

COLLEGE HAPPENINGS

May 25, 2021

FROM THE DEAN

The Wright Brothers

Yesterday I drove home to Fargo from Custer, SD, where I'd paid a surprise visit to my father for his 80th birthday. On the 9-hour drive home, I listened to the non-fiction audiobook "The Wright Brothers" by David McCullough, which told the history of inventors and aviation pioneers Wilbur and Orville Wright. As self-taught engineers, the brothers showed incredible work ethic, grit, ingenuity, and courage in their quest to invent the first powered airplane.

Last month, NASA's Ingenuity helicopter became the first aircraft to fly on a planet besides Earth. Under its solar panel, the helicopter carries a small piece of wing fabric from the 1903 Wright Flyer. And, its first Martian take-off and landing area was aptly named "Wright Brothers Field."

It is amazing how much engineering has advanced in the past 120 years. Just take the field of aviation as an example. In 1947, just 44 years after the Wright brothers made their first flights in Kitty Hawk, North Carolina, Chuck Yeager broke the sound barrier in level flight. Only 22 years later, in 1969, Neil Armstrong walked on the moon. Today, reusable rocket stages from SpaceX and Blue Origin are designed to return to their launch site and land vertically, and the New Horizons spacecraft has flown past Pluto.

Looking back at innovations in modern history, and the exponentially increasing rate of engineering progress, is exciting for those of us in engineering education. It reminds us that we can't be the kind of place where a professor shows up with the same lecture notes each year that were once white, but have faded to yellow because they're so old. We can't be the kind of college where you hold up two different curriculums and have a hard time telling which is from today and which is from 30 years ago. The fields of engineering and computer science are changing so quickly. Which is why we must be an agile college that continually updates its curriculums to meet the rapidly changing skillset needed by our graduates.



IN THE NEWS

[STEM Kids Camp on North Dakota Today](#)

[Common Ground: NDSU GeoWall Team](#)

[Are UAVs the answer to seeding in wetlands, saline seeps?](#)

CONGRATULATIONS

Achintya Bezbaruah, from the **Department of Civil and Environmental Engineering**, **Sudarshan Srinivasan**, from the **Department of Electrical and Computer Engineering**, and **Saeed Salem**, from the **Department of Computer Science**, were promoted to Full Professor. **Joe Latimer**, from the **Department of Computer Science**, was promoted to Senior Lecturer. All were recognized at the [2021 Celebration of Excellence](#).

Mohammed and **Hossein Emami Ahari** from the **Department of Civil and Environmental Engineering** placed 3rd in the 2021 GeoPrediction competition. Mohammed and **Tiffany Meeks**, also from CEE, placed 3rd in the 2021 GeoVideo competition. NDSU was one of just two institutions whose students won more than one award in the 2021 GeoChallenge competitions.

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

Tuesday, August 17, **New Faculty Orientation**. The event runs from 8:30 a.m. to 4:00 p.m. [Register here](#).

Wednesday, August 18, **Annual Faculty and Academic Staff Conference**. Presentations will include demonstrating best practices for research, instruction, advising, assessment, campus climate, inclusion, mentoring, leadership, and classroom technologies. [Register here](#).

NDSU FACULTY FELLOWS PROGRAM

The Office of the Provost/Faculty Affairs invites applications for the Faculty Fellows program for the 2021-2022 academic year. The Faculty Fellows program provides faculty members the opportunity to enhance their academic leadership skills, bring faculty expertise and voice to administrative offices, and to gain insight into administrative practices and offices. Applications are due May 28, 2021.

Fellowship opportunities are available to lead and/or coordinate programs in content areas such as faculty development, mentoring, and leadership development.

To apply please send: 1) curriculum vitae; and 2) a letter of interest describing your experience in faculty mentoring, inclusive teaching and/or research mentoring, and academic leadership to canan.bilen.green@ndsu.edu by May 28, 2021 for full consideration.

BIOMADE WHITE PAPERS DUE MAY 28

NDSU is a partner in a new Manufacturing Innovation Institute related to biomanufacturing (using biology to make chemicals and materials) called BioMADE.

You can read more about the institute at <https://biomade.org/>. They are most interested in funding research related to scale-up of technology – bridging the gap between basic science/discovery and industry.

Team-based white papers for the first round of funding are due May 28, 11:59 pm EST. More info on the project calls are available at <https://biomade.org/programs/>.

CULTURAL DIVERSITY AND SAFE ZONE TRAINING

The Office of the Vice Provost for Faculty and Equity will be offering a series of the Cultural and Cultural Diversity Trainings as part of the Community of Respect series and the Safe Zone Training series via Zoom.

Cultural and Cultural Diversity Trainings:

- Module 1 Cultural and Cultural Diversity, June 10 from 10 am - noon
- Module 2, Redefining Diversity, June 17 from 10 am- noon
- Module 3, Microaggressions, June 24 from 10 am- noon
- Module 4, Confronting Bias, July 1 from 10 am- noon

Safe Zone Training:

- Level 1 “Becoming an Ally”, June 8, 2021 from 1-3 pm
- Level 2 “Gender Identity and Expression”, June 15, 2021 from 1-3 pm
- Level 3 “Upstander”, June 22, 2021 from 1-3 pm

Register for either program here: https://www.ndsu.edu/equity/education_and_training/

Registrants will be emailed the Zoom link a few days prior to the training dates.

VIRTUAL DEPCOR DAY

The Defense Established Program to Stimulate Competitive Research (DEPSCoR) is holding a virtual DEPSCoR Day on Wednesday, June 23 from 9 a.m. to 4 p.m. The event will include overviews of currently open funding opportunities, various panel sessions, and breakout sessions with Program Officers representing the topics in the [Research Collaboration funding opportunity announcement](#).

To participate in the Virtual DEPSCoR Day, you must [register](#) in advance no later than June 16, 2021. You are encouraged to register early as space is limited.

FUNDING OPPORTUNITIES

NSF: Cyber-Physical Systems

The CPS program [[NSF 21-551](#)] aims to develop the core research needed to engineer these complex CPS, some of which may also require dependable, high-confidence, or provable behaviors. Core research areas of the program include control, data analytics, and machine learning including real-time learning for control, autonomy, design, Internet of Things (IoT), mixed initiatives including human-in- or human-on-the-loop, networking, privacy, real-time systems, safety, security, and verification.

NSF is working closely with multiple agencies across the federal government, including DHS; DOT; NIH; and USDA-NIFA. Proposals for three classes of research and education projects—differing in scope and goals—are supported through the CPS program.

EPA: Sustainable Materials Management Grants – Region 8

The Environmental Protection Agency (EPA) Region 8 (Mountains and Plains – CO, ND, MT, SD, UT, WY) is soliciting applications [[EPA-R8-2021-SMM](#)] that address the national and regional priority of decreasing the environmental impact of materials with a focus on reducing greenhouse gas emissions (GHGs). This funding opportunity is designed to both decrease materials generated (source reduction) and increase the diversion of materials through reuse, recycling, and other strategies.

Deadline: June 23, 2021

RECENTLY FUNDED GRANTS

- Xiangfa Wu (PI), Qifeng Zhang (CPI), Adam Curtis Gladen (CPI). Advanced membrane electrode assemblies for fuel cells. \$842,797 from the Department of Defense. 01/01/2021 – 12/31/2023.
- Qifeng Zhang (PI), Adam Curtis Gladen (CPI). Advanced Materials for Lithium Ion Batteries Phase IV. \$1,200,053 from the Department of Defense. 05/15/2021 – 05/14/2024.
- Qifeng Zhang (PI). Reform Electrical Engineering Lab course (ECE 306) to enhance students' conceptual understanding of electric circuits by integrating computer simulations into laboratory experiments. \$1,000 from the NDSU Foundation and Alumni Association. 06/15/2021 – 08/14/2022.
- Di Wu (PI), Dali Sun (CPI). An interactive graph-based methodology for cancer drug screening. \$5,000 from the NDSU Foundation and Alumni Association. 05/17/2021 – 10/31/2022.
- Yechun Wang (PI). Influences of micro-patterned channel surface on blood cell motion in microfluidics. \$5,000 from the NDSU Foundation and Alumni Association. 05/17/2021 – 12/16/2021.
- Beena D Ajmera (PI). Influence of Salt Concentration on the Occurrence of Slope Failures in North Dakota. \$1,000 from the NDSU Foundation and Alumni Association. 06/01/2021 – 11/06/2022.
- Long Jiang (PI), Mijia Yang (CPI). Developing printable concrete using eco-friendly recycled carbon fiber/epoxy composites. \$5,000 from the NDSU Foundation and Alumni Association. 05/07/2021 – 11/06/2022.
- Inbae Jeong (PI). Board of Trustees Endowment Grant Program: Development of Remote Lab System. \$1,000 from the NDSU Foundation and Alumni Association. 05/17/2021 – 08/13/2021.

RECENTLY SUBMITTED PROPOSALS

- Wenjie Xia (PI). Developing New Compatibilizers for Plastic Upcycling through High-Throughput Materials Characterization and Computation. \$3,454,417 from the Department of Energy. 09/01/2021 - 08/31/2024.
- Chad A Ulven (PI), Todd L Sirotiak (CPI), Majura Fortunatus Selekwia (CPI). Novel Thermal Retrofitting for the Exterior of Windows. \$199,999 from the Department of Energy. 07/01/2021 - 12/31/2021.
- Dharmakeerthi Nawarathna (PI). FMSG: Biomanufacturing Viral vector free CAR T-cell manufacturing at point-of-care for personalized therapy. \$500,000 from the National Science Foundation. 09/01/2021 - 08/31/2023.
- 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. 02/01/2022 - 01/31/2024.
- Jordi Estevadeordal (PI), Yan Zhang (CPI), Yildirim B Suzen (CPI), William John Reffling (CPI). SCIENTIFIC-GRADE WIND TUNNEL FOR NDSU ADVANCED UNSTEADY AERODYNAMICS RESEARCH. \$187,653 from the U.S. Air Force. 01/01/2022 - 12/31/2032.
- Achintya Bezbaruah (PI), Dharmakeerthi Nawarathna (CPI). Understanding the Mechanisms of Barley's Catalyst Properties for the Synthesis of Dielectric and Contaminant Adsorbent Materials. \$299,871 from the National Institute of Food & Agriculture. 01/01/2022 - 12/31/2023.
- Achintya Bezbaruah (PI). Nanotechnology for Agriculture and Food Systems PARTNERSHIP: Nano-enabled hybrid phosphorus platforms for increasing phosphorus use efficiency. \$799,842 from the National Institute of Food & Agriculture. 01/01/2022 - 12/31/2024.

RECENT PUBLICATIONS

For 2021, 103 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:

- Akerkouch, Lahcen, and Trung Bao Le. 2021. "A Hybrid Continuum-Particle Approach for Fluid-Structure Interaction Simulation of Red Blood Cells in Fluid Flows." *Fluids* 6 (4): 139.
<https://doi.org/10.3390/fluids6040139>.

- Anar, M. J., Z. Lin, L. Ma, and A. Chatterjee. 2021. "Modeling the Effects of Crop Rotation and Tillage on Sugarbeet Yield and Soil Nitrate Using Rzwqm2." *Transactions of the ASABE* 64 (2): 461–74. <https://doi.org/10.13031/trans.13752>.
- Du, Jing, Dinesh Katti, and Hendrik Heinz. n.d. "Multiscale Experiments and Modeling in Biomaterials and Biological Materials, Part I." *JOM*. <https://doi.org/10.1007/s11837-021-04692-0>.
- Faisal, H. M. Nasrullah, Kalpana S. Katti, and Dinesh R. Katti. n.d. "Differences in Interactions Within Viral Replication Complexes of SARS-CoV-2 (COVID-19) and SARS-CoV Coronaviruses Control RNA Replication Ability." *JOM*. <https://doi.org/10.1007/s11837-021-04662-6>.
- Huynh, Phat K., Arveity Setty, Hao Phan, and Trung Q. Le. 2021. "Probabilistic Domain-Knowledge Modeling of Disorder Pathogenesis for Dynamics Forecasting of Acute Onset." *Artificial Intelligence in Medicine* 115 (May): 102056. <https://doi.org/10.1016/j.artmed.2021.102056>.
- Iskander, Syeed Md, Yamrot M. Amha, Phillip Wang, Qin Dong, Juhe Liu, Michael Corbett, and Adam L. Smith. 2021. "Investigation of Fats, Oils, and Grease Co-Digestion With Food Waste in Anaerobic Membrane Bioreactors and the Associated Microbial Community Using MinION Sequencing." *Frontiers in Bioengineering and Biotechnology* 9 (April): 613626. <https://doi.org/10.3389/fbioe.2021.613626>.
- Kazemi, Mehdi, Omid Bozorg-Haddad, Elahe Fallah-Mehdipour, and Xuefeng Chu. n.d. "Optimal Water Resources Allocation in Transboundary River Basins According to Hydropolitical Consideration." *Environment Development and Sustainability*. <https://doi.org/10.1007/s10668-021-01491-0>.
- Mitra, Dipankar, Sukrith Dev, Monica S. Allen, Jeffery W. Allen, and Benjamin D. Braaten. 2021. "Coordinate Transformations-Based Antenna Elements Embedded in a Metamaterial Shell with Scanning Capabilities." *Electronics* 10 (9): 1081. <https://doi.org/10.3390/electronics10091081>.
- Nahar, Nurun, Ramsharan Pandey, Ghasideh Pourhashem, David Ripplinger, and Scott W. Pryor. 2021. "Life Cycle Perspectives of Using Non-Pelleted vs. Pelleted Corn Stover in a Cellulosic Biorefinery." *Energies* 14 (9): 2518. <https://doi.org/10.3390/en14092518>.
- Pandey, Ramsharan, Nurun Nahar, Scott W. Pryor, and Ghasideh Pourhashem. 2021. "Cost and Environmental Benefits of Using Pelleted Corn Stover for Bioethanol Production." *Energies* 14 (9): 2528. <https://doi.org/10.3390/en14092528>.
- Rahman, Md Mahfuzur, Bibek Byanju, David Grewell, and Buddhi P. Lamsal. 2021. "High-Power Sonication of Soy Proteins: Hydroxyl Radicals and Their Effects on Protein Structure (Vol 64, 1050192, 2020)." *Ultrasonics Sonochemistry* 73 (May): 105504. <https://doi.org/10.1016/j.ultsonch.2021.105504>.
- Rasool, Raihan Ur, Khandakar Ahmed, Zahid Anwar, Hua Wang, Usman Ashraf, and Wajid Rafique. n.d. "CyberPulse plus : A Machine Learning-Based Security Framework for Detecting Link Flooding Attacks in Software Defined Networks." *International Journal of Intelligent Systems*. <https://doi.org/10.1002/int.22442>.
- Wang, Ning, Xuefeng Chu, and Xiaodong Zhang. 2021. "Functionalities of Surface Depressions in Runoff Routing and Hydrologic Connectivity Modeling." *Journal of Hydrology* 593 (February): 125870. <https://doi.org/10.1016/j.jhydrol.2020.125870>.
- Zeng, Lan, and Xuefeng Chu. 2021. "Integrating Depression Storages and Their Spatial Distribution in Watershed-Scale Hydrologic Modeling." *Advances in Water Resources* 151 (May): 103911. <https://doi.org/10.1016/j.advwatres.2021.103911>.
- Zhang, Hao, Liming Zhu, Fan Zhang, and Mijia Yang. 2021. "Effect of Fiber Content and Alignment on the Mechanical Properties of 3D Printing Cementitious Composites." *Materials* 14 (9): 2223. <https://doi.org/10.3390/ma14092223>.

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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