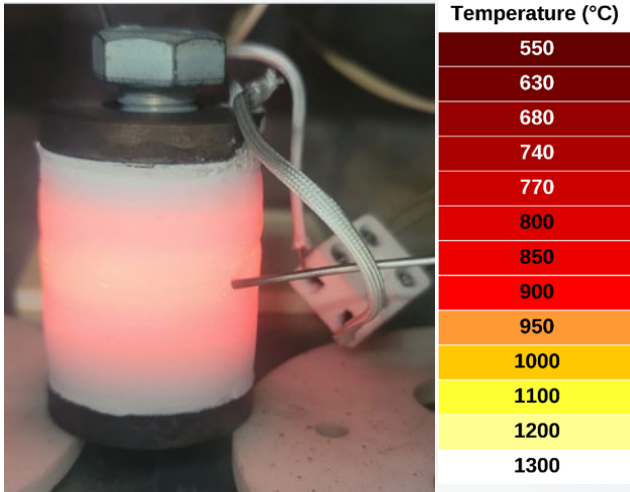


Castable Inorganic Composite Potting Material and Process for Custom High-Temperature Electromagnets and Devices



Thermal management of high-temperature electromagnets (HTEMs) used in integrated electric propulsion systems is often challenging, especially for compact micropropulsion devices or high-power-density systems. HiFunda’s new castable inorganic composite potting materials (CICPM) and filament winding in situ potting (FWISP) process will extend the temperature limits of conventional potting materials and minimize or eliminate instances of insulation and potting degradation for a wide range of applications.

Capabilities

- Utilizes castable inorganic composite potting material (CICPM)
- CICPM is capable of functioning at extremely high temperatures (1000°C)
- CICPM is multifunctional and can be tailored for different applications
- CICPM is chemically resistant
- FWISP process provides turnkey custom HTEMs
- Thermal cycling and magnetic test
- Significant cost savings over existing solutions

Applications

- Electromagnets in electric propulsion systems on spacecraft
- Thermal management applications
- High-temperature environments
- Aerospace
- Automotive

Opportunity

Current Funding

This project is currently being funded by a NASA Phase II SBIR award.

Next Stage

HiFunda is looking for customers, end users, and/or partners to support a NASA Phase II-E proposal or a DOD Phase II/III to further develop the technology for other applications.

Opportunity

We are seeking potential end users in federal and commercial applications that may be interested in contributing to the development of this technology.



Figure 10. Wind 32 POC-HTEM a) As-wound (wet), b) Dried, c), d), e) Cured

Innovative Materials & Electrochemical Sensor Solutions

The HiFunda Approach:

Develop and advance new and disruptive materials technologies through the valley-of-death that may prevent the commercialization of novel ideas and technologies.

PROVEN SUCCESS: Demonstrated track record of developing and commercializing, scaling up, and spinning out new companies that provide innovative materials solutions.

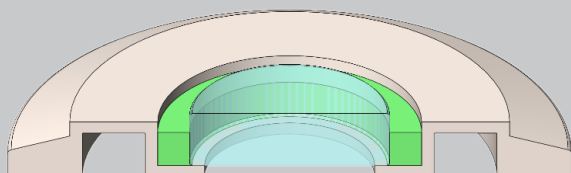
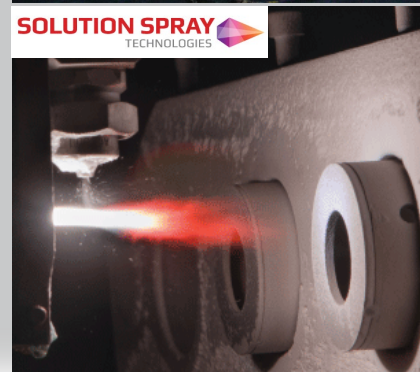
GREAT SCIENCE, GOOD BUSINESS: Excellent scientific and engineering experience with the business acumen to commercialize technologies.

PRODUCTIVE PARTNERSHIPS: Significant experience collaborating with industrial, government, and academic partners and taking excellent ideas from the bench to the marketplace.

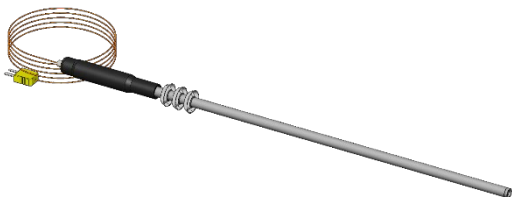
HiFunda's Technologies and Projects:

HiFunda develops new technologies in materials science, ceramics, electrochemical devices, composites, coatings, clean technologies, sensors, and catalysis.

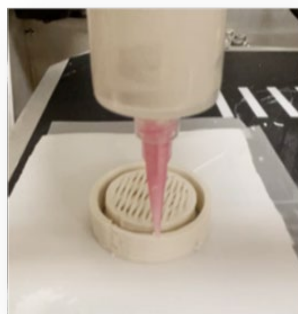
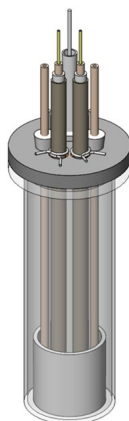
Spinout Companies:



Thermal Expansion Matched Glass Frits used for Sealing Assemblies for Alpha Detection



Custom High-Temperature Reference Electrodes (HTRE) for Molten Salt Electrochemistry



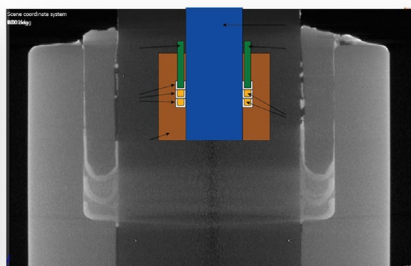
POC 3DZeoGeo Printing ATV



Additively-Manufactured, Net-Shape Adsorbent Beds for Carbon Dioxide Removal



Plasma Catalyst Coupling for Valorization of Methane and CO₂



Novel Ceramic-to-Metal Seal for High-Temperature, High-Pressure Applications



Low-Cost, Low-Temperature Geopolymer Composite Overwraps for Gun Barrels



HiFunda works with customers to solve their most demanding technical challenges to develop and commercialize new materials and technologies

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