

**FROM LAB TO LAUNCH**  
NAVAL POSTGRADUATE SCHOOL  
**REVERSE PITCH**



**Licensable Technologies**



# Licensing through TechLink

**TechLink helps innovation-minded businesses and entrepreneurs partner with DOD and VA labs to significantly cut time and resources from their R&D efforts, bringing new products and services to market with speed and efficiency.**

## **1. FIND TECH**

- » Testing data may be available to companies evaluating the technology.
- » TechLink guides businesses through evaluation and licensing; services provided at no cost.

## **2. APPLY**

- » Your license application must be submitted to the lab that owns the technology. It should include a commercialization plan with specific details on the products or services you intend to deliver and a first offer of license terms.

## **3. LICENSE**

- » Businesses may commercialize the technology by first licensing it from the Navy. License fees paid to the Navy are negotiable.
- » Businesses that license the technology may have the opportunity to pursue collaborative research with the inventors.



**SCAN TO VIEW  
NAVAL POSTGRADUATE SCHOOL'S  
TECHNOLOGY PATENT PORTFOLIO**

# Segmented Ergonomic Diving Suit with Enhanced Thermal Protection

*Patent Awarded: 2022*

The diving suit enables improved thermal resistance, thermal insulation, and ergonomics compared to conventional suits. It includes a base layer as a body glove with composite-containing plates attached. The composite pieces may be cast in molds or 3D printed directly, in a shape and pattern corresponding to the body of the diver. Segmentation lines between the composite pieces are chosen to follow the areas of maximal bending of the human body.



## **Key Attributes**

- » Enhanced thermal, sonic, and blast protection.
- » Ergonomically superior to existing wetsuits, particularly the neutral-buoyancy models.
- » Thermally superior to existing wetsuits through passive protection not requiring power sources.
- » 3D scans of diver's body and 3D printing of segments allows for custom-fitting suit.
- » Standardized components easily manufacturable from inexpensive commonly available materials.



**Learn about the  
Advanced Warfighter  
Technologies Lab**

## **Professor Emil Kartalov, PhD**

Director, Advanced Warfighter  
Technologies Laboratory

Associate Professor, Physics Dept.



# Autonomous Spherical Underwater Robot for Shipwreck Interior Exploration

*Patent Awarded: 2023*

The 3D-printed AUV, known as the Wievel (Wreck Interior Exploration Vehicle) is a spherical robot for exploring the inside of shipwrecked vessels for intelligence and other information. Four Blue Robotics M100 motors, controlled by a Raspberry Pi 3B+ controller, are mounted inside acrylic tubes. Each thruster is powered by its own 14.8-volt lithium-polymer battery within a watertight ABS container.



## **Key Attributes**

- » Flight computer programming for propulsion and navigation control of the unique, quad-core, vectored-thrust propulsion subsystem.
- » Controllable buoyancy.
- » The “sphere of eyes” includes four wide-angle cameras positioned to record a visual history of its travels without rotational maneuvering.
- » Small spherical size enables passage through shipwreck compartments, but also delivery by larger, long-range vehicles.



## **Ross Anthony Eldred**

Faculty Associate - Research,  
Systems Engineering Dept.

# 3D Printed Oxide Reinforced Titanium Composites and Methods

*Patent Awarded: 2023*

This additive manufacturing method creates durable metal components made of titanium reinforced with oxide particles. These enhanced titanium oxide metal matrix composites (MMCs) have been evaluated for mechanical properties, corrosion resistance, and weight reduction. The invention includes large cylindrical support structures, which show uniform dispersion and little to no porosity at the interface of the titanium and oxide materials. This process allows for the creation of a titanium oxide MMC that demonstrates oxidation resistance for temperatures up to 1100 C.



## **Key Attributes**

- » This invention is an evolutionary step toward stable multi-phase composite materials.
- » Enhanced wear and corrosion resistance for titanium alloys.
- » Optimization of ideal strength-to-weight ratio.
- » Substantially reduces cost over traditional manufacturing methods and allows for quick turn-around, customizable, and low-volume part production.



## **Professor Troy Ansell, PhD**

Associate Professor,  
Mechanical & Aerospace Engineering

# Reduced EMI Four-Legged Single-Phase Inverter

*Patent Awarded: 2025*

The four-legged single-phase inverter tackles common mode electromagnetic interference (EMI) issues during DC to AC conversion. This advanced inverter features pairs of half-bridge circuits controlled by pulse density modulation (PDM) to boost efficiency and minimize the need for higher voltage and current ratings in components. The designs demonstrate considerable advancements in managing EMI, potential uses in micro-grids, and enhanced reliability for single-phase inverters, addressing significant challenges in existing technologies and providing a dependable solution for contemporary power systems..



## **Key Attributes**

- » Supports a variety of DC energy sources such as batteries, solar cells, and fuel cells, and incorporates a bypass capacitor to mitigate high-frequency EMI.
- » Efficient power distribution.
- » Versatile energy compatibility.
- » Advanced control mechanism.
- » Error management and optimization.



## **Professor Giovanna Oriti, PhD**

Professor,  
Electrical & Computer Engineering

# Detachable Drone Hijacker and Jammer

*Patent Awarded: 2024*

This method, apparatus, and system for countering unmanned aerial systems includes portable detachable/attachable drone hijackers/jammers meant to act as a stand-in electronic warfare device that can be configured and attached to another unmanned device. This innovative design leverages protocol vulnerabilities of adversarial UAVs and attacks their communication links with their ground control station or other devices.



## **Key Attributes**

- » Significantly improves security by countering adversarial use of unmanned aerial systems.
- » Offers flexibility in its deployment, which is a unique feature not found in most current counter-UAS devices.
- » Fills a gap in the current market for a detachable system that can target the communication and control links of a target UAV via air-to-air attack methods.
- » Designed to deliver air-to-air attacks, which adds to its effectiveness and versatility.



## **Capt. Christian Thiessen, USMC**

Service Chief's Fellow, DARPA

Dual MS in Defense Analysis (Applied Design for Innovation) & Information Warfare Systems Engineering '22

# *Where Science Meets the Art of Warfare*

From Lab to Launch: Reverse Pitch Event is hosted by Naval Postgraduate School and its partners under the auspices of Partner Intermediary Agreements.