

COLLEGE HAPPENINGS

March 5, 2019

FROM THE DEAN

Gender Diversity in Engineering

A core value of our new strategic plan is “We are inclusive—we are proactive about diversity, knowing that we are far better together.” The College of Engineering leadership team is currently working on scorecards for our strategic plan by identifying key performance indicators to measure the health of our college and to track progress on our strategic goals. One of the things that we will continue to track related to diversity is the female enrollment in the college, which is a benchmark that we need to increase.

One reason is societal. While women now comprise a majority of college degrees awarded each year in our country, only 14 percent of engineers are women (and there is a similar under-representation of Hispanic, black, and Native American engineers compared to the overall population).¹ At the same time, society benefits from having more engineers to address societal grand challenges—such as developing clean energy solutions—and to spur economic growth. Another reason is quality; diverse teams provide better solutions. The engineering profession will benefit from finding better ways to tap into this “critical half of the human talent pool.”²

An important strategy to increasing female enrollment and retention is providing appropriate role models and mentors for aspiring women engineers. Strong female engineering faculty members can provide excellent role models for these students. Another approach to attract women into engineering is to improve our public relations by emphasizing how the discipline helps society. Thomas Grose in ASEE Prism magazine explains:

Young women are drawn to disciplines that have an obvious altruistic quality to them, such as environmental or biomedical engineering. Eccles’ 2003 Michigan study found that girls who are confident in their math abilities tend to want to improve society and place more value on fields they think are people-oriented. The profession needs to do a better job of showing girls that degrees in, say, mechanical or electrical engineering can be wonderful gateways to medical or environmental work.³

Both of these methods, featuring strong female engineering role models and emphasizing how engineering helps society, were featured in the annual Introduce a Girl to Engineering Day hosted by the College of Engineering at NDSU two weeks ago (for the fourth consecutive year). This event was attended by over 250 eighth grade girls from nine area middle schools.

Recently, as part of a special project for Women’s History Month, the college interviewed some of our distinguished women graduates. Those women are highlighted on a special Alumnae Spotlight website (https://www.ndsu.edu/coe/alumni/alumnae_spotlight/), with a different female engineering role model featured every few days on the site and on social media. Ultimately the goal is to encourage more young girls and women to pursue an engineering degree and to celebrate the accomplishments of these engineering alumnae.



IN THE NEWS

[Alumnus contribution sparks robotics innovation](#)

[College of Engineering hosts Introduce a Girl to Engineering Day](#)

[Introduce a Girl to Engineering Day brings hundreds of 8th graders to NDSU \(KVRR\)](#)

[Introduce a Girl to Engineering Day held at NDSU \(Forum and WDAY\)](#)

[Inspiring Teacher: Roger Green, associate professor of electrical and computer engineering](#)

[Engineering alumnae featured for Women's History Month](#)

CONGRATULATIONS

Mohsen Tahmasebi Nasab, a doctoral student in the **Department of Civil and Environmental Engineering**, made the finals of this year's Three Minute Thesis competition and was named the People's Choice Award winner.

Yao Yu from the **Department of Construction Management and Engineering** was featured by the Office of Research and Creative Activity for his work [mentoring undergraduate researchers](#).

Rajesh Kavasseri from the **Department of Electrical and Computer Engineering** was named the [Researcher of the Month](#) by the Office of Research and Creative Activity.

Please let [College Happenings](#) know about honors, awards, new grants and other announcements so we can share them with other faculty and staff.

UPCOMING EVENTS

Wednesday, March 6, Faculty Luncheon. **“Open Educational Resources: Reduced Cost, Improved Outcomes”** with Tanya Spilovoy, WICHE Cooperative for Educational Technologies. **11:30 a.m. - 1:00 p.m.**, Memorial Union Arikara Room. [Register here](#).

Thursday, March 7, Faculty Luncheon and Student Success Summit. **“Coaching as an Advising Strategy: Increasing Motivation, Responsibility and Trust”** with Michael Heim, Washington State University and Preferred Coaching. **11:30 a.m. - 1:00 p.m.**, Memorial Union Plains Room. [Register Here](#).

Thursday, March 7, **Mechanical Engineering Graduate Seminar**. Alan Perrault, an M.S. student, will present, **“Computational Simulation of a Low-Pressure Turbine Vane.”** 1:00 – 1:50 p.m. in Dolve Hall 118.

Monday, March 18, **Clicker RFP open forums**. The committee is working to select a vendor for clicker software and devices in March. Faculty and staff wishing to provide feedback are invited to attend at **9:00 a.m. or 2:00 p.m. in the Memorial Union Century Theater**.

Wednesday, March 20, **Doosan Bobcat's Annual Scholars Social**. 4:00 p.m. – 5:30 p.m. in the Glenn Hill Center, Room 334. RSVP to Samantha Leingang by email samantha.leingang@doosan.com.

Thursday, April 11, **NDSU EXPLORE Annual Showcase** at the Memorial Union. [Registration is now open](#). Encourage your students to present their research and creative work in posters, oral presentations, or in other formats.

Friday, April 12 and Saturday, April 13 **CoSearch NDSU**. Researchers will have 30 hours to share a research idea, hone the idea with an interdisciplinary team they meet at the event and pitch the idea to a panel of judges who will fund the winners. Learn more about the event and [sign up here](#).

COSEARCH NDSU

Students normally get all the fun. Pitch competitions, accelerators and startup weekends encourage students to test ideas and launch businesses. But what about faculty and researchers? Well, it's your turn to get in on the fun at the first ever CoSearch NDSU.

On April 12 and 13th, researchers will have 30 hours to share a research idea, hone the idea with an interdisciplinary team they meet at the event and pitch the idea to a panel of judges who will fund the winners. [Register now to claim your spot](#).

This spring's CoSearch NDSU will have the broad theme: The Farm of the Future. The event itself will be hosted through a partnership with Emerging Prairie, the Research and Tech Park and the Office of Research and Creative Activity. [Learn more about the event](#).

NICE FACULTY FELLOWS

NDSU's new Director of Entrepreneurship, Scott Meyer, has put out a call for NICE (NDSU Innovation, Creativity and Entrepreneurship) Faculty Fellows to integrate innovation, creativity and entrepreneurship into their courses and research.

The first cohort of NICE Fellows will meet monthly for one year to share ideas on how to integrate ICE into their courses. They will also attend a conference with students who are exploring the same topic.

As a part of their fellowship, they will receive funding for course development, a cohort of fellow learners and a platform to showcase their work. [Apply here](#). Applications are due by March 8th.

COLLEGE OF ENGINEERING AWARDS

The **Graduate and Research Committee** and the **Academic Affairs Committee** are now accepting nominations for the **College of Engineering Researcher and Teacher of the Year awards**.

Each year the college recognizes the outstanding research and teaching achievements of CoE faculty and graduate students.

Details about the awards, including nomination documents, instructions and previous winners can all be [found on the College of Engineering website](#).

Nominations and supporting materials are due by **Friday, April at 5:00 p.m.**

FUNDING OPPORTUNITIES

The **NDSU Foundation and Alumni Association Grants Committee** is accepting applications from faculty and staff for six grant funds for the 2019 academic year. The application deadline is **March 8, 2019, by 5:00 p.m.**

- **The Centennial Endowment** can provide maximum awards of \$5,000, with a total of \$22,000 available. This grant fund supports professorships, scholarships, biotechnology, faculty development, libraries and cultural arts.

- **The Board of Trustees Endowment** can provide maximum awards of \$1,000, with a total of \$5,000 available. This grant fund supports general programs across campus.
- **The Library Endowment** has \$3,000 available to award. This grant fund supports requests from any academic unit on campus for materials that will enhance the collections and/or operations of university libraries.
- **The Gordon A. Larson Foundation Fund** has \$17,000 available to award. This grant fund supports competitive grants for agricultural research efforts conducted at North Dakota State University.
- **The Carl A. and Jean Y. White Memorial Endowment for Agriculture Research** has \$4,000 available to award. This grant fund supports faculty and research staff to encourage Agricultural research initiatives.
- **The Engebretson Family Research Fund** has \$11,000 available to award. This grant fund is open every other academic year (odd years) and was established to support the advancement of pharmaceutical research, by encouraging the discovery and development of new drug therapies and delivery systems.

Faculty and staff can obtain application forms and additional information for all six grants at the Foundation and Alumni Association website: ndsufoundation.com/grants-and-awards-application.

For any further questions, please email Jennifer Reinhold at jennifero@ndsualumni.com The NDSU Foundation and Alumni Association will notify applicants of funding decisions by April 19, 2019.

DoD: U.S. Army Engineer Research and Development Center

The U.S. Army Engineer Research and Development Center (ERDC) has issued a [Broad Agency Announcement \(BAA\)](#) (solicitation # [W912HZ-19-BAA-01](#)) for various research and development topic areas.

The ERDC is responsible for conducting research in the broad fields of hydraulics, dredging, coastal engineering, instrumentation, oceanography, remote sensing, geotechnical engineering, earthquake engineering, soil effects, vehicle mobility, self-contained munitions, military engineering, geophysics, pavements, protective structures, aquatic plants, water quality, dredged material, treatment of hazardous waste, wetlands, physical/mechanical/ chemical properties of snow and other frozen precipitation, infrastructure and environmental issues for installations, computer science, telecommunications management, energy, facilities maintenance, materials and structures, engineering processes, environmental processes, land and heritage conservation, and ecological processes.

For all topics, white papers or pre-proposals must be submitted for initial review. White papers must clearly outline the work to be conducted, public benefit of the work, appropriate technology transfer, personnel qualifications, and all associated costs.

Application deadline: January 31, 2020

DoD: Defense University Research Instrumentation Program

The Department of Defense (DoD) Defense University Research Instrumentation Program ([DURIP](#)) announcement (N00014-19-S-F007) seeks proposals from universities to purchase equipment and instrumentation in support of research in areas of interest to the DoD. This competition is open to accredited U.S. institutions of higher education with degree granting programs in science, mathematics, and/or engineering. DoD interests include the areas of research supported by the Army Research Office ([ARO](#)), the Office of Naval Research ([ONR](#)), and the Air Force Office of Scientific Research ([AFOSR](#)). A central purpose of the DURIP is to provide equipment and instrumentation to enhance research-related education in areas of interest and priority to the DoD. Therefore, your proposal must address the impact of the equipment or instrumentation on your institution's ability to educate students through research in disciplines important to DoD missions. You are encouraged to contact the Program Managers listed in the cited announcements before submitting proposals to explore research areas of mutual interest. Research equipment costing between \$50,000 and \$1,500,000 is eligible. There is no cost sharing or matching for proposals under this announcement.

Inquiries and Questions deadline: April 26, 2019. Application deadline: May 17, 2019

RECENTLY FUNDED GRANTS

- Dean D. Steele (CPI). Whole System Approach to Integrated Crop/livestock Production to Enhance Soil Health and Profitability of Cropping and Livestock Systems in the Northern Great Plains. \$199,995 from NIFA. 10/01/2018 – 10/29/2021.
- Chad A. Ulven (PI). A New Design to Improve Life Expectancy of Total Ankle Replacement (TAR) - Phase II. \$50,000 from the ND Department of Commerce. 07/01/2018 – 12/31/2019.
- Kenneth Hellevang (PI). Impact of Drying and Storage Environment on Green and Semi-Green Soybeans Varieties. \$31,000 from the ND Soybean Council. 07/01/2019 – 06/30/2020.

RECENTLY SUBMITTED PROPOSALS

- Wenjie Xia (PI). DMREF: A Materials Genomics Approach to Advancing the Thermomechanical Performance of Polymer-Clay Nanocomposites. \$1,126,392 from the National Science Foundation. 08/16/2019 – 08/15/2023.
- Wenjie Xia (PI). Multilayer Thin Film Coating for Sensor Platform in Extreme Environments. \$90,249 from the University of North Dakota. 09/16/2019 – 09/15/2020.
- Yao Yu (PI). Needs Assessment Study of Low-Income North Dakota Individuals and Families. \$6,000 from The Consensus Council, Inc. 04/01/2019 – 08/31/2019.
- Ivan T. Lima Jr. (PI). Label-Free Biosensor for the Detection of the Molecular Biomarkers of Pancreatic Cancer. \$24,999 from the National Institutes of Health. 03/01/2019 – 08/31/2019.
- Ivan T. Lima Jr. (PI). Label-Free Single-Nucleotide Polymorphism Detection based on Dielectrophoresis Spectroscopy. \$398,750 from the National Institutes of Health. 09/01/2019 – 08/31/2021.
- Danling Wang (PI). New sensing technology based on a novel 2D nanostructured, Vanadium Carbide (V100C9), MXene for application in Cancer prevention and treatment. \$24,999 from the National Institutes of Health. 03/01/2019 – 08/31/2019.
- Danling Wang (PI). Investigation of New Functional Semiconducting Nanomaterial, K2W7022, for Breath Acetone Detection, a Non-invasive Sensor Tool for Diabetes Diagnosis and Monitoring. \$359,685 from the National Science Foundation. 05/01/2019 – 04/30/2023.
- Dali Sun (PI). Combining Immunoprecipitation and PCR to Target at Circulating Tumorous Exosomes for Fast Pancreatic Cancer Early Detection. \$24,999 from the National Institutes of Health. 03/01/2019 – 08/31/2021.
- Dali Sun (PI). Combining Immunoprecipitation and PCR to Target at Circulating Tumorous Exosomes for Fast Pancreatic Cancer Early Detection. \$145,000 from the National Institutes of Health. 06/01/2019 – 05/31/2021.
- Halis Simsek (PI). Effects of Different Water Table Depth on Plant Water Consumption, Yield, Quality Parameters and Antioxidant Enzyme Activities in Wheat Plant: A Lysimeter Study. \$45,392 from the ND Wheat Commission. 07/01/2019 – 06/30/2021.
- Halis Simsek (PI). Effects of Different Water Table Depth on Plant Water Consumption, Waterlogging, Yield and Quality Parameters and Antioxidant Enzyme Activities in Dry Bean: A Lysimeter Study. \$51,562 from the Northharvest Bean Growers Association. 07/01/2019 – 06/30/2021.
- Dharmakeerthi Nawarathna (PI). Biomanufacturing of safe and non-viral CAR T-cells for cancer immunotherapy. \$24,999 from the National Institutes of Health. 03/01/2019 – 08/31/2019.
- Dharmakeerthi Nawarathna (PI). Validating the Efficacy of Micro-RNA Biomarker Testing for Early Detection of Pancreatic Cancer. \$24,999 from the University of North Dakota. 03/01/2019 – 08/31/2019.
- Dilpreet Singh Bajwa (PI). Flax Straw Biochar for Industrial and Agricultural Uses – a value added application. \$26,587 from AmeriFlax. 07/01/2019 – 06/30/2020.
- Trung Quoc Le (PI). Point-of-care Obstructive Sleep Apnea (OSA) Monitoring and Forecasting Platform for Cancer Patients. \$25,000 from the University of North Dakota. 03/01/2019 – 08/31/2019.
- Mijia Yang (PI). GOALI: Collaborative Research: Advancing the Understanding and Design of Long-Span Metal Roofs Considering Extreme Thermal Variations. \$196,668 from the National Science Foundation. 07/01/2019 – 6/30/2022.

- Todd L. Sirotiak (PI). Concrete for Significant Enhancement for Durability and Sustainability. \$508,079 from the Department of Energy. 08/01/2019 – 07/31/2021.
- Majura Fortunatus Selekwa (PI). Reconfigurable Intelligent Robotic System for Precision Agriculture. \$905,043 from the National Science Foundation. 01/01/2020 – 12/31/2023.
- Majura Fortunatus Selekwa (PI). Design and Development of a Robotic Machine for Separating Coils from Fabric Pockets. \$68,352 (Multisponsor). 04/15/2019 – 12/31/2019.
- Yechun Wang (PI). Accelerating Methods for Evaluating Degradation of Corrosion Protective Coatings in Flowing Environment and Fluid Dynamics Modeling. \$190,575 from the University of Akron. 10/01/2019 – 09/30/2023.
- Benjamin Delbert Brooks (PI). Epitope modeling and high-throughput SPR characterization of antibody: antigen binding. \$412,165 from the National Institutes of Health. 01/01/2020 – 12/31/2022.
- Benjamin Delbert Brooks (PI). Improving Anti-Drug Antibodies Assays. \$412,500 from the National Institutes of Health. 09/01/2019 – 10/30/2022.

RECENT PUBLICATIONS

For 2019, 18 publications by authors with the College of Engineering affiliation have appeared in various journals, according to the ISI Web of Science and submissions from faculty. Here are some of the most recent publications:

- Hossain, Razuan, Qifeng Zhang, Michael Johnson, Obinna Ama, and Danling Wang. n.d. “Investigation of Different Materials as Acetone Sensors for Application in Type-1 Diabetes Diagnosis” 14 (5): 6. <https://biomedres.us/new-year-special-issue/pdfs/BJSTR.MS.ID.002619.pdf>
- Monono, E. M., D. P. Wiesenborn, J. M. Vargas-Ramirez, and R. Zhou. 2019. “Preserving Juice from Industrial Beets Using Organic Acids.” *Transactions of the ASABE* 62 (1): 177–85. <https://doi.org/10.13031/trans.13051>.

College Happenings is distributed to the NDSU College of Engineering staff and faculty every other Tuesday.

Read past issues of *College Happenings* [here](#).

Deadline for submissions to *College Happenings* is 12:00 p.m. Fridays.

Contact kyle.bosch@ndsu.edu to submit items for *College Happenings*.

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