

COLLEGE HAPPENINGS

March 30, 2021

FROM THE DEAN

Developing Engineering Leaders

One of the most pressing and vital challenges in engineering education is effectively forming engineering leaders. For this reason, the College of Engineering has identified teaching students to be creative problem solvers who have the skills to motivate and inspire as one of our top priorities. Now, more than ever, graduating students need to be equipped with the skills to solve societal challenges.

One place that engineering leadership was on display over the past year, is in society's response to the covid-19 pandemic. Examples of engineering leadership and innovation that was relied on this past year include (1) video conferencing and high-speed internet enabled much of the country to work and learn remotely, (2) production of medical equipment and diagnostics improved treatment, (3) design of indoor air purifiers limited transmission, (4) supply chain management facilitated materials and chemical precursors, and (5) scale-up technologies of vaccines and therapeutics are allowing for wide distribution.

Educating and preparing engineering leaders is the biggest challenge facing engineering education, leaders with the ethics and courage to right wrongs and seek justice, innovators who put knowledge into practice to meet the challenges people and society will face in this century. Developing these leaders requires recognition that the most effective way people learn to develop as leaders is through practice, honed through a thread of leadership development (both curricular and extracurricular opportunities) throughout the degree plans.



IN THE NEWS

[Competition raises funds for NDSU graduate battling cancer](#)

[NDSU students recognized at national competition](#)

[Student resources: Study Abroad Services](#)

[Let the Battle of the Cents-es begin](#)

[NDSU holds 10th annual 'Battle of the Cents-es' to raise money for woman with RMS](#)

[NDSU releases new Career Outcomes Report](#)

CONGRATULATIONS

Ravi Kiran Yellavajjala, assistant professor in the Department of Civil and Environmental Engineering has been awarded an NSF CAREER grant. His proposal, "CAREER: Reduced-scale Additively Manufactured Models for Quantifying the Behavior of Large Structural Steel Castings," will investigate the fundamental multiscale fracture mechanisms in additively manufactured reduced scale steel models.

Civil engineering seniors **Wesley Kaeter** and **Malachi “Mac” Graupman** received honorable mentions in the prestigious Sustainable Nanotechnology Organization's NanoPitch Contest, held March 24. The contest gives participants 100 seconds to explain their research.

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, April 14, **NDSU COVID-19 Vaccine Clinic**. The J&J one shot vaccine is being offered to all NDSU staff, faculty and students. Reservations are available from 9:00 a.m. – 3:00 p.m. Get more information and [REGISTER HERE](#).

Wednesday, April 21, **Faculty Virtual Luncheon: Holistic Teaching Evaluation**. With recent modifications to NDSU policies 332 and 352, this event will provide suggestions and resources to support holistic teaching evaluation that includes input from students, peers, and the instructor themselves. 11:30 a.m. - 1:00 p.m. via Zoom.

Wednesday, April 21, **How to Speak with Humans: A Workshop for Academics**. The Office of Research and Creative Activity is hosting Paul Sutter, astrophysicist, author, and communications expert, for a fun and informative faculty workshop about science communications. 2:00 – 3:30 p.m. on Zoom. [Register to attend](#).

NASEM WORKSHOP: STRATEGIES FOR EFFECTIVE DATA MANAGEMENT AND SHARING

On April 28-29, 2021, the National Academies of Sciences, Engineering, and Medicine (NASEM) is hosting Changing the Culture of Data Management and Sharing, a virtual public workshop to examine strategies for effective data management and sharing. The workshop will discuss challenges to and potential solutions for data management and sharing across scientific disciplines and ways researchers can integrate data management and sharing practices into their routine research conduct. The workshop aims to inform implementation strategies for the new [NIH Policy for Data Management and Sharing](#).

Strategies for Effective Data Management and Sharing

April 28-29, 2021

[Learn more and register >>](#)

VENTUREWELL: SUSTAINABLE DESIGN FACULTY GRANTS

VentureWell is seeking applications for its Spring 2021 Faculty Grants. This cycle is focused on sustainable design and they are seeking proposals with innovative ideas related to creating or evolving courses and programs that incorporate sustainable design concepts aimed at developing novel inventions and technologies.

Join an upcoming informational webinar to learn more about the current Faculty Grants opportunity and to ask questions. Use the links below to RSVP today:

- [Webinar: April 6, 3pm ET](#)
- [Webinar: April 19, 3pm ET](#)

You can visit the detailed [Faculty Grants Guidelines page](#) to view more information about the grant cycle priorities and how to apply.

NDSU is a member of VentureWell and faculty are eligible for this and other funding opportunities.

FUNDING OPPORTUNITIES

Defense University Research Instrumentation Program (DURIP)

DoD's DURIP is designed to improve the capabilities of accredited U.S. higher education institutions to conduct research and to educate scientists and engineers in areas important to national defense by providing funds for the acquisition of research equipment or instrumentation. A DURIP award provides between \$50,000 and \$1,500,000 for the purchase of major equipment or instrumentation.

The three agencies that administer the award are the [Army Research Office \(ARO\)](#), the [Office of Naval Research \(ONR\)](#), and the [Air Force Office of Scientific Research \(AFOSR\)](#).

A variety of research and technology areas are reflected in each agency's Broad Area Announcements. Examples include biomaterials and bionanotechnology, human sciences, energy efficient electronics and photonics, aerospace composite materials, quantum sciences, corrosion control technologies, machine learning, artificial intelligence, materials and processes for additive manufacturing.

Applicants are encouraged to contact the Program Managers in the BAAs before submitting proposals to explore research areas of mutual interest. *The deadline for inquiries and questions is Friday, April 23, 2021.*

Cost sharing is not required. Applicants should take note of any amendments that may modify the announcement. The amendments are posted on the [Grants.gov](#) webpage. The funding opportunity number is [FOA-AFRL-AFOSR-2021-0002](#).

Full Proposal Deadline: May 14, 2021

RECENTLY FUNDED GRANTS

- John F Nowatzki (PI). Demonstrate the Use of Unmanned Aerial Vehicles to Plant Cover Crop Seed. \$53,753 from the ND Department of Agriculture. 03/01/2021 – 02/28/2022.
- Wei Lin (PI). Sampling Wastewater for SARS-CoV-2 (2021). \$48, 672 from the Department of Treasury. 01/01/2021 – 06/30/2021.

RECENTLY SUBMITTED PROPOSALS

- Farhad Shirani Chaharsooghi (PI). Collaborative Research: SWIFT: Energy-Aware Multiuser Communication in Millimeter Wave Wireless Networks. \$299,988 from the National Science Foundation. 10/01/2021 – 10/01/2024.
- Zhibin Lin (PI), Juan Li (CPI). AI-Empowered Digital Twin Framework with Novel Cognitive Learnings toward Enabling Intelligent Automation in Precision, Prediction, Prevention, and Participation (P4) Pipelines. \$550,000 from Pipeline and Hazardous Materials Safety. 09/01/2021 – 09/30/2024.
- Ying Huang (PI), Danling Wang (CPI), Qifeng Zhang (CPI). SMART: A Novel Semi-Autonomous Multi-modal Sensor-Based High-Dimensional Time Series Data-Driven Intelligent Remote Monitoring System. \$180,000 from Pipeline and Hazardous Materials Safety. 09/30/2021 – 09/30/2024.
- Majura Fortunatus Selekwu (PI). Evaluation of the Effectiveness of Epoxidized Soybean Oil (ESBO) in Protecting Autonomous Vehicle Navigation Sensors. \$24,820 from the ND Soybean Council. 06/01/2021 – 12/31/2021.

- Ravi Kiran Yellavajjala (PI). Integrative Multi-omics Approach to Alzheimer's Disease. \$100,000 from the National Institutes of Health. 08/16/2021 – 08/15/2023.
- Ewumbua Monono (PI). Pilot Scale Degumming/Bleaching Unit for Refining Crude Vegetable Oils. \$158,719 from the National Institute of Food and Agriculture. 10/01/2021 – 12/31/2022.
- Inbae Jeong (PI). Collaborative Research: FW-HTF-P: Human-Engaged Robot Operation In Construction (HEROIC). \$31,453 from the National Science Foundation. 10/10/2021 – 09/30/2022.
- Syeed Md Iskander (PI). Anaerobic membrane bioreactors to mitigate microplastics during food waste management. \$209,418 from the National Science Foundation. 07/01/2021 – 06/30/2024.
- Mijia Yang (PI). CO₂ sequestration in alkaline activated concrete through accelerated carbonation. \$5,000 from the NDSU Foundation and Alumni Association. 06/01/2021 – 11/30/2022.
- Xin Sun (CPI). Development of a Precision Agriculture Fellows Program. \$150,000 from the National Institute of Food and Agriculture. 12/01/2021 – 12/31/2024.

RECENT PUBLICATIONS

For 2021, 55 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:

- Azadi, Firoozeh, Parisa-Sadat Ashofteh, and Xuefeng Chu. 2021. "Evaluation of the Effects of Climate Change on Thermal Stratification of Reservoirs." *Sustainable Cities and Society* 66 (March): 102531. <https://doi.org/10.1016/j.scs.2020.102531>.
- Das, Tonoy K., and Achintya N. Bezbaruah. 2021. "Comparative Study of Arsenic Removal by Iron-Based Nanomaterials: Potential Candidates for Field Applications." *Science of the Total Environment* 764 (April): 142914. <https://doi.org/10.1016/j.scitotenv.2020.142914>.
- Jaswandkar, Sharad, H. M. Nasrullah Faisal, Kalpana S. Katti, and Dinesh R. Katti. 2021. "Dissociation Mechanisms of G-Actin Subunits Govern Deformation Response of Actin Filament." *Biomacromolecules* 22 (2): 907–17. <https://doi.org/10.1021/acs.biomac.0c01602>.
- Liao, Yangchao, Zhaofan Li, Fatima, and Wenjie Xia. 2021. "Size-Dependent Structural Behaviors of Crumpled Graphene Sheets." *Carbon* 174 (April): 148–57. <https://doi.org/10.1016/j.carbon.2020.12.006>.
- Ostrand, Megan S., Thomas M. DeSutter, Dean D. Steele, Ryan F. Limb, and Aaron L. M. Daigh. n.d. "Can a Superabsorbent Polymer Help Remediate Compaction in Frigid, Semiarid Soils? - A Laboratory Evaluation on Soil Physical Processes." *Arid Land Research and Management*. <https://doi.org/10.1080/15324982.2021.1887399>.
- Parvej, Subbir, Dayakar L. Naik, Hizb Ullah Sajid, Ravi Kiran, Ying Huang, and Nidhi Thanki. 2021. "Fugitive Dust Suppression in Unpaved Roads: State of the Art Research Review." *Sustainability* 13 (4): 2399. <https://doi.org/10.3390/su13042399>.
- Sadiq, Mahek, Lizhi Pang, Michael Johnson, Venkatachalem Sathish, Qifeng Zhang, and Danling Wang. 2021. "2D Nanomaterial, Ti₃C₂ MXene-Based Sensor to Guide Lung Cancer Therapy and Management." *Biosensors-Basel* 11 (2): 40. <https://doi.org/10.3390/bios11020040>.
- Yao, Lijian, Dong Hu, Chao Zhao, Zidong Yang, and Zhao Zhang. 2021. "Wireless Positioning and Path Tracking for a Mobile Platform in Greenhouse." *International Journal of Agricultural and Biological Engineering* 14 (1): 216–23. <https://doi.org/10.25165/ijabe.20211401.5627>.
- Yodo, Nita, and Tanzina Arfin. 2021. "A Resilience Assessment of an Interdependent Multi-Energy System with Microgrids." *Sustainable and Resilient Infrastructure* 6 (1–2): 42–55. <https://doi.org/10.1080/23789689.2019.1710074>.

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*.

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