news marks the end of a four-year transition from the National Association of Intercollegiate Athletics (NAIA), which had been Mines' home for 50 years. The full membership change will become effective Sept. 1. The School of Mines will join nearly 300 other Division II members. Full NCAA membership means Hardrocker student-athletes will now be eligible for post-season competition and post-season academic and athletic awards.

By gaining admission, the university will be eligible for a variety of NCAA program enhancement opportunities that will enable its athletics programs to prosper.

“This is a great day for the Hardrocker family,” said School of Mines President Heather Wilson. “The athletic brand of the NCAA is known worldwide, and with Division II status we will be able to attract academically- and athletically-qualified student-athletes to the university. I'd like to thank Dick Kaiser, our athletics director, for guiding us through this transition. This is Dick’s fourth time taking a collegiate team from the NAIA to the NCAA during his 41 years in intercollegiate athletics. He and his team in the athletic department did a great job for the School of Mines.”

Last year 295 student athletes participated in 13 sports at the School of Mines. The university employs 30 full- or part-time coaches and administrators.

The School of Mines applied and was accepted into the NCAA Division II level in 2010. The Hardrockers started the membership transition process with nearly a year of preparation followed by two candidacy years. The university used that time to make changes within the department and staff by integrating the NCAA philosophy and platform, as well as becoming compliant with all NCAA rules and regulations. After three evaluations from an NCAA committee, the Hardrockers were approved for probationary member status during the 2012-13 school year.
Scientists at the School of Mines and the U.S. Forest Service are getting the chance to unravel a millennia-old mystery, thanks to the surprising discovery of a 31-inch completely intact Triceratops brow horn.

The rare dinosaur discovery occurred July 19 in Thunder Basin National Grassland in eastern Wyoming. Believed to be one of the last dinosaur species to roam the earth, Triceratops existed nearly 65 million years ago. Herbivorous giants up to 30-feet long, they sported two large brow horns and a small horn on their snout.

Scientists at the university’s Museum of Geology’s Paleontology Research Laboratory will provide curation and storage for the specimen and its associated data and work with the U.S. Forest Service to study clues about the dinosaur and its environment.

Paleontology volunteer Tom Ludwig of the Passport in Time (PIT) program operated by the U.S. Forest Service discovered the fossil. Close partners, the School of Mines houses many Forest Service findings and hosts its PIT program.

The PIT group was not expecting large fossils on the Alkali Creek microsite, prompting participants to bring only small bags to collect their findings. However, as Ludwig, a retired Minnesota state park ranger, began dusting away at a narrow strip of exposed fossil bone, it only continued to grow in size.

Regional North Zone paleontologist Barbara Beasley, who led the expedition at Alkali Creek Paleontological Special Interest Area – where only research and administrative collections are allowed – recalled how the crew was caught off guard by the discovery. “We had to go back and get more plaster and burlap to make a protective jacket around the horn. ... I was very pleased at how well preserved the specimen was.”

The brow horn was then transported to the Paleontology Research Laboratory on the School of Mines campus. The PIT group worked carefully to remove the plaster jacket that enclosed the specimen out in the field. Working diligently using air abrasion methods, they then removed dirt tens of millions of years old from the Triceratops horn.

The SDSM&T Museum of Geology’s Paleontology Research Laboratory opened in 2010 and is home to more than half a million specimens. It serves as a repository for fossils and data from the U.S. Forest Service and other public land management agencies. In April, Passport in Time was the first professional lab prep course offered in the new building to participants other than SDSM&T students. PIT is a volunteer archaeology, paleontology and historic preservation program of the U.S. Forest Service.
Imagine a market topping one billion people, so lucrative it generates revenue almost four times that of Google, Apple, Microsoft and Intel – each year.

Welcome to the world of mobile computing and the driver behind the South Dakota School of Mines & Technology’s new Mobile Computing Lab, which will host its first students this fall.

While almost anyone can find simple app development tools on the web, this course is uniquely positioned to offer content far more rigorous, focusing on the fundamental principles and theories that go into the design of mobile systems.

“Few colleges have any curriculum for mobile computing, and most of the content of these courses is focused on basic app development. Our class is really based on the fundamental processes that are used to develop software in the mobile computing environment,” says Kyle Riley, Ph.D., head and associate professor of the Department of Mathematics & Computer Science.

Charged with preparing tomorrow’s scientific workforce, Riley decided to train his students to become the drivers of something that is just a fingertip away, something millions of people around the world, in fact, rely upon: the mobile phone. Fifty-six percent of all American adults own smartphones, according to a Pew study released this June.

In this trillion-dollar business, smartphones, tablets and wireless data plans are only the beginning. This January, Facebook announced for the first time that it was drawing more traffic from mobile devices than PCs. Touchscreens outnumber keyboards. In India, mobile Internet traffic exceeds any coming from a desktop.

In fact, this idea first took shape when Roger Musick, Mines alumnus and CEO of Innovative Systems, a telecommunications company in Mitchell, proffered a startling statistic of his own. Seventy percent of computing devices bought today are mobile devices and not a traditional laptop or desktop. Beset by increasing demands in the area of mobile computing, Musick underscored the need for a workforce better prepared to deal with this type of technology.

From there, a partnership was born with his alma mater. Innovative Systems provided more than $25,000 in support of the lab with donations from Golden West and CHR Solutions, as well. Both latter companies have branches in South Dakota, while Golden West is headquartered in the state. Innovative Systems and CHR Solutions additionally have residency in the Black Hills Business Development Center located on the School of Mines campus and employ a number of Mines graduates and students.

For Riley, the real value is priceless. There will be considerable overlap with existing graphic user interface, networking and cybersecurity classes.

He adds that much of the course will feature development for Android devices, though it will also introduce the Apple environment.

Since apps can run on a wide variety of devices, one of the biggest difficulties lies in the fact that these devices are so dissimilar. “Apple operating systems are completely different from Android, and both mobile platforms are very different from ordinary desktops and laptops. It takes a very wise developer to design and manage an app across these platforms, and that is what we hope to foster with this class.”

While app development will have a place in the curriculum, the thrust of the advanced course, which is restricted to juniors and seniors and is already full, will be far broader than the next Angry Birds.

“In the end, developing software on a mobile device is a much bigger challenge than traditional software development. Power is in short supply so everything must run as efficiently as possible. Memory is in short supply. Internet and phone connections are very intermittent, and you need to plan for that,” Riley explains.

Brian Butterfield of Innovative Systems adds that “the challenges inherent to form factor size, battery power, computing power, connectivity, device capabilities (camera, location, keyboard), and location underscore those that a student has not been exposed to in developing software for consumption from a desktop or laptop.”

But it’s not all challenges. There are some incredible possibilities, too. Riley says that because mobile devices are, well, mobile and come equipped with GPS, there are a multitude of opportunities for information and communication that aren’t possible on a traditional desktop.

“SDSM&T should really target this trend in a meaningful way if we desire to remain competitive with our peers.” As mobile devices place the Internet into every hand, everywhere, every time, preparing his students for a market on a seemingly endless upward trajectory is not only a savvy business move, it’s common sense. After all, there are still six billion people to go.
Korde named ASME fellow

Umesh Korde, Ph.D., a professor in the Department of Mechanical Engineering at the School of Mines, has been selected as a fellow with the American Society of Mechanical Engineers (ASME). Korde joins a distinguished group of honorees. Of the 117,504-member ASME organization, just 3,205 are fellows. As a newly elected fellow, Korde will be recognized in the November issue of Mechanical Engineering Magazine.

Korde was named the Pearson Endowed Chair in Mechanical Engineering at the School of Mines in 2012.

Korde, who joined the School of Mines in 2003, has a global reputation for his research emphasizing the control and dynamics of systems oscillating in response to wave motion, particularly on optimizing their motion to maximize the absorbed power in real time. He serves as an associate editor of the journal Ocean Engineering.

His current research includes real-time control of wave energy converters in collaboration with the U.S. Navy and the University of Hawaii and a project on an energy storage system being developed by Mines students. He teaches undergraduate courses in mechanical vibrations and sustainable energy systems.

“By continuing to honor our members by elevating them to the grade of fellow, we ensure ASME’s commitment to its vision ‘to be the essential resource for mechanical engineers and other technical professionals throughout the world for solutions that benefit humankind,’” ASME Executive Director Thomas G. Loughlin wrote in the notification letter.

Korde becomes the second ASME fellow in the School of Mines Department of Mechanical Engineering, behind Mike Langerman, Ph.D., professor and department head who has been an ASME fellow since 2006.

Alumnus named new Army Guard assistant adjutant general

Mines alumnus Brig. Gen. Kevin Griese is the new assistant adjutant general for the S.D. Army National Guard.

He is responsible for strategic planning, strength management, troop readiness and mobilization support of nearly 3,300 Army National Guard soldiers.

“I am humbled and honored to have been selected as the new Army assistant adjutant general,” said Griese. “I am extremely fortunate to be able to continue to serve in such a professional organization as the S.D. Army National Guard.”

Griese received his commission as a second lieutenant through the Mines ROTC program and was branched as an engineer officer. He holds a B.S. in civil engineering from Mines and a Masters in Strategic Studies from the U.S. Army War College.

Riley named chair-elect of MAA’s quad-state region

Kyle Riley, Ph.D., head and associate professor of the Department of Mathematics & Computer Science at the South Dakota School of Mines & Technology, has been named chair-elect of the Rocky Mountain Section of the Mathematical Association of America (MAA), the organization’s highest ranking officer.

Covering a region extending from western South Dakota to Montana, Wyoming and Colorado, the MAA is the largest professional society for mathematicians in North America. It supports a professional development program and fosters mathematical excellence at the high school, undergraduate, graduate and professional levels.

“The Rocky Mountain Section of the MAA is a wonderful way to promote collaboration and strengthen the mathematics community,” Riley said. “The Mathematical Association of America has a heavy reliance on volunteer help to deliver their regional conferences, and I am honored to be involved in such a wonderful organization,” Riley said.

Beginning April of next year, Riley will serve a two-year term on the executive committee, managing finances of the regional section, planning annual conferences and spearheading the effort to establish future conferences. He will also coordinate the Distinguished Teaching Award to honor an outstanding educator in the region, including managing nominations and facilitating selection.
Kaiser steps down as AD of Hardrocker Athletics

Mines Athletics Director Dick Kaiser has stepped down to take a new position at Oklahoma State University in Alva, Okla.

After a 40-year career as an athletics administrator, Kaiser will become Northwestern Oklahoma State's head athletic grounds supervisor and director of its intercollegiate golf program. “This is absolutely a perfect opportunity for me at this point of my career. And to get to be working side-by-side with family, it just doesn’t get any better than that.”

Kaiser’s son, Ryan, is an administrator in the Northwestern Oklahoma State Athletic Department, and one of his main reasons for accepting the new position. He said it was a great opportunity, and he will be able to step into more of a “dad” and “granddad” role.

Mines President Heather Wilson thanked Kaiser for his hard work and dedication to the university and guiding the athletics department in the right direction. “I am accepting Dick’s decision with regret,” Wilson said. “He was the engine that took the Hardrockers to the NCAA, and we are all very grateful for his work. Dick has twin three-year-old grandsons and a chance to be closer to them. We will be missed, and we all wish him the very best.”

Kaiser, who was hired in 2009, was the driving force in facilitating the Hardrockers’ journey from NAIA to NCAA Division II status. He also expanded the athletics program, including adding support staff and coaches, as well as a new sports program (men’s soccer). Within the last six months, both the men’s soccer and football programs have been accepted into the Great Northwest Conference (GNAC), a league based mainly in the Pacific Northwest.

Additionally, he helped upgrade current facilities and raise scholarships and other funds for Hardrocker Athletics and credited much of the growth to the cooperation and assistance of the Hardrock Club and boosters.

Continued from page 2

During the 2012-13 provisional year, the Hardrockers were recognized as NCAA Division II members to opponents during competition, but all sports programs were not eligible to compete in post-season play. During the past four years of the process, more than 2,300 pages of documents have been written and prepared for submission, three on-campus visits have occurred by the NCAA or their representatives, and six national NCAA meetings have been attended by SDSM&T administrative leaders.

Lady Hardrockers get new hoops coach Larsen

Spearfish native Ryan Larsen has been named head coach of the Lady Hardrockers.

Hardrocker women’s basketball program, becoming the third head coach in the program’s 37-year history.

Larsen becomes a Hardrocker after serving five years in Vermillion as the assistant women’s basketball coach at the University of South Dakota where he was the recruiting coordinator, scouting director, position coach for guards and posts, assisted the head coach with scheduling games and coordinated several off-season camps. Larsen also aided the Coyotes in the institution’s transfer from NCAA Division II to Division I.

“The School of Mines is very happy to welcome Ryan to campus and we look forward to a great season cheering the Lady Hardrockers,” said Mines President Heather Wilson.

Prior to arriving at USD, Larsen was a member of the Augustana College men’s basketball staff from 2002-07. Along with his coaching duties, Larsen was also the recruiting coordinator for three seasons. During that time he recruited three high school student-athletes who earned player of the year honors from their respective states. From 1999-2002 Larsen was at Minnesota State University-Moorhead. Larsen graduated from MSU Moorhead, earning his bachelor’s degree in 2002. He obtained his master’s degree from Augustana in 2004.

Track teams earn NCAA academic honors

NEW ORLEANS – The South Dakota School of Mines & Technology men’s and women’s track and field programs were both named to the 2013 NCAA Div. II All-Academic Track and Field teams by the U.S. Track & Field and Cross Country Coaches Association.

“It is a great honor for our student-athletes to receive this award,” said Hardrocker track and field head coach Jerry Schafer. “To be able to excel in the classroom as well as in the field of competition is a great feat and I’m proud that our kids are being recognized for that.”

A total of 92 institutions earned the distinction on the women’s side and 42 on the men’s teams as a result of earning a cumulative team GPA of 3.00 or higher.

The Lady Hardrockers squad earned a team GPA of 3.25 (18 student-athletes) while the men’s team finished with a 3.11 (29 student-athletes).
Go to Mines
Devereaux becomes full depository library

Devereaux Library has been selected as a full depository to the South Dakota State Library, assisting in educating citizens and showcasing the number of state publications placed online.

H.M. Briggs Library at South Dakota State University in Brookings is the other university library selected as a full depository.

“These two South Dakota universities should be recognized for stepping up to be the depository of one print copy, when available, as well as an electronic copy,” said South Dakota State Librarian Daria Bossman.

“South Dakota’s public libraries should be recognized for stepping up to be the depository of one print copy, when available, as well as an electronic copy,” said South Dakota State Librarian Daria Bossman.

“The Devereaux Library stepped in to host the state documents because it is very important that there is some representation for West River,” said Devereaux Director Patty Andersen.

“While everyone with a computer can access the online materials, there are still some documents that will only be distributed in a tangible format. When the Rapid City Public Library stepped out of the role of providing access to state documents a few years ago, we stepped in. Right now our collection is fairly small, and we don’t expect it to grow a lot since most materials will be in electronic format.”

Approximately 98 percent of South Dakota’s public libraries provide access to computers and the Internet.

“South Dakota’s public libraries, whether full or affiliate depositories or not, large or small, can play an important role in getting the information out to the citizens of our state,” Bossman said.

A result of the 2012 session’s legislative action, the entire process for online collection and cataloguing of state government documents is now in place and fully functioning. Find South Dakota State Library’s digital collections online at http://bit.ly/1c7M1kc

A Rapid City neighborhood park has become a little smarter this summer thanks to a community service project by a group of South Dakota School of Mines & Technology students.

Mines volunteers threw their sweat equity into building not the next mechanical engineering wonder of the world but a Little Free Library for use by children and adults at Kiwanis-Mary Hall Park.

The Little Free Library is a global initiative to help promote literacy and the love of reading by building free book exchanges. Volunteers construct a small library, which serves as a depository for a public book swap. Essentially a decorative box, the libraries are monitored by community organizations or other identified stewards.

“There are hundreds of these libraries all over the world, but right now there’s a huge gap in the Midwest where there aren’t any of these libraries. We wanted to help fix that,” said Mines student Gina Rossi, a sophomore civil and environmental engineering major from Pueblo, Colo. Rossi is president of Circle K International, the university-level affiliate of Kiwanis International, which maintains the Mary Hall Park at 3220 W. South St. on the west side of town.

“We felt like it would have a really positive impact,” Rossi said. “We are hoping to increase literacy and access to books for low-income families who can’t afford to buy new books otherwise. We are also hoping to encourage a love of reading for anyone who decides they want to use the library.”

A dozen Mines students built the library from scratch with $100. Anyone is free to take a book. In return, they are asked to bring it back or exchange it for another when they’re done. With books coming from community donations, the library will be self-sustainable with only occasional maintenance.

The Downtown Kiwanis and Westside Kiwanis clubs are helping supply books and keeping an eye on the library in the future, said Kiwanis member Tom Allen.

“We have had a number of books left and several taken... The little kid books seem to disappear rapidly,” Allen said.

The Little Free Library is just one example of what is becoming a greater community service initiative by the School of Mines. Later this month 400 incoming freshmen will gather on a single day to clean up the hillside behind campus and the neighborhood around it, as well as volunteer at Feeding South Dakota.

“At Mines, we prepare leaders in science and engineering. First and foremost, leaders serve the community. I’m very glad our students are engaging in this way,” said Mines President Heather Wilson.

In addition to Rossi, other Mines students who helped build the Little Free Library were Katharine Ross, Rashyll Leonard, Jordan Miller, Zach Heher, Nick Kelly, Zach Pierson, Kathleen Ryan, Alec Knox, Spencer Ferguson and Anne Christensen.

Students build literacy

School of Mines students Gina Rossi, Kathleen Ryan, Zach Heher, Anne Christensen, Katharine Ross, Rashyll Leonard and Zach Pierson built the Mary Hall Park Little Free Library from scratch.

About Legacy News

Legacy News is produced by the Office of University Relations the first Wednesday of each month. The newsletter is largely a compilation of news releases, photos and Web articles.

To submit news or story ideas or to subscribe to the email distribution list, please contact Fran LeFort, communications manager, at 605.394.6082 or at fran.lefort@sdsmt.edu. For more School of Mines news, visit news.sdsmt.edu.

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