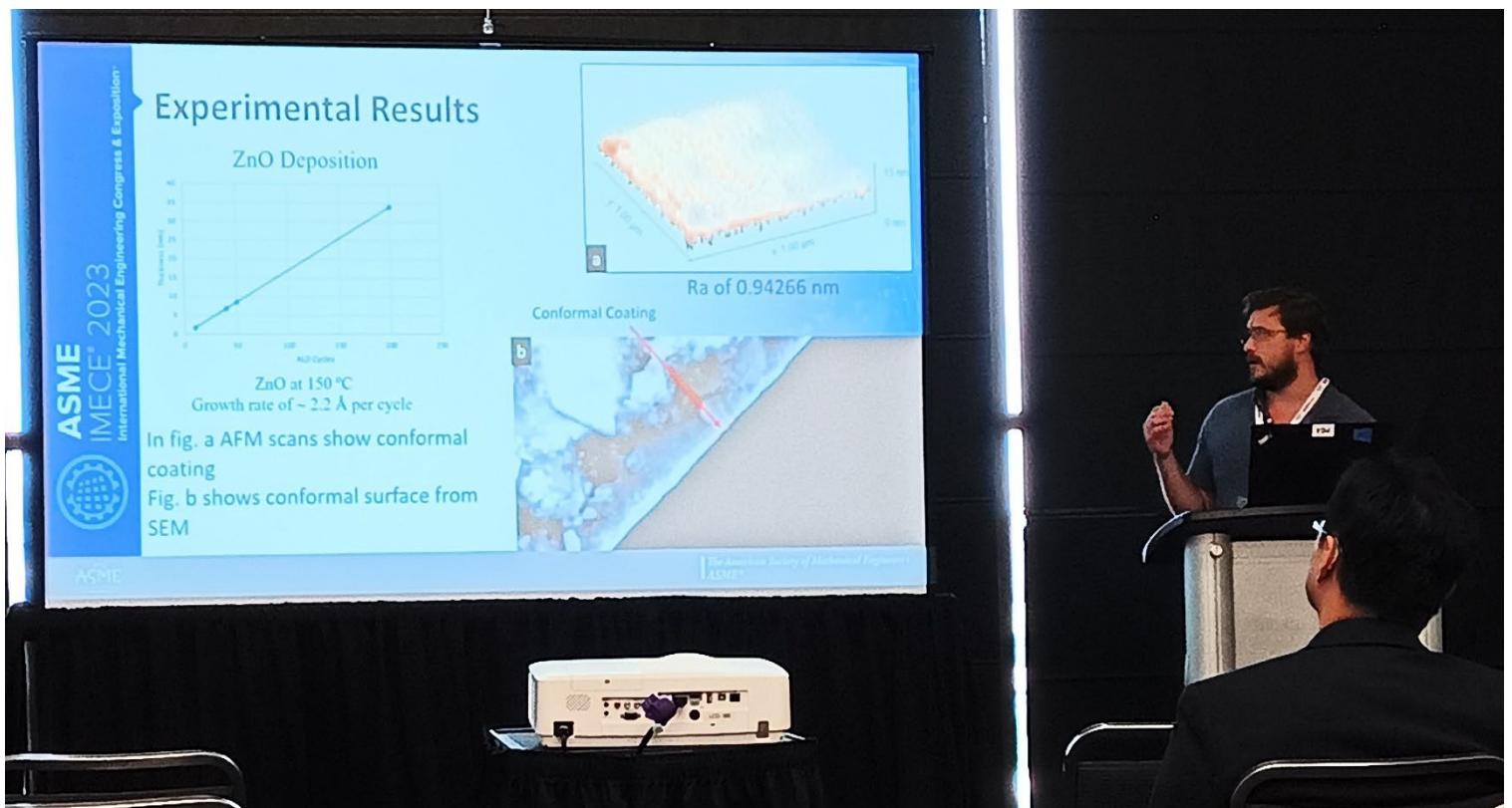


# Ongoing Grants September 2023





## Air Force Research Laboratory (AFRL) Wright Research Site

Agency	Title and PIs	Amount	Period
Air Force Research Laboratory (AFRL) Wright Research Site	Nano-enhance Phase Change Material & Loop Heat-Pipe Enabled Hybrid Thermal Management of Electromechanical Actuator. <b>Dr. Xu (PI)</b>	\$200,000	2021-2023

## Applied Research Laboratory for Intelligence and Security (ARLIS)

Agency	Title and PIs	Amount	Period
Applied Research Laboratory for Intelligence and Security (ARLIS)	Pilot Projects for the Intelligence & Security University Research Enterprise (INSURE) Academic Consortia "Machine Learning Experimentation" <b>Dr. Paul Cotae (PI)</b> and others	\$300,000	2021-2022

## Goals for Partnership

- ❖ Enhance the research capabilities by exposing faculty and students to collaborative, cutting edge research with industry and government.
- ❖ Prepare a research-capable workforce with an emphasis on underrepresented minorities.
- ❖ Promote the pursuit of degrees.

Department of Defense (DOD)			
Agency	Title and PIs	Amount	Period
Department of Defense (DoD)	Acquisition of Advanced Robotics and Autonomous Vehicle Technology (AR- AVT) for Research in Smart Grid Systems, Teaching, and K-12 Outreach at the University of the District of Columbia". <b>Dr. Shahirinia</b> and CO-PIs	\$391,796	2020-2022
Department of Defense (DOD)	Understanding the Processing- Microstructure-Property of Additively Manufactured Parts, Multi-scale Modeling and Experimental Characterization, Department of Defense (DoD) <b>(PI) Jiajun Xu,</b> Nian Zhang, Kate Klein, and Devdas Shetty	\$660,000	2020-2023
Department of Defense (DOD)	GPU Accelerated Micro-CT Imaging System for Research and Education [GPU Accelerated Micro-CT Imaging of Mineral Precipitation Growth in Bio-Mediated Soil. <b>PI: Max Denis,</b> Co-PIs: Hossain Azam, Lei Wang, JiaJun Xu	\$389,000	2021-2022
Department of Defense (DOD)	Acquisition of LC-MS/MS to Accelerate Multidisciplinary Research, Education and Training Capabilities at UDC <b>PI: Hossain Azam,</b> Co-PIs: Tolessa Deksissa, Alexandra Taraboletti, Xueqing Song, Ozlem Dilek, Uche Udeochu, Rosie Sneed, Brandy Huderson	\$403,978	2022-2023
Department of Defense (DOD)	Davison J (PI, Catholic University of America), et al., <b>Thompson LA (Consultant),</b> Research and Innovative STEM Education (RAISE): To lift or move to a higher position or level	\$750,000	2022-2024
U.S. Army	Center of Excellence for Acoustic and Seismic Sensing in Urban Environments at the University of the District of Columbia. <b>Max Denis (PI),</b> Lei Wang, Wagdy Mahmoud	\$2,114,426	2021-2026

## Research Centers

- ❖ NASA-MIRO Center for Advanced Manufacturing for Space Technology (CAM-STAR)
- ❖ NSF CREST Center for Nano Technology Research & Education (CNRE)
- ❖ NIH Specialized Technological Center for Assistive Rehabilitation Research (STAR)

## Department of Energy (DOE)

Agency	Title and PIs	Amount	Period
Department of Energy (DOE)	Drying System using Heat Pumps using additive manufacturing. Consortium with University of Maryland	\$3,000,000	2023-2025
Department of Energy and MSI STEM Research & Development Consortium (MSRDC)	Development of Efficient and Stable Perovskite Solar Cells with SnO <sub>2</sub> as Electron Transport Layer. <b>PI: Hongmei Dang</b>	\$400,000	September 2022-September 2024

## DC Water

Agency	Title and PIs	Amount	Period
DC Water	Implementation of partial denitrification anammox (PdNA) technology utilizing fermentate as a carbon source at DC Water's Blue Plains Advanced Wastewater treatment plant <b>PI: Hossain Azam</b>	\$57,700/year	2023

## Microsoft

Agency	Title and PIs	Amount	Period
Microsoft	Microsoft Impact 2020 Award Title: Capacity Building in Cyber Security and Computer Engineering Microsoft <b>Dr. Kacem (PI)</b> and others	\$135,000	2021-2023

# CAM-STAR

### Research in Additive Manufacturing

- Additive Manufacturing
- Nanomanufacturing
- Space Exploration and Operation Technology and Materials
- Human Health & Performance

### Educational Innovation

- AM-focused Curriculum
- NASA-related research learning experience
- NASA Internship & Fellowship

### UDC Advancement & Capacity Building

- Strategic partnerships
- Faculty Professional Development & Seed Grant
- Research facility & Sustainability

### Recruitment & Outreach

- NASA Ambassador Program
- NASA Opportunities Awareness and STEM Enrichment Workshop
- NASA Community College Aerospace Scholars (NCAS)

## National Aeronautics and Space Administration (NASA)

Agency	Title and PIs	Amount	Period
National Aeronautics and Space Administration (NASA)	Aquaponics with Ethylene Scavengers to Support Human Life Off Earth. NASA Fellowship, <b>PI: Hossain Azam</b>	\$100,000	2021-2023
National Aeronautics and Space Administration (NASA)	Investigating Human mobility and activity while robed in EVA Space suit (Mars) NASA Fellowship. <b>Lara Thompson (PI)</b>	\$100,000	2021-2023
National Aeronautics and Space Administration (NASA)	<b>Thompson LA (PI)</b> , Romero R (graduate candidate). Investigating Human Mobility and Activity while Robed in an EVA Spacesuit (MARS). NASA Fellowship Activity.	\$100,000	2021-2023
National Aeronautics and Space Administration (NASA)	“Developing NASA-infused Curriculum and Experiential Research for Student Success in Space Technology” for award for a total of \$1.2 million. We are collaborating with NASA Goddard Space flight center and UDC community college in this proposal to develop NASA infused curriculum. <b>Jiajun Xu (PI)</b>	\$1.2M	2023-2025

## National Institutes of Health (NIH)

Agency	Title and PIs	Amount	Period
National Institutes of Health (NIH)	Advancing Diversity in Aging Research through Undergraduate Education at the University of the District of Columbia. PAR-17-290 NIA MSTEM: Advancing Diversity in Aging Research through Undergraduate Education (R25) <b>Dr. Thompson, Dr. Denis, and Dr. Zhang</b>	\$1,890,000	2020-2025

## National Science Foundation (NSF)

Agency	Title and PIs	Amount	Period
National Science Foundation (NSF)	Integrating Risk and Resilience into Undergraduate Engineering Education Towards a Hazard-Resilient Built Environment. Principal Investigator: Lei Wang, Co-PI: <b>Pradeep K. Behera</b> , Jiajun Xu, Sasan Haghani	\$399,931	2018-2022
National Science Foundation (NSF)	Targeted Infusion Project: STEM- Business Focused Logistics and international Trade (LIT} Analytics Principal Investigator: Anshu Arora (SBPA) Co-Principal Investigators: Lei Wang, <b>Pradeep K. Behera</b> , Amit Arora, Mohamad Sepehri	\$399,967	2019-2022
National Science Foundation (NSF)	Predictive Models for Wind- Penetrated Power Systems Using the Bayesian Approach. <b>PI: Dr. Shahirinia</b>	\$275,420	2019-2022
National Science Foundation (NSF)	Targeted Infusion Project: Workforce Development for a New Generation of Cyber Security System <b>Dr. Kacem (PI)</b> and others	\$388,000	2020-2024
National Science Foundation (NSF)	CISE-MSI: RCBP-ED: CNS: Data Science and Engineering for Agriculture Automation <b>Dr. Kim (PI)</b> and others	\$299,000	2021-2023
National Science Foundation (NSF)	Collaborative Research: CISE-MSI: RPEP: HBCU Artificial Intelligence and Cybersecurity (AI-Cyber) Research Partnership <b>Dr. Wellman (PI)</b> , Timothy Oladunni, Lily Liang	\$152,000	2021-2024
National Science Foundation (NSF)	MERGE: Multiphysics Enriched Mixed Reality for Integrated Geotechnical Education, National Science Foundation (Subaward from Rowan University): Lei Wang (PI)	\$21,920	2021-2024
National Science Foundation (NSF)	Medium: Collaborative Research: MUDL: Multidimensional Uncertainty-Aware Deep Learning Framework <b>PI: Dong Jeong</b>	\$200,000	2021-2025
National Science Foundation (NSF)	<b>Thompson LA (PI)</b> . Alan T. Waterman Awardee 2022. Highest early career honor for early-career scientists and engineers	\$1,000,000	2022-2027



**National Science Foundation (NSF) continued**

<b>Agency</b>	<b>Title and PIs</b>	<b>Amount</b>	<b>Period</b>
National Science Foundation (NSF)	Supplemental fund for NSF-CREST Center for Nanotechnology Research and Education, <b>PI Pawan Tyagi</b> , Co-PIs Devdas Shetty, Kate Klein, Jiajun Xu, Hongmei Dang	\$100,000	2023-2024
National Science Foundation (NSF)	Catalyst Award: Integrating Water-Energy-Food-Climate Nexus into Undergraduate Engineering and Science Education <b>PI: Hossain Azam</b> , Co-PIs: Pradeep Behera, Tolessa Deksissa, Matthew Richardson	\$200,000	2022-2024
National Science Foundation (NSF)	Collaborative Research: CUE-T: HBCU Learning Community-based Intervention in Computing, <b>PI-Briana Wellman</b> , Co-PI Lily Liang, Senior Personnel- Uzma Amir	\$598,934	2023-2026
National Science Foundation (NSF) HBCU-RISE: \$999,711 2022-2025	Game Theory Based Climate Change Impact Analysis for the Protection of Critical Infrastructure Systems Co-PI: Hossain Azam, PIs: <b>Bryan Higgs (PI)</b> , Pradeep Behera (Co-PI), Thabet Kacem	\$999,711	2022-2025



<b>National Institute of Food and Agriculture (NIFA)</b>			
<b>Agency</b>	<b>Title and PIs</b>	<b>Amount</b>	<b>Period</b>
National Institute of Food and Agriculture (NIFA)	Use of life cycle sustainability assessment (LCSA) to measure environmental, economic, and societal impacts of aquaponics and hydroponics, PI: <b>Hossain Azam</b> , Co- PIs: Jose-Luis Izursa, Sheikh Mokhlesur Rahman, Matthew L. Richardson, Patricia D. Millner, Thomas Wheet	\$90,000	2021-2023

<b>National Security Agency (NSA)</b>			
<b>Agency</b>	<b>Title and PIs</b>	<b>Amount</b>	<b>Period</b>
National Security Agency (NSA)	National Centers of Academic Excellence in Cybersecurity-Cybersecurity Education Diversity Initiative (CEDI) <b>Dr. Wellman (PI)</b> and others	\$297,000	2020-2024

<b>UDC Water Resources Research Institute (WRII)</b>			
<b>Agency</b>	<b>Title and PIs</b>	<b>Amount</b>	<b>Period</b>
UDC Water Resources Research Institute (WRII)	Economical production of methane (CH <sub>4</sub> ) and hydrogen (H <sub>2</sub> ) and struvite recovery from agricultural waste, energy crops, and food waste <b>PI: Hossain Azam</b>	\$15,000	2022-2025

## CREST CENTER

Our mission is to use UDC faculty's core expertise in nanotechnology to establish a nationally recognized center of excellence to support UDC's goals.



**With College of Agriculture, Urban Sustainability & Environmental Sciences  
(CAUSES)**

Agency	Title and PIs	Amount	Period
Propel Center	PROPEL UDC: A Diverse Pipeline of Agrotechnology Talents for Urban Innovation and Entrepreneurship in Anacostia Schools and Ward 08 of Washington, DC. PIs: Patrick Gusman, Rodney Trapp, Harris Trobman, Jordan Clayton, and <b>Hossain Azam</b>	\$300,000	2022-2023
USDA-National Institute of Food and Agriculture (NIFA)	Food-Energy-Water (FEW) Nexus: Using Rainwater Harvesting and Solar Energy for Next Generation Urban Farming Practices, Co-PI: <b>Hossain Azam</b> , PI: Harris Trobman, Co-PIs: Mamatha Hanumappa	\$90,000	2022-2023
USDA-NIFA	Next generation materials to optimize both methane (CH <sub>4</sub> ) and hydrogen (H <sub>2</sub> ) production economically from agricultural waste, energy crops, and food waste <b>PI: Hossain Azam</b> , Co-PIs: Stephanie A. Lansing, Tolessa Deksissa, Jose-Luis Izursa, Amro Hassanein, Kibria K. Roman	\$90,000	2023-2025
USDA-Specialty Crop Block Grant Program	Quantification of environmental, economic, and societal impacts of specialty crops grown in aquaponics and hydroponics <b>PI: Hossain Azam</b> , Co-PIs: Jose-Luis Izursa, Sheikh Mokhlesur Rahman, Matthew L. Richardson, Patricia D. Millner, Thomas Wheet, Sabine O'Hara	\$58,612	2022-2024
USDA-Specialty Crop Block Grant Program	Food-Energy-Water (FEW) Nexus: Next Generation Urban Farming Practices to Integrate Specialty Crop Production with Rainwater Harvesting and Solar Energy, <b>PI: Hossain Azam</b> , Co-PIs: Harris Trobman, Mamatha Hanumappa, JiaJun Xu	\$45,112	2022-2024

**NATIONAL CENTERS**

<b>Agency</b>	<b>Title and PIs</b>	<b>Amount</b>	<b>Period</b>
NASA MIRO-Center for Advanced Manufacturing in Space Technology & Applied Research (CAM-STAR)	CAM-STAR PI <b>Dr. Jiajun Xu</b>	\$3,000,000	2019-2025
NSF_CREST Center for Nanotechnology Research and Education	CNRE <b>Pawan Tyagi (PI)</b> , Devdas Shetty, Kate Klein, Jiajun Xu, Hongmei Dang	\$5,000,000	2019-2025
NIH-Specialized Technological Center for Assistive Rehabilitation Research (STAR)	Creating STAR center PAR-20-086, C06 Research Facilities Grant, National Institutes of Health. <b>Lara Thompson (PI)</b> , Mr. Timothy Millner (Key Personnel)	\$5.300,000	2020-2025

