NDSU | COLLEGE OF ENGINEERING

COLLEGE HAPPENINGS

March 8, 2022

FROM THE DEAN

Research Neighborhoods

The best university research is done in community. That community is often interdisciplinary with participants bringing diverse experiences and backgrounds together to the research problem. In an effort to increase collaborative research across the college and to highlight our research efforts, the College of Engineering's Research and Graduate Committee has been asked to identify "Research Neighborhoods." These neighborhoods, or research theme areas, will be used to describe, organize, and cross-pollinate some of the larger collaborations and opportunities beyond the confines of individual departments.

These intellectual research neighborhoods are to be collaborative area of emphasis drawing together faculty, staff, students, and outside researchers to find solutions to important problems. They are not intended to be exclusive or closed, but rather open communities that will grow as we invest in these areas of strength. I expect that it will be common for faculty and research staff to be part of more than one neighborhood.

If you have ideas for research neighborhoods that should be considered, please share them with Jessica Vold, chair of the Research and Graduate Committee. Also, if you haven't provided your input on the research work you are involved in from the short survey sent out by the committee, please do so before Friday.

CONGRATULATIONS

Jordi Estevadeordal from the **Department of Mechanical Engineering** has been approved to be promoted to Full Professor.

Roger Green from the **Department of Electrical and Computer Engineering** has been approved to be promoted to Full Professor.

Long Jiang from the **Department of Mechanical Engineering** has been approved to be promoted to Full Professor.

The **Bison Robotics Autonomous Snowplow** team placed 1st in the team portion of the 2022 Autonomous Snowplow Competition held in January in Minneapolis.

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

Monday, March 14 – Friday, March 18, **NDSU Spring Break**.

COLLEGE AWARD NOMINATIONS

Each year the College of Engineering is proud to recognize the outstanding accomplishments of our faculty, staff and graduate students in the areas of teaching, research and service.

Nominations for our annual teaching and research awards are open through April 15. Nominations for our annual staff awards are open through July 15.

For more information on how to nominate a colleague and for a look at past winners head to our College Awards website.

UNIVESITY AWARD NOMINATIONS

Excellence in Mentoring Award

Recognizes outstanding mentoring by faculty of undergraduate/graduate students, faculty, and others. *Students, staff, and faculty submit nominations*. **Submit:** Nomination letter (one letter, no more than 2 pages long), CV (no more than three pages long), Letters of support from mentored individuals. Nominations due March 16.

Chamber of Commerce NDSU Distinguished Faculty Service Award

Recognizes faculty who have attained distinction in their profession and have made substantial service contributions to the community and region. **Submit:** Nomination letter (one letter, no more than 2 pages long), CV (no more than three pages long), Letters of support (no more than two letters). Nominations due March 16

Mary McCannel Gunkelman Award

You are invited to nominate a student or employee of NDSU who you believe has made the most significant and unselfish contributions to creating a happy environment for the enjoyment of NDSU students. Please provide specific examples of how this individual has had direct impact on making NDSU a pleasant, cheerful campus during the current academic year. Nomination forms will be shared with the nominee and are due March 28.

STUDENT RESEARCH DAY

NDSU Student Research Day is a one-day event on April 19, 2022, that is dedicated to providing NDSU graduate and undergraduate students an opportunity to present their research and creative works. Both oral and poster presentation options are available. This is an inaugural event resulting from a collaboration among NDSU EXPLORE, Gamma Sigma Delta, and the Graduate Student Council.

Learn more and register to participate in Student Research Day >>

Registration closes Tuesday, March 22, 2022

FUNDING OPPORTUNITIES

NDSU Foundation Grants

The NDSU Foundation Grants Committee is now accepting applications from NDSU faculty and staff for five grant opportunities for the spring 2022 Grant Program.

Faculty and staff can obtain application forms and additional information for the available grants at the NDSU Foundation website. **The deadline to submit your application is March 25, 2022, by 4:30 p.m.** The NDSU Foundation will notify applicants of funding decisions by May 12, 2022.

- 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 **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 **Gordon A. Larson Foundation Fund** has $16,000 available to award. This grant fund supports competitive grants for agricultural research efforts conducted at North Dakota State University.
- The **Library Endowment** has $3,700 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 **Carl A. and Jean Y. White Memorial Endowment for Agriculture Research** has $4,400 available to award. This grant fund supports faculty and research staff to encourage agricultural research initiatives.

DOE: University Training and Research for Fossil Energy and Carbon Management

This funding opportunity [DE-FOA-0002596] for University Coal Research (UCR) Program, sponsored by the Office of Fossil Energy and Carbon Management (FECM) Crosscutting Research University Training and Research (UTR) Program and administered by the National Energy Technology Laboratory (NETL), has the following primary mission objectives:

1. educate and train the next generation of engineers and scientists to help develop and contribute to a highly-skilled, inclusive, and competitive U.S. workforce and economy;
2. support novel, early-stage research at U.S. colleges and universities that advances the FECM mission of delivering integrated solutions related to fossil energy and carbon management and enable transformation to a sustainable, netzero greenhouse gas future; and,
3. ensure that students are being equipped with cutting-edge, translatable skillsets that will allow them to contribute to the U.S. workforce and greater economy over the course of a longstanding and enduring career.

Deadline: April 4, 2022

RECENTLY FUNDED GRANTS

- Farhad Shirani Chaharsooghi (PI). CIF: Small: An Information Theoretic Framework for Web Privacy. $15,833 from the National Science Foundation. 12/1/2020 - 8/31/2021.
- Mijia Yang (PI). Solar snow fence. $10,008 from the Federal Highway Administration. 12/1/2021 - 11/30/2022.
- Ali Amiri (PI), Chad Ulven (CPI). Reducing fogging emission of natural fiber-filled polymers. $13,354 from the Center for Bioplastic and Biocomposites. 1/1/2022 - 12/31/2022.
- Ghodrat Karami (PI). NASA Human Exploration Rover Challenge. $4,000 from the University of North Dakota. 1/10/2022 - 4/1/2022.
- Lokesh Karthik Narayanan (PI), David Grewell (CPI). Closed-loop control for strengthening 3D printed (FDM) parts through ultrasonic welding. $13,615 from the Center for Bioplastic and Biocomposites. 1/3/2022 - 12/31/2022.
- Xinhua Jia (PI) Assessing subsurface drainage systems using electromagnetic induction. $52,166 from Ellingson Companies. 1/1/2022 - 12/31/2023.
- Jordi Estevadeordal (PI), Yan Zhang (CPI), Yildirim B Suzen (CPI). DoD DURIP FY2022: High-Speed Volumetric Measurement System for Spatially and Temporally Resolved Flow and Surface Measurements. $521,340 from the U.S. Navy. 03/01/2022 – 02/28/2023.
- Zhibin Lin (PI). Improving Bridge Concrete Overlay Performance. $60,000 from the University of Wisconsin – Milwaukee. 10/01/2021 – 09/30/2023.

- Alan R Kallmeyer (PI). SAE Formula Car Competition. $2,000 from the University of North Dakota. 2/14/2022 - 6/30/2023.

RECENTLY SUBMITTED PROPOSALS

- Chad A Ulven (PI), Jessica Lynne Lattimer Vold (CPI). RII Track-2 FEC: Advanced additive manufacturing of bio-based thermoplastics and composites: A new economic engine for rural America. $3,999,806 from the National Science Foundation. 10/1/2022 - 9/30/2026.
- Danling Wang (PI), Zhibin Lin (CPI), Yechun Wang (CPI). Novel two-dimensional Ti3C2 MXene based floating membrane devices for ocean carbon cycle study. $99,125 from the National Aeronautics and Space Administration. 9/1/2022 - 8/31/2023.
- Ravi Kiran Yellavajjala (PI). A Sustainable Air-entraining and Internal Curing Agent. $60,000 from the Iowa Department of Transportation. 5/16/2022 - 12/15/2022.
- Chad A Ulven (PI), Robert Allan Sailer (CPI). Additive Manufacturing of Copper Components with Micro Cold Spray Technology. $25,450 from the U.S. Navy. 7/1/2022 - 6/30/2023.
- Simone Ludwig (PI). STTR proposal - Satellite Fault detection. $44,805 from the U.S. Air Force. 8/15/2022 - 5/17/2024.
- Long Jiang (PI). Development of smart, self-healing, injectable gels using soy protein isolate for local cancer therapy. $54,360 from the ND Soybean Council. 7/1/2022 - 6/30/2023.
- Long Jiang (PI) Soy protein isolate based electrolyte gels for anti-freezing flexible zinc-ion batteries. $49,240 from the ND Soybean Council. 7/1/2022 - 6/30/2023.
- Long Jiang (PI) Further development on Soy Protein-based Soft Gels for Sensors and Soft Robotics. $30,334 from the ND Soybean Council. 7/1/2022 - 6/30/2023.
- Ademola Monsur Hammed (PI), Ewumbua Monono (CPI), Niloy Chandra Sarker (CPI). Development of Co-culture starter microbiome for organic ammonia production from soybeans. $66,429 from the ND Soybean Council. 7/1/2022 - 6/30/2023.
- Xiangfa Wu (CPI), Oksana Zholobko (CPI). Soy-based Biopolymers for Electrospinning Functional Micro- and Nanofibers for Use in High-Efficiency Air Filters and Respirators. $50,922 from the ND Soybean Council. 7/1/2022 - 6/30/2023.
- Changhui Yan (CPI). Comprehensive multi-omics analysis incorporating RNA secondary structure prediction to build causal models focused on SMAD4 and TGFÎ² pathway genes in pancreatic ductal adenocarcinoma. $1,994,565 from the National Institutes of Health. 1/8/2023 - 1/7/2028.

RECENT PUBLICATIONS

For 2022, 27 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:

- Afrin, Tanzina, and Nita Yodo. 2022. “A Hybrid Recovery Strategy toward Sustainable Infrastructure Systems.” *Journal of Infrastructure Systems* 28 (1): 04021054. https://doi.org/10.1061/(ASCE)IS.1943-555X.0000670.
- Bukartyk, Marta, Oksana Zholobko, and Xiang-Fa Wu. n.d. “Green Synthesis of Soy Protein Nanocomposites: Effects of Cross-Linking and Clay Nanoparticles on the Mechanical Performance.” *ACS Omega*. Accessed March 7, 2022. https://doi.org/10.1021/acsomega.1c06002.
- Costa, Cristiano, Yu Zhang, Kirk Howatt, Billy Ram, John Stenger, John Nowatzki, Sreekala Bajwa, and Xin Sun. 2022. “Palmer Amaranth (Amaranthus Palmeri S. Watson) and Soybean (Glycine Max L.) Classification in Greenhouse Using Hyperspectral Imaging and Chemometrics Methods.” *Transactions of the ASABE* 65 (1): 179–88. https://doi.org/10.13031/ja.14321.

- Fu, Jingyan, Zhiheng Liao, and Jinhui Wang. n.d. “Level Scaling and Pulse Regulating to Mitigate the Impact of the Cycle-to-Cycle Variation in Memristor-Based Edge AI System.” *IEEE Transactions on Electron Devices*. Accessed February 24, 2022. https://doi.org/10.1109/TED.2022.3146801.
- Rasuleva, Komila, Santhalingam Elamurugan, Aaron Bauer, Mdrakibhasan Khan, Qian Wen, Zhaofan Li, Preston Steen, et al. 2021. “Beta-Sheet Richness of the Circulating Tumor-Derived Extracellular Vesicles for Noninvasive Pancreatic Cancer Screening.” *ACS Sensors* 6 (12): 4489–98. https://doi.org/10.1021/acssensors.1c02022.
- Yang, Huanyu, Ying Huang, Zhi Zhou, and Jinping Ou. n.d. “Long-Term Performance of Packaged Fiber Bragg Grating Sensors for Strain Monitoring inside Creep Medium.” *International Journal of Smart and Nano Materials*. Accessed February 28, 2022. https://doi.org/10.1080/19475411.2022.2027548.

See your name on this list? Help us get the word out about your amazing work by submitting it as a **Breakthrough Alert**. **This online form** is an easy, step-by-step guide for summarizing published research for the general public.

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*.

Follow the College of Engineering on social media.