Turnkey Custom Electrode Development Services

Problem/challenge:

Are you experiencing problems with electrode degradation, undesirable corrosion, nonuniform deposits, low efficiencies, high cost, and/or short lifetime for your electrochemical processes or devices?

Solution:

HiFunda's turnkey custom electrode development services can help jointly solve your greatest challenges by developing custom electrodes and electrochemical conditions to improve your electrochemical process or device. We will optimize electrodes and electrochemical conditions for your application to reduce operating, maintenance, and device costs.

Applications:

- Anodes and cathodes for the most demanding electrochemical reactions
- Aqueous and nonaqueous electrochemistry
- Batteries
- Improved reaction yields and selectivity
- Flexible electrodes
- High-temperature, solid-state electrochemistry
- Fuel cells (solid oxide fuel cells (SOFCs), proton-conducting fuel cells (PCFCs))
- Electrochemical sensors (oxygen (O_2) and oxides of nitrogen (NO_x) sensors
- Microchannel reactors
- Cathodic protection (sacrificial anodes)
- Electrooxidation
- Electrowinning
- Electrosyntheses
- Electrocatalysts
- Proprietary R&D
- Solid Electrolyte Oxygen Separation (SEOS)
- Electrochemical cell optimization
- Electrochemical cell design
- Electrochemical cell fabrication
- Electrochemical cell modeling

Electrochemical Impedance Spectroscopy (EIS) for testing in solids, liquids, and gases

Precision rotator for hydrodynamic modulation of electrodes and optimization of flow conditions

Bipolar power supplies for pulse plating, and current/potential waveform modulation and optimization

Tube furnace for controlled atmosphere and temperature of solid-state electrochemical devices

hifunda™

HiFunda can help jointly solve your greatest electrochemical and materials challenges

CONTACT:
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Innovative Materials, Energy, and 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:

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

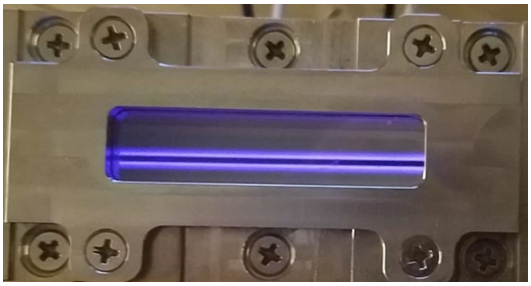
PLASMA CATALYTIC REACTOR FOR VALORIZATION OF METHANE and CO_2: Teamed with Princeton Plasma Physics Laboratory and the DOE to design, develop, and demonstrate novel plasma catalytic reactors and processes for converting stranded natural gas and waste carbon dioxide to methanol.

NOVEL CERAMIC-TO-METAL SEALS FOR ADVANCED POWER GENERATION: Teamed with Boise State University (BSU) and the DOE to develop reliable high-temperature seals of metal pipes to ceramic heat exchangers which will enable advanced high-temperature nuclear, concentrated solar, and advanced combustion power generation systems that utilize power cycles based on steam or supercritical CO_2.

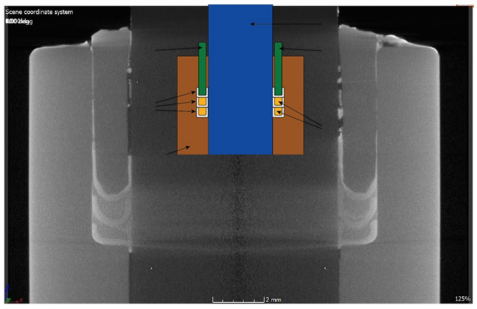
STRUCTURAL HEALTH MONITORING (SHM) OF ADVANCED COMPOSITES: Teamed with the University of Utah to further develop ultrasonic SHM sensing technology for advanced composite structures. HiFunda is currently seeking funding partners to demonstrate and mature this technology.

LOW-TEMPERATURE, CERAMIC-LIKE GEOPOLYMERS: Developing geopolymers for unique applications such as wear-resistant conductive coatings and composite structures as well as high surface area catalyst supports.

Current Projects:

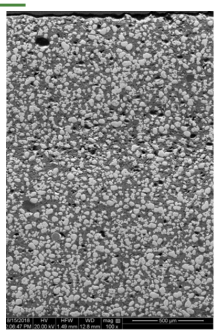


Plasma Catalyst Coupling for Improved Conversion of Methane to Liquids

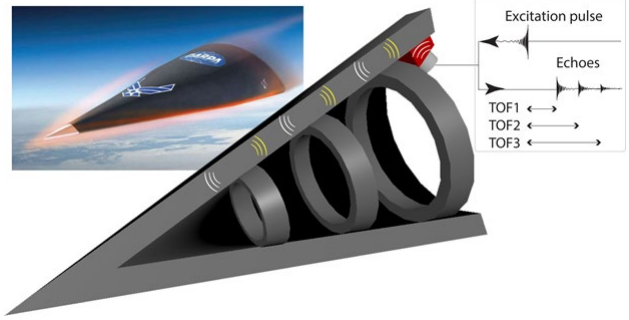


Novel Ceramic-to-Metal Seal for High-Temperature, High-Pressure Applications

Future Projects:



Low-Temp., Ceramic-Like Geopolymers for Advanced Coatings, Composites, & Catalysts



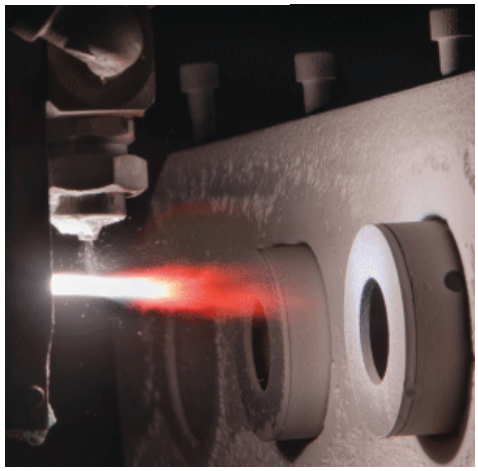
U/S-SHM in integrated and monolithic systems produced by additive manufacturing

Spinout Companies:

OSCILLA power

Oscilla Power Triton WEH

SOLUTION SPRAY TECHNOLOGIES



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

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