

COLLEGE HAPPENINGS

December 7, 2021

FROM THE DEAN

Professional Engineering Licensure

Before I joined NDSU, the College of Engineering set a goal of increasing the percentage of engineering faculty members who have achieved and maintained professional engineering licensure. The importance of this goal remains. In a [previous message](#), I described the processes. “The first step toward Professional Engineer (PE) licensure is passing the Fundamentals of Engineering (FE) exam ... to become an Engineer in Training, or EIT. After graduation and the accumulation of four years of engineering experience, the EIT is eligible to take the Principles and Practice in Engineering exam; passing that exam is the final step in becoming a PE.”

Several years ago, the North Dakota State Board of Registration for Professional Engineers and Land Surveyors in North Dakota modified their policies so that “research and report writing” qualifies as non-teaching experience for purposes of professional engineer registration. Two years of non-teaching experience is required (research and report writing, consulting, or other engineering outside the field of teaching).

Payment of registration fees is required to maintain an active professional engineering license. To support our goal, faculty members who have valid professional engineering licenses may submit a copy of their active professional registration/license with proof of registration payment to the College of Engineering for reimbursement. For faculty members whose registration is in a state requiring professional development hours, the College will reimburse up to \$300 per year for pre-approved and qualified continuing professional development activities. The faculty member must demonstrate that the reimbursement qualifies for licensure professional development credit and provide the necessary registration receipts and completion certificate (or equivalent) for reimbursement. For faculty preparing to take the professional licensing examination, partial cost of preparatory materials is reimbursable upon achieving professional registration not to exceed \$250.

If you are an engineering faculty member, but aren't a PE, I hope you will consider pursuing licensure for your own professional development and as an example to our students.



IN THE NEWS

[NDSU researchers among top-cited scientists](#)

[Engineering students win environmental design competition](#)

CONGRATULATIONS

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, December 8, **Senior Design Expo**. The joint Mechanical and Electrical and Computer Engineering Senior Design Expo will showcase the innovative projects designed and built by students during their capstone course. 11:00 a.m. – 2:00 p.m. in the Memorial Unions Oceti Sakowin Ballroom.

Thursday, December 16, **College of Engineering Ring and Pin Ceremony**. This ceremony is a blending of two significant and celebratory events, the Order of the Engineer and the Pledge of the Computing Professional. 5:30 p.m. AG Hill 112. Get more information [here](#).

Friday, December 17, **2021 Winter Commencement**. 2:00 p.m. in the SHAC. Faculty and staff who wish to participate in the academic processional along with our graduation class can sign up here:

<https://www.ndsu.edu/commencement/facstaff/>

NSF AND CAREER DEVELOPMENT PROGRAM

The Research and Creative Activity Office has created an **NSF and CAREER Proposal Development Program** to assist faculty in writing proposals to NSF.

All sessions will be held during spring semester 2022. There are two tracks:

Track A: First NSF Proposal or Proposal Re-submissions

This series of sessions are primarily for faculty who have not written an NSF proposal or have not had a successful NSF proposal submission. This track would also be useful for faculty applying to the NSF CAREER program in Summer 2023 or 2024.

Track B: NSF CAREER 2022

This series of sessions is for faculty that will be submitting an NSF CAREER proposal in Summer 2022.

Learn more, see the full schedule and apply [here](#).

DISQUISITION BOOT CAMP

The NDSU Center for Writers is now taking applications for the **10th NDSU Disquisition Boot Camp** that runs from January 5th- 7th, 2022. The three-day boot camp, the fourth entirely online, is an opportunity for master's and PhD students to work intensively on disquisitions (dissertations, theses, or master's papers) in a focused and productive atmosphere. The application deadline is December 12th.

Application available at www.ndsu.edu/cfwriters/disquisition_boot_camp/

Email kristina.caton@ndsu.edu with questions.

STUDENT RESEARCH DAY

NDSU Student Research Day is a new event involving a collaboration between NDSU EXPLORE, Gamma Sigma Delta, and the Graduate Student Council. We are excited to bring together what once was three separate events into one day of celebrating undergraduate and graduate student research and creative projects.

Student Research Day is scheduled for April 19, 2022. Watch for more information on registration and event details in early 2022.

FUNDING OPPORTUNITIES

NSF: Smart and Connected Communities

The goal of the NSF Smart and Connected Communities (S&CC) program solicitation [NSF 22-529] is to accelerate the creation of the scientific and engineering foundations that will enable smart and connected communities to bring about new levels of economic opportunity and growth, safety and security, health and wellness, accessibility and inclusivity, and overall quality of life.

For the purposes of this solicitation, communities are defined as having geographically-delineated boundaries—such as towns, cities, counties, neighborhoods, community districts, rural areas, and tribal regions—consisting of various populations, with the structure and ability to engage in meaningful ways with proposed research activities. A “smart and connected community” is, in turn, defined as a community that synergistically integrates intelligent technologies with the natural and built environments, including infrastructure, to improve the social, economic, and environmental well-being of those who live, work, learn, or travel within it.

The S&CC program encourages researchers to work with community stakeholders to identify and define challenges they are facing, enabling those challenges to motivate use-inspired research questions. The S&CC program supports integrative research that addresses fundamental technological and social science dimensions of smart and connected communities and pilots solutions together with communities.

Proposals accepted anytime, until April 1, 2024

NIST: Metals-based Additive Manufacturing Grant Program

The NIST Metals-based Additive Manufacturing Grant Program [[2022-NIST-MBAMGP-01](#)] is seeking applications to support significant measurement science research in addressing current and future barriers to wide-spread adoption of metals-based additive manufacturing, such as feedstock, machine, and process characterization; real-time process monitoring and control; increasing process optimization and throughput; rapid qualification methodologies for processes and parts via characterization of surface quality, part accuracy, material properties as well as model-based approaches; and computational requirements for systems integration in advanced additive manufacturing systems including multi-material and multi-laser systems.

Deadline: January 11, 2022

DOE: SciDAC: Partnerships in Earth System Model Development

The Department of Energy (DOE) Office of Science (SC) programs in Biological and Environmental Research (BER) and Advanced Scientific Computing Research (ASCR) are soliciting applications from multi-disciplinary teams to establish collaborative projects under the SC-wide Scientific Discovery through Advanced Computing (SciDAC) program in specific targeted topic areas that relate to the BER and ASCR missions. This Funding Opportunity Announcement [[DE-FOA-0002585](#)] invites new research applications for the SciDAC-5 Partnerships in Earth System Model Development that enable or accelerate scientific discovery employing deep, necessary, and productive collaborations between earth-system scientists on the one hand and applied mathematicians and computer scientists on the other, that overcome the barriers between these disciplines and consequently fully exploit the capabilities of DOE high-performance computing (HPC) in order to accelerate and enhance the DOE’s Energy Exascale Earth System Model (E3SM) development, supported by the Earth System Model Development Program Area (ESMD) of the Earth and Environmental Systems Modeling Program (EESM) within the Earth and Environmental Systems Sciences Division (EESDD) under BER. This SciDAC opportunity targets current challenges of the E3SM to improve its representations and performance of the Atlantic Meridional Ocean Circulation (AMOC), the Antarctic ice sheet, marine biogeochemistry, and quasi-biennial oscillation (QBO), as well as

improved physics and numerics to enhance coupling of the various components with high and variable resolutions of the E3SM.

Pre-application deadline: January 13, 2022

RECENTLY FUNDED GRANTS

- Mijia Yang (PI). Solar snow fence. \$10,008 from the National Academies. 12/1/2021 - 11/30/2022.
- Om Prakash Yadav (PI). Trung Quoc Le (CPI). RII Track-2 FEC: Artificial Intelligence on Sustainable Energy Infrastructure Network (AI SUSTEIN) and Beyond towards Industries of the Future. \$5,977,484 from the National Science Foundation. 09/01/2021 – 08/31/2025.
- Xinhua Jia (CPI). Filling the Pipeline- Preparing the Next Generation of Watershed Management Extension Professionals. \$57,568 from the National Institute of Food and Agriculture. 01/01/2021 – 12/31/2025.
- Wenjie Xia (PI). Collaborative Research: Multiscale Mechanics of Adsorption-Deformation Coupling in Soft Nanoporous Materials. \$206,661 from the National Science Foundation. 07/01/2021 – 06/30/2024.
- Ewumbua Monono (PI). Bio-based polymer degradation and impact on human health. \$76,878 from the National Institute of Food & Agriculture. 10/01/2021 – 09/30/2024.
- Kalpana Katti (PI), Dinesh R Katti (CPI). Prostate Cancer Bone Metastasis Testbed for Regenerative Bone Therapies for Bone Metastasis. \$75,000 from the National Institutes of Health. 09/01/2021 – 08/31/2022.
- Qifeng Zhang (PI). A flash co-sintering strategy for the fabrication of LiPON-based bulk-type solid-state lithium-ion battery. \$82,856 from the National Aeronautics and Space Administration. 08/16/2021 – 08/15/2022.

RECENTLY SUBMITTED PROPOSALS

- Trung Quoc Le (PI). Collaborative Research: SCH: Next Generation of Smart Wearable Obstructive Sleep Apnea Multisensory System for Diagnosis and Prediction (NGen-SWAP). \$528,907 from the National Science Foundation. 8/1/2022 - 7/31/2026.
- Ravi Kiran Yellavajjala (PI). Improving the Freeze Thaw Performance of Concrete. \$50,000 from the ND Corn Utilization Council. 7/1/2022 - 6/30/2024.
- Omid Beik (PI). Improved Energy Security Using Multiphase Design for High Voltage Multilevel Power Electronics Converters. \$487,133 from the U.S. Army. 8/1/2022 - 7/31/2024.
- Jeremy A Straub (PI). Publication Fee Support - Hayek Fund. \$5,000 from the Institute for Humane Studies. 12/1/2021 - 11/30/2022.
- Kalpana Katti (PI), Danling Wang (CPI), Dinesh R Katti (CPI), Dali Sun (CPI), Wenjie Xia (CPI). RECODE Preliminary Proposal: Novel nanocomposite based smart sensor for real-time monitoring breast cancer bone metastasis through a new 3D nanoclay based scaffold model. \$1,471,521 from the National Science Foundation. 5/1/2022 - 4/30/2026.

RECENT PUBLICATIONS

For 2021, 200 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:

- Alibrahim, Hussain, and Simone A. Ludwig. 2021. "Hyperparameter Optimization: Comparing Genetic Algorithm against Grid Search and Bayesian Optimization." In *2021 IEEE Congress on Evolutionary Computation (CEC 2021)*, 1551–59. New York: Ieee. <https://doi.org/10.1109/CEC45853.2021.9504761>.
- Eide, Austin, Cengiz Koparan, Yu Zhang, Michael Ostlie, Kirk Howatt, and Xin Sun. 2021. "UAV-Assisted Thermal Infrared and Multispectral Imaging of Weed Canopies for Glyphosate Resistance Detection." *Remote Sensing* 13 (22): 4606. <https://doi.org/10.3390/rs13224606>.

- Khan, Muhammad Saeed, Adnan Iftikhar, Raed M. Shubair, Antonio-D. Capobianco, Benjamin D. Braaten, and Dimitris E. Anagnostou. 2020. “Eight-Element Compact UWB-MIMO/Diversity Antenna With WLAN Band Rejection for 3G/4G/5G Communications.” *IEEE Open Journal of Antennas and Propagation* 1: 196–206. <https://doi.org/10.1109/OJAP.2020.2991522>.
- Shrestha, Deepika, Fardad Azarmi, and X. W. Tangpong. n.d. “Effect of Heat Treatment on Residual Stress of Cold Sprayed Nickel-Based Superalloys.” *Journal of Thermal Spray Technology*. Accessed December 6, 2021. <https://doi.org/10.1007/s11666-021-01284-x>.
- Wang, Xingyu, Fujian Tang, Qi Cao, Xiaoning Qi, Hong Pan, Xi Chen, and Zhibin Lin. 2022. “Carbon-Based Nanoparticle-Filled Protective Coatings for Enhanced Damage Tolerance and Corrosion Resistance of Structural Weldment.” *Journal of Materials in Civil Engineering* 34 (1): 04021384. [https://doi.org/10.1061/\(ASCE\)MT.1943-5533.0004019](https://doi.org/10.1061/(ASCE)MT.1943-5533.0004019).
- Wolf, Henry, Dipankar Mitra, Ryan Striker, and Benjamin Braaten. 2021. “On the Equivalent Circuit Model of a 3D-Printed Conductive Electrifi Transmission Line on a Flexible NinjaFlex Substrate.” In *2021 IEEE International Conference on Electro Information Technology (EIT)*, 83–85. New York: Ieee. <https://doi.org/10.1109/EIT51626.2021.9491832>.

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.

