

# 401 TECHBRIDGE

## TECHNOLOGY COMMERCIALIZATION SHOWCASE

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Dr. Jean VanderGheynst

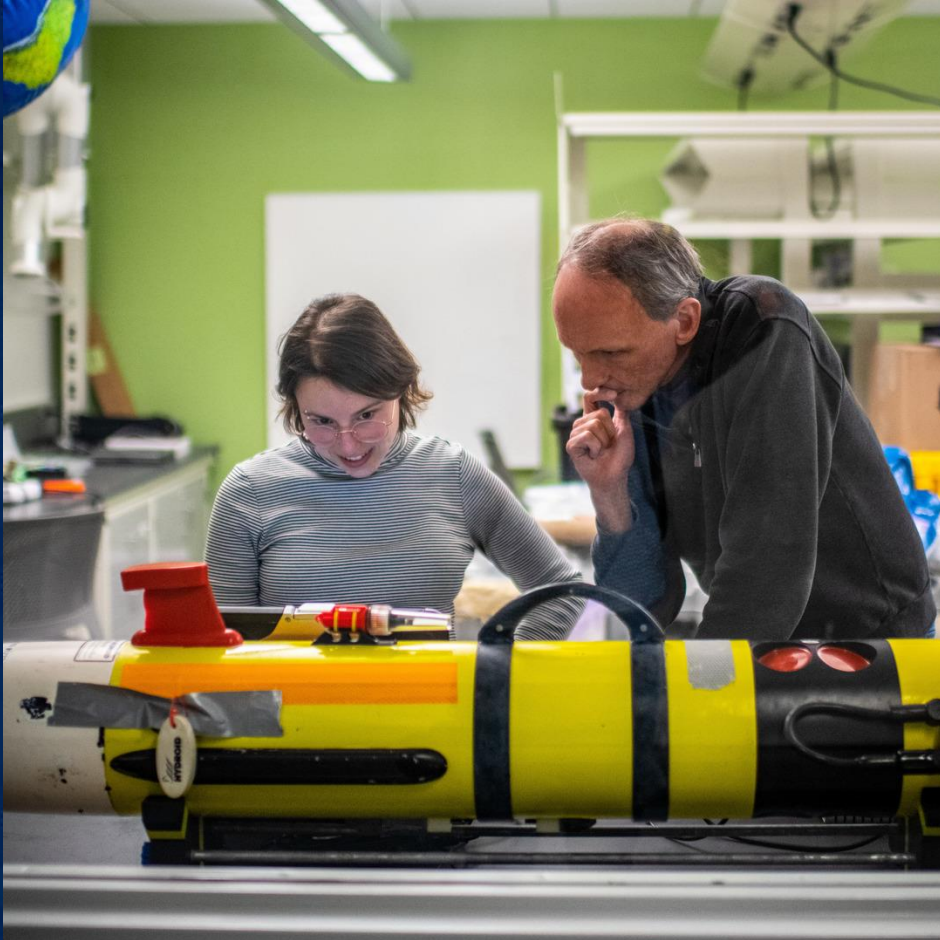
Dean College of Engineering, School for Marine Science and Technology

# UMASSD RESEARCH & INNOVATION

- \$82M Research Portfolio
- \$26M in new funding in FY22
- Primary Funding Agencies
  - National Science Foundation
  - Department of Defense
  - National Oceanographic and Atmospheric Administration
  - Department of Education
  - National Institute of Health
  - State Agencies & Quasi-public
  - Industry
- Areas of Research Strength
  - Marine Technologies
  - Life Sciences
  - Climate Change, Coastal Resiliency
  - Fisheries
  - Renewable Energy
  - STEM Education
  - Cybersecurity
  - Scientific Computing



# INDUSTRY COLLABORATIONS



Strong industry partnerships are essential in advancing innovation, particularly in the defense, blue technology, and sustainability industries.

The **Business Engagement Center** connects your company or institution with UMass Dartmouth resources surrounding:

- research and development
- talent pipeline and recruiting
- professional development opportunities.

The **Office of Technology Commercialization and Ventures** provides advice, consultation, and negotiations surrounding:

- assessing inventions arising from research
- assisting with transferring materials to/from UMassD
- arranging confidentiality agreements
- negotiating licenses for the transfer of University technology to industry for development and commercialization



# CORE FACILITIES

Core facilities include research equipment and infrastructure that are available at a daily, hourly, or per-unit rate, for use by companies who contract with UMassD.

- Biodegradability Lab
- X-Ray Diffraction Facility
- Laser Confocal Microscopy Facility
- Scanning Electron Microscope Facility
- SMAST Optic and Acoustic Test Tank
- SMAST West Seawater Facility
- Center for Innovation and Entrepreneurship

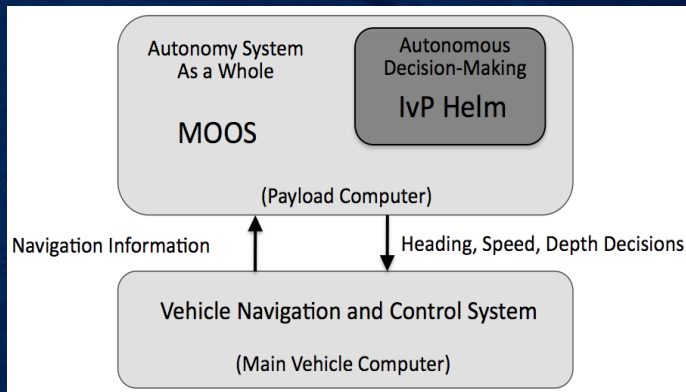


Pat Larkin, Deputy Director, Massachusetts Technology Collaborative, Lieutenant Governor Karyn Polito, Chancellor Mark Fuller, Jean VanderGheynst, Dean of Engineering and interim Dean of SMAST, and Mike Joyce '85, Primaloft CEO posing in front of a mural outside the new lab



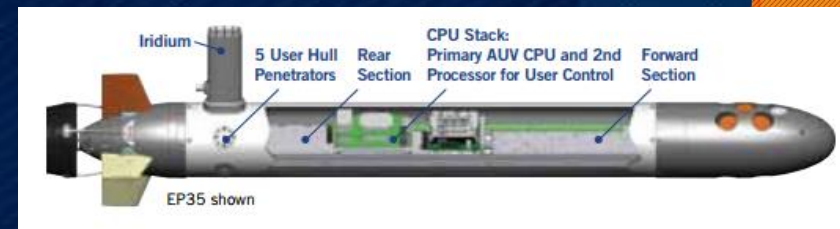
# MARINE AND UNDERSEA TECHNOLOGY (MUST) Research Program

- \$13.1M funding from the Office of Naval Research
- Strong Collaboration with the Naval Undersea Warfare Center, Newport, RI
- Industry and Academic Partners
- Meeting the US Navy's two greatest needs
  - Cutting-edge Research
  - A highly-skilled Technical Workforce



## Areas include:

- Advanced Materials
- Acoustics and Signal Processing
- Robotic Autonomy
- AI and Machine Learning
- Ocean Modeling
- Energy

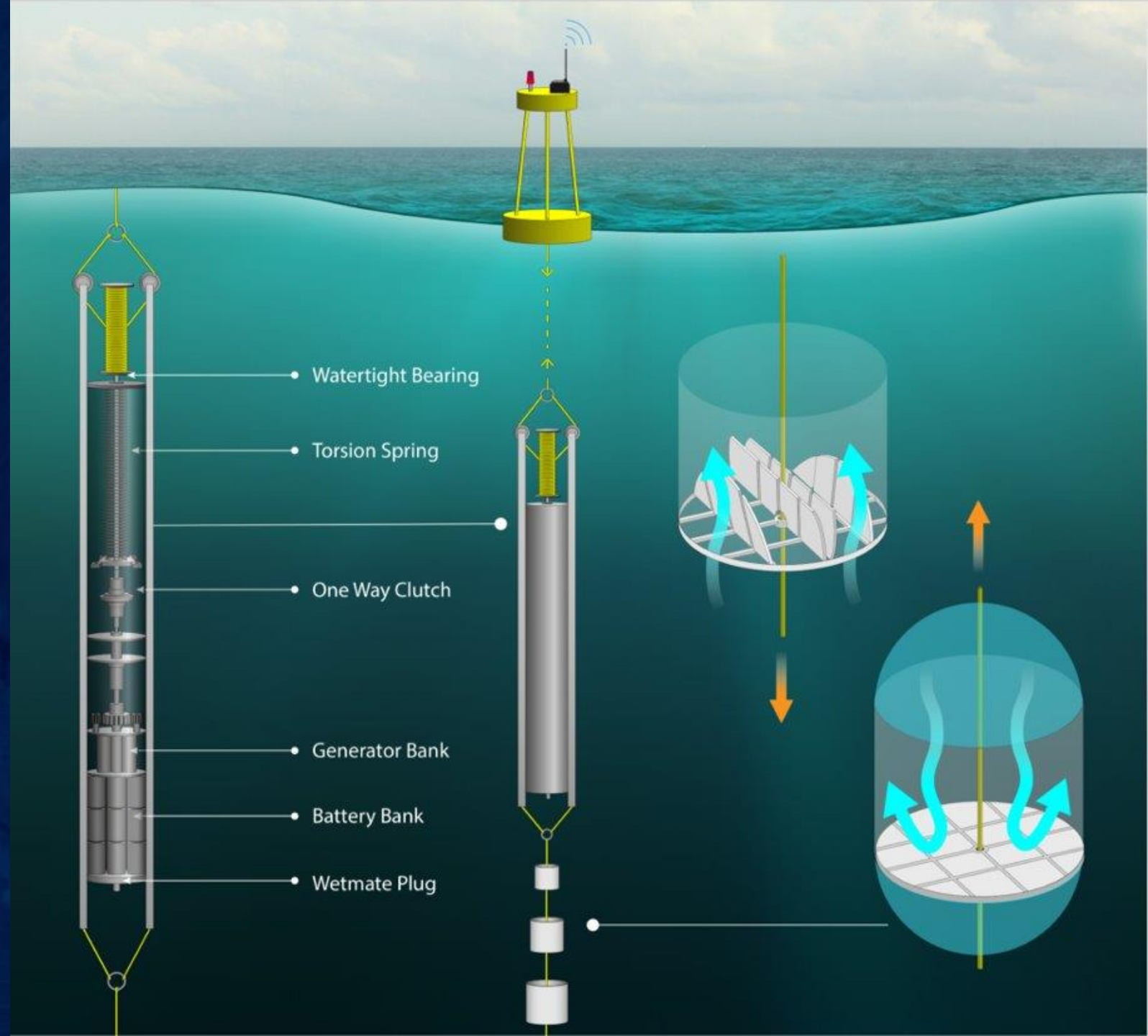


# MADWEC

## Maximal Asymmetric Drag Wave Energy Converter

**Dr. Daniel MacDonald**  
**Dr. Mehdi Raessi**

- MADWEC is a low-cost, low-maintenance system to harness renewable energy generated from ocean waves
- Capable of providing at-sea power for moorings, autonomous underwater vehicles and communications
- Two versions:
  - Standard - 100s of W to kW
  - Sonobuoy - W to 10s of W





# Aurelia Upper Ocean Profiler

**Dr. Amit Tandon, Patrick Pasteris**

The Aurelia Upper Ocean Profiler is a low-cost, user-friendly depth changing vehicle for ocean sensors.

- focused on detecting important sub-surface ocean data (e.g., temperature, salinity, currents) in the upper ocean
- low-cost depth control system to allow several dive/surface trips
- Android graphical interface for Bluetooth programming
- Radio communication for retrieval after completing its mission



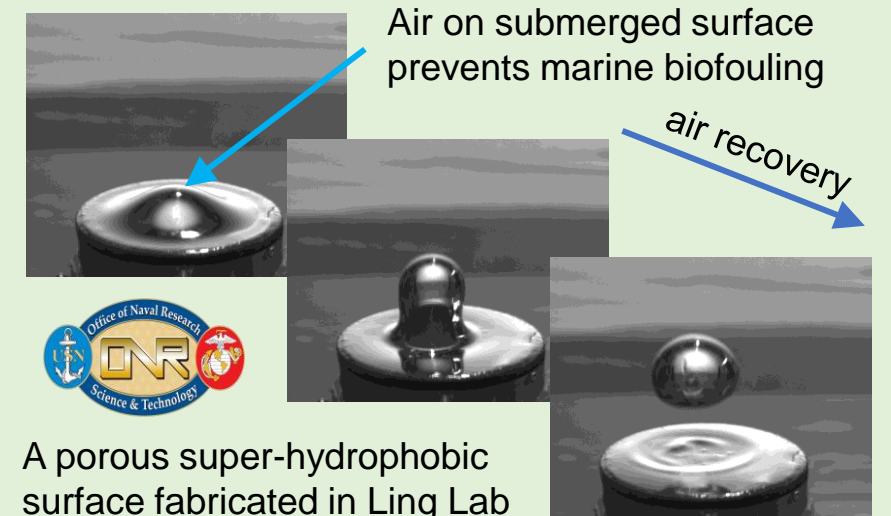
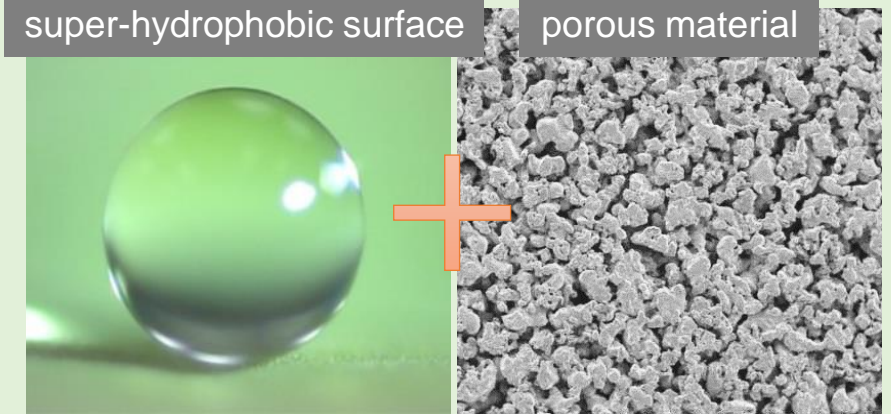


# Long-life Super-Hydrophobic Coating for Friction Reduction and Anti-fouling

## Dr. Hangjian Ling

- Super-hydrophobic coatings have great potential in preventing marine biofouling and reducing drag and fuel cost for ships
- However, these coatings are usually short-lived as the air layer is depleted quickly in the ocean due to turbulent flows, gas diffusion and pressure
- By combining super-hydrophobic coatings and porous material, Ling Lab developed a technology that allows the air layer to sustain on underwater surfaces for an extended period
- This technology could serve as the next-generation of marine coating for anti-fouling and fuel saving

A technology inspired from nature and beyond nature





# CONTACT

- Jean VanderGheynst, Dean COE and SMAST, [jvanderghgheynst@umassd.edu](mailto:jvanderghgheynst@umassd.edu)
- Ramprasad Balasubramanian, Vice Chancellor of Research and Innovation, [rbala@umassd.edu](mailto:rbala@umassd.edu)
- Ben Jones, Director of Corporate Engagement & Institutional Partnerships, [ben.jones@umassd.edu](mailto:ben.jones@umassd.edu)
- Bill Mitchell, Assistant Director of Corporate Engagement, [bill.mitchell@umassd.edu](mailto:bill.mitchell@umassd.edu)
- Catherine Ives, Intellectual Property Consultant, [cives@umassd.edu](mailto:cives@umassd.edu)