

# NPS Center for Additive Manufacturing

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Co-director of Center for Additive Manufacturing

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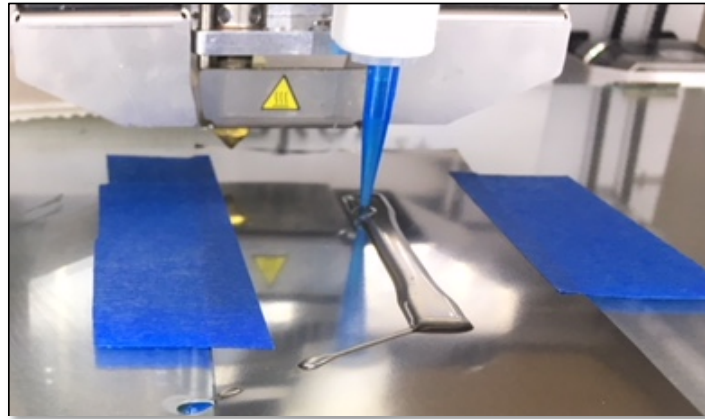
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# Agenda

- Mission
- Educational and Research Initiatives
- Naval Additive Manufacturing 2030
- Discussion



# NPS Center for Additive Manufacturing

# NPS Center for Additive Manufacturing

- **Mission:** Interdisciplinary research in AM domain, Naval needs
- **Why NPS?:** NPS embodies a unique mix of faculty with interdisciplinary expertise, and students / practitioners
- **People:** 35 faculty
- **8 Academic units:** Computer Science, Energy Academic Group, Information Science, Mechanical & Aerospace Engineering, Operations Research, Physics, System Engineering, Space Systems Academic Group
- **Current labs:**
  - Center for Materials Research facilities
  - Applied Physics laboratories
  - MOVES Additive Manufacturing Lab
  - Space Systems Academic Group lab
  - System Engineering Lab
  - RoboDojo Lab
- **Co-directors:** Dr. A. Sadagic and Dr. E. Gunduz

# Educational Mission

- **Current activities:**

- Curricula augmented with AM-themed lecture materials and
- Student thesis: Over 50 AM-themed thesis
- Brown Bag lecture series
- Lab research demonstrations, panel discussions


- **Future:**

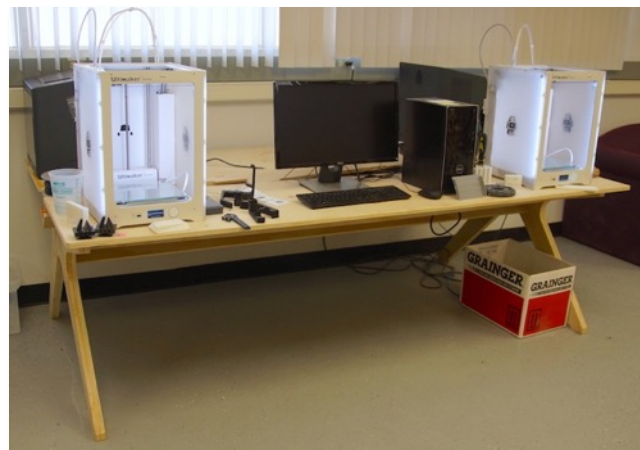
- *Goal:* Reach every single NPS student and, at a minimum, ensure they have basic understanding and appreciation of AM technologies, including strategic value of AM in Naval domain.
- *AM certificate:* 4 courses that provide a well rounded understanding about AM domain.

# Research Disciplines & Topics

- **Material science and energetics:**
  - Materials development and testing, development of new AM technologies, parts fabrication, applications and certification
- **Modeling and simulations:**
  - Use of Virtual Reality and Augmented Reality for AM prototyping and testing, 3D scanning, Secure model databases
- **Cybersecurity**
- **Personnel development:**
  - Personnel education and training; Innovation by Sailors and Marines
- **Technology adoption:**
  - Large scale adoption, Portals for collaboration
- **Logistic & acquisition:**
  - Return on investment, Effects of AM on logistics and acquisition, Operational aspects of AM
- **Space systems**

# Naval Additive Manufacturing 2030

- Umbrella initiative for Center's activities in next 10 years.
- Interdisciplinary research (basic and applied), teaching and training.
- What advancements need to be made to reach a full integration of AM optimized for Naval domain, while reaching the maximum of this technology potential?
- Address both technical & human/personnel issues.
- AM as a part of the ecosystem with other technologies
  - Sensors, robotics, artificial intelligence, networking, advanced/agile manufacturing, virtual reality, augmented reality, 3D data acquisition, data-driven analytics, energetics & sustainable production
-  • Build a coalition with colleagues from academia, industry and Naval domain.



# Q & A

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