

NEWS

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Samuel Ginn
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Announcements

NCURA YouTube: Jean Feldman on NSF's Mentoring Plan Requirements

In collaboration with the National Council of University Research Administrators (NCURA), Jean Feldman—Head of NSF's Policy Office—clarifies points of uncertainty regarding Mentoring Plans and Individual Development Plans (IDPs) for graduate students and postdoctoral scholars.

[Watch the full 3-minute video here.](#)

Funding Opportunities

Department of Energy Computational Science Graduate Fellowship Program (DOE CSGF)

Krell Institute

Proposals Due: January 16, 2025

Award Amount: \$45,000–\$180,000

Areas of Interest: computer science, chemical engineering, mechanical engineering, materials science, chemistry, physics

The DOE CSGF program provides opportunities to graduate students in fields that utilize high-performance computing to solve complex science and engineering problems. Distinct benefits include:

- A yearly stipend of \$45,000
- Full coverage of tuition and fees during the appointment period (at any accredited U.S. university)
- An annual \$1,000 professional development allowance
- Up to four years of total support (subject to renewal)
- A twelve-week practicum experience at a DOE national laboratory or site, including access to DOE supercomputers
- An annual program review for fellows and DOE staff held each summer in the D.C. area

Details on eligibility and program criteria can be found [here](#).

Communications, Circuits, and Sensing-Systems (CCSS)

Division of Electrical, Communications and Cyber Systems (ECCS), National Science Foundation (NSF)

Proposals accepted anytime

Areas of Interest: signal processing, sensing, communication systems, data science and analytics

The Communications, Circuits, and Sensing-Systems (CCSS) Program supports research on **circuit and system hardware** and **signal processing techniques** in the following areas:

- Radio Frequency (RF) Circuits and Antennas for Communications and Sensing
- Communication Systems and Signal Processing
- Dynamic Bio-Sensing Systems

CCSS also supports **system architectures** for next-generation cyber-physical systems (CPS). The program aims to create complex and hybrid systems—from nano- to macro-scale—for a variety of applications, including health and medicine, environmental and biological monitoring, disaster mitigation, manufacturing, intelligent transportation, energy, and more.

Proposals should focus on new technologies and applications for communications and sensing.

Example topics include high-speed communications of terabits per second and beyond; sensing and imaging covering microwave to terahertz frequencies; personalized health monitoring and assistance; secured wireless connectivity and sensing for the Internet of Things; and dynamic-data-enabled autonomous systems through real-time sensing and learning.

Read more about this funding opportunity [here](#).

Faculty Research Spotlight

Dr. Nima Shamsaei





Dr. Nima Shamsaei of Mechanical Engineering serves as the Philpott-WestPoint Stevens Distinguished Professor and Director of the National Center for Additive Manufacturing Excellence (NCAME). His broad research interests include additive manufacturing (AM), fatigue, microstructural characterization, failure analysis, solid mechanics, design for additive manufacturing (DfAM), and nondestructive evaluation (NDE).

Additive manufacturing (AM), as defined by the American Society for Testing and Materials (ASTM) International, is the process of joining materials to create customized objects from 3D model data, usually layer by layer. While extensive research has been done to "improve the consistency of AM parts, a comprehensive understanding of how various AM parameters influence the mechanical properties and fatigue performance" of parts is still lacking.

Dr. Shamsaei's 2017 overview publication titled, "Additive manufacturing of fatigue resistant materials: Challenges and opportunities," uncovered the limitations in knowledge related to the fatigue of AM materials, and proposed "potential immediate solutions to improve [their] reliability and durability." Such findings, according to Dr. Shamsaei, are most critical to the space, aviation, automotive, and medical industries.

This research ultimately laid the groundwork for establishing NCAME in 2017—a collaborative effort between Auburn University and NASA—which currently engages 10+ faculty members, and employs 11 full-time research staff and 20+ graduate students. NCAME is also a founding partner of the ASTM International Additive Manufacturing Center of Excellence (AM CoE).

Additionally, the impact of Dr. Shamsaei's research is evident in the **300+ peer-reviewed publications** and **80+ externally funded research projects** he has received. According to Dr. Shamsaei, all funds—either in full or partially—have "focused on addressing the challenges highlighted in the article and building upon them to advance our understanding of fatigue behavior in AM parts."

Yadollahi, A. & Shamsaei, N. (2017). [Additive manufacturing of fatigue resistant materials: Challenges and opportunities](#). *International Journal of Fatigue*, 98, 14–31.

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