**DE-FOA-0002446**

**HYDrogen and Fuel Cells R&D 2021 Funding Opportunity Announcement**

**Teaming Partner List**

Updated MarCH 3, 2021

\* By facilitating this Teaming Partner List, EERE does not endorse or otherwise evaluate the qualifications of the entities that self-identify themselves for placement on the Teaming Partner List.

| **Organization Contact** | **Organization Type** | **Topic** | **Area of Technical Expertise** | **Description of Capabilities** |
| --- | --- | --- | --- | --- |
| Damanjit Singhdamanjit@netsity.com323-387-8811Netsity1262 Amaryllis WayCorona, CA 92882 | Minority owned small business | All | Artificial intelligence, machine learning, stochastic modelling techniques and data science tools | We provide AI based data analysis / classification, system control / monitoring, and design / performance optimization for fuel cells, electrolyzers and refueling stations with various physics-informed modelling techniques. Our models capture data relating to temperature, pressure, humidity, flow rate, current and voltage during operation, to reduce unit cost of production, get higher yield, better power density and enhanced electro-chemical process efficiency under highly variable operating conditions. Our focus is in following areas - Achieve cost reduction, durability, performance enhancement, high power density, through advancements in components, material development, operational control, and design. We can predict the catalyst activity, coatings, plates, electrodes, membranes across a wide range; Realize the true potential of fuel cells by perfecting air–hydrogen supply, transient power response, efficiency optimization, cold start, thermal management, and humidity control; Coordinating the crucial states and parameters, for eg. gas flows of hydrogen and oxygen and the temperature and humidity, to achieve the best control system design, through nonlinear predictive control approaches. |
| David PerzynskiChief Strategy Officer (CSO)562-294-0995 info@instanton.energy https://instanton.energy/Instant ON, LLC  | Microgrid Integrator and Distributor |  | Demand Response Aggregation; Islandable Energy Storage Solutions; Scalable and Deployable Microgrids and Nanogrids; Energy as a Service, Virtual Power Plants, Fuel Cell Technology; Circuit Level Smart Panel Technology | Instant ON (IO) facilitates the integration and distribution of connected, smart, efficient, and flexible Microgrid and Nanogrid technology. IO prioritizes resiliency, and promotes solutions which are optimized, scalable, and deployable.Our projects are to serve as the framework for replicable solutions that solve the challenge of grid instability, curtailment, demand response, and community islanding during outages. IO seeks and commits to decisive collaboration in creating a response to this RFI. Our team brings technology, experience, and specific projects locations that can be used for the pilot. Instant ON also can broker innovative finanding and DBOM solutions, including that from Schneider Electric GreenStruxure's Energy as a Service (EaaS). Visit us at instanton.energy |
| Peter Grittnergrittnerpm@gmail.com607-377-7474 | Small Business | 4A Heavy Duty Fuel Cell Cost Analysis; 4B Hydrogen Production Cost Analysis; 4C Hydrogen Storage Cost Analysis |  | COST ANALYSIS: I am an experienced  management consultant with extensive expertise in cost analysis, competitive cost analysis, value propositions, new product introductions and scale up strategies, in particular in the manufacturing sector. The type of cost analysis you are seeking is exactly what I have done during my 30+ year management consulting and business development carrier. FUELL CELLS: In addition, fuel cells have been a hobby of mine since they were the subject of my master’s thesis in 1976, and thermodynamics and system theory the subject of my doctoral thesis in 1978. |
| Lance FergusonDirector, Engineering & Innovationlance.ferguson@jtekt.com(678) 640-1269JTEKT North America7 Research DriveGreenville, SC 29607 | Large Business | Subtopic 1A, Subtopic 1B |  | JTEKT is a leading Automotive supplier as well as the parent company of Koyo Bearings and has a Technical Center in South Carolina.  In addition to Bearing expertise & testing capabilities that may be relevant to Air Management, the following metal forming capabilities may be relevant to bipolar plate manufacturing.  Material characterization including Metallurgy lab, in-house mechanical testing, and access to other advanced material testing facilities as well experience with various grades and types of steel.  Metal Forming Simulation and Analysis, including multiple FEA packages and experience resolving material fracture, wrinkling, and shape error issues.  Forming Technology and Process/Tool Design with expertise in metal stamping and tool design for thin sheet metals, including a unique servo press to optimize press motion vs productivity and an in-house metrology lab. |
| Tony Anderson203-287-3700 X290aanderson@precision-combustion.comPrecision Combustion, Inc. (PCI)410 Sackett Point Rd.North Haven, CT 06473 | Small Business | 2A | Solid Oxide Electrolyzer Systems | Precision Combustion, Inc. (PCI) is developing solid oxide fuel cell and electrolyzer systems. We are seeking collaborators who are interested in manufacturing and commercializing the systems. PCI has fuel cell system design experience, prototype integration experience, and test capabilities up to 10 kW in output. We have also supported field test and operation of systems.  |
| Venky KrishnanVice President, Bus. Dev & Special Projectsd: +1.562.293.1678c: +1.562.666.6519vkrishnan@calnetix.comCalnetix Technologies16323 Shoemaker AvenueCerritos, CA 90703 | Small Business |  | High speed electrical machines, motor drives, and oil-free magnetic bearings, with significant experience in systems integration | We have developed solutions for a wide variety of compressors and expanders in challenging environments with very high efficiency and turn-down capability. Our clients include US Department of energy, US Navy, NASA and other industrial and aerospace companies worldwide. |
| Joshua PerskyChief Technology Officer JPersky@LERCORP.comPh: 720.220.2162Low Emissions Resources Corp17 State Street 19th FloorNew York, NY 10004 | Small Business | Subtopic 2A: High Temperature Electrolyzer Manufacturing R&D | - Design, manufacturing, and analysis of SOEC cells and stacks including seals, interconnects, and manifolds.- Proton conducting ceramics - Electrochemical modeling -High volume manufacturing of ceramics | Our pilot manufacturing facility is fully equipped for all aspects of ceramic characterization, development, manufacturing, and scale up. Development and commercial scale extrusion, coating, and sintering available. The R&D lab hosts multiple test stands for electrochemical testing of SOEC materials and cells and has a fully equipped analytical lab. On-site Rheology, zeta potential, PSD, BET, SEM, STA, Dilatometer, GC/MS, and EIS enable rapid development. Coupled with our pilot manufacturing line we can transition from R&D to development and into production rapidly.  Our dedicated team of PhD scientists and specialized technicians focused on SOEC technology are available to partner. |
| Whitney G. Colellawgc@gaia-energy-research-institute.com(650) 283-2701Gaia Energy Research Institute LLC309 Yoakum Parkway, Suite 1512 Alexandria, Virginia, 22304-3906 | Small Business | All | Electrochemical and Hydrogen Energy System Design; Mechanical engineering; Process/chemical engineering; TEA; LCA | Design of Electrolyzers, Fuel Cell Systems, Electrochemical Compressors, Electrochemical Separators, Hydrogen Refueling Stations & Related Technologies; H2A case study development; Techno-economic Analyses (TEA); Life Cycle Analysis / Assessment (LCA); Environmental Impact Analysis |
| Robert Darlingrobert.darling@rtx.com860-610-7495Raytheon Technologies Research Center411 Silver LaneEast Hartford, CT 06074 | Large business | Subtopic 1A: Fuel Cell R&D for Heavy Duty Applications – Low-Cost, Durable Bipolar Plates | Electrochemical engineering, corrosion, analytical chemistry, microstructural analysis, modeling of corrosion | Raytheon Technologies develops fuel cells primarily for aerospace and defense. The Research Center test stands and facilities for testing subscale and full size fuel cells. The staff includes experts in low and high temperature fuel cells, corrosion, materials, coating development, microscopic analysis, and modeling.  |
| Bruce Beambruce.beam@beamrenewableenergy.com703-966-4465Beam Renewable Energy, LLC3631 N Harrison StreetArlington, VA 22207 | Veteran-Owned Small Business/Project Developer/Industry | All | Renewable Energy Project Developer (Green Hydrogen Project Opportunity) | Beam Renewable Energy, LLC is a veteran-owned renewable energy project developer which has been active in the utility scale SOLAR PV market in the Mid-Atlantic since 2013. Our website is: [www.beamrenewableenergy.com](http://www.beamrenewableenergy.com).  As of Dec 2020, we have two co-located 5MWac solar projects on more than 600 acres of land in late stage development in Warren County, NC.  We would like to use these projects together (10MWac total size) as a possible test bed/proof of concept/initial project for the commercialization of MW-scale hydrogen electrolyzer technology using SOLAR PV as the energy source.  We are looking for teaming partners on this FOA that are interested in "Green Hydrogen" production from solar energy and are happy to speak with interested parties. |
| Michael UlshManufacturing R&D Project LeadChemical & Nanoscience Centermichael.ulsh@nrel.gov(M) 720-413-4214National Renewable Energy Laboratory15013 Denver West ParkwayGolden CO 80401 | National Lab | Subtopic 2A, High-temperature Electrolyzer Manufacturing R&D |  | The NREL Process Science & Engineering Group has expertise and capabilities from fundamental studies and characterization of electrode and electrolyte inks and slurries to science and scaling studies for atmospheric pressure electrode and electrolyte layer coatings. We perform slurry formulation, rheology and stability studies as well as studies to understand the impact and scalability of mixing methods. For coatings, we utilize small-scale automated spray, rod and knife coating for early scoping as well as detailed coating and drying science and process window studies. We can then transition these learnings to fully sheet-to-sheet or high-throughput roll-to-roll coating and drying systems. We also have extensive experience and capabilities for the development of real-time, in-line quality control and inspection techniques, uniquely designed, studied, and validated on a roll-to-roll system, for a wide range of fuel cell and electrolysis materials and structures, including SOFC.  |
| Felix Evans felix.evans@nidec-motor.com 314-737-1313Nidec Motor Corporation 8050 W Florissant Ave.St. Louis, MO 63136  | Industry | 1B | - Innovative ultra high-speed motor technology for fuel cell applications - High-speed, high-efficiency fuel cell air compressor design | Nidec Motor Corporation is the world's leading comprehensive motor manufacturer, handling "everything that spins and moves” across sectors from commercial and industrial to residential and appliance markets. Nidec is focused on advanced, reliable, high-efficiency electric motors serving a broad range of applications. We have demonstrated expertise in the design and development of products for industry applications including but not limited to power generation, pumping, propulsion, air management, and compressor technology. Nidec is also well-positioned with a network of industry partners to accelerate the commercialization of fuel cell technologies for global decarbonization. |
| Andrew Sexton Andrew.Sexton@trimeric.com 512-618-9725Trimeric CorporationPO Box 826Buda, TX 78610 | Small Business | All | Process/chemical engineering | Trimeric has experience relevant to the development, design, and operation of hydrogen production and storage technologies, from vehicle-scale to commercial-scale. Capabilities include process design, equipment selection, process simulation, property estimation, building prototype process units, test program planning, project feasibility, and techno-economic studies. Trimeric works with an extensive network of vendors, technology providers, and end-users. |
| Cory Kreutzer cory.kreutzer@nrel.gov 303-807-5559National Renewable Energy Laboratory15013 Denver West ParkwayGolden CO 80401 | National Lab | 1B: Fuel Cell R&D for Heavy-Duty Applications | Packaged hydrogen fuel cell system operation and performance characterization | - Fuel cell system testbed including existing instrumentation, safety systems, and hydrogen supply- Fuel cell system operation and integration into a larger energy system - Expertise in experimental hydrogen systems instrumentation, component reliability assessment- HD truck duty cycle development/analysis |
| Mike PetersMichael.peters@nrel.gov 303-524-0864National Renewable Energy Laboratory15013 Denver West ParkwayGolden CO 80401 | National Lab | 3A and 3B | Hydrogen fueling infrastructure and FCEV fueling, H2Fills fueling model development, hydrogen component reliability | - High pressure ground storage, precooling, dispensing, and highly instrumented vehicle storage capacity suitable for 60-80kg fill events at 700 bar, 10 kg/min average flow rate, and down to -40C precooling. Suitable for characterization of subtopic 3A components utilizing gaseous hydrogen and for experimental results generation suitable for subtopic 3B model evaluation and validation. - H2Fills hydrogen filling simulation model (https://www.nrel.gov/hydrogen/h2fills.html) - Experience with hydrogen compression system evaluation with MW scale electrical demand and supporting hydrogen supply - Hydrogen metering performance assessment |
| Chad HunterTeam LeadCenter for Integrated Mobility Sciences303-275-2925 | M: 720-765-7562Chad.Hunter@nrel.govNational Renewable Energy Laboratory (NREL)15013 Denver West Parkway | Golden, CO 80401 | National Lab | 4A: Cost and Performance Analysis Fuel Cells4B: Cost and Performance Analysis Hydrogen Production | - H2A case study development- H2FAST techno-economic modeling- general techno-economic analysis- cost analysis | - Development and support of DOE’s H2A production case studies (<https://www.nrel.gov/hydrogen/h2a-production-models.html>)- Extensive experience developing techno-economic modeling with H2A and H2FAST (<https://www.nrel.gov/hydrogen/h2fast.html>)- Systems level cost analysis- Project management and coordination with techno-economic analysis projects at the national labs |
| Katherine ChouPrincipal InvestigatorBiosciences CenterKatherine.Chou@nrel.gov(M): 720-486-9938(O): 303-384-7626National Renewable Energy LaboratoryFTLB 18115013 Denver West ParkwayGolden, CO 80401 | National Lab | Subtopic 2B |  | My research group has over 10 years of experience in microbial conversion of waste lignocellulosic biomass to bio-H2. We are currently and have been supported by DOE HFTO to develop and improve a process through using an efficient cellulose-degrading bacteria to directly ferment corn stover and produce H2 as a product. This fermentation process is coupled with MEC (microbial electrolysis cells) to produce additional H2 from the fermentation effluent rich in organic compounds. Our technical expertise include genetically modifying microbes for improved performance, strain characterization, bioreactor engineering, fermentation/process design, detection of microbial H2 production and organic compounds using analytical instruments such as GC (Gas Chromatography) and HPLC (High Performance Liquid Chromatography).  |
| Paul GannonProfessor, Chemical Engineeringpgannon@montana.edu (406)994-7380Montana State University306 Cobleigh HallBozeman, MT 59717 | Academic | 1A (bipolar plate coatings); 2A (High-Temperature Electrolyzer R&D) |  | MSU hosts a variety of relevant expertise, experimental and modeling capabilities, as well as diverse and underserved student populations; all of which can be leveraged in a collaborative project. MSU faculty are actively involved with research on advanced corrosion-resistant coatings and coating technologies (e.g., PVD, CVD, electroplating, thermal spray), which is supported by state-of-art coating deposition equipment and a comprehensive suite of surface analysis instrumentation (e.g., nano-Auger, FE-SEM/EDS, XPS, XRD, ToF-SIMS, Raman, etc.). Collectively, MSU faculty have decades of research experience with PEMFC and SOFC/SOEC systems from component-level development to system controls and power electronics, and enjoy extensive international and industrial collaborations.  |
| Neal SullivanAssociate ProfessorMechanical Engineering DepartmentDirector of the Colorado Fuel Cell CenterColorado School of MinesGolden, Colorado, USA 80401303-273-3656 (office)cfcc.mines.edunsulliva@mines.edu | Academic | 2A: High Temperature Electrolyzer Manufacturing R&D | - Electrolyzer performance characterization- Performance degradation characterization and mitigation- Elevated-pressure performance characterization | - Extensive experimental infrastructure for characterizing long-term performance of low- and high-temperature electrolyzers at the component, cell, stack, and system levels;- Stack and system experimental characterization at kW to tens-of-kW scales;- Component microstructural analysis using advanced tools;- Component-level degradation test stands;- Experienced work force. |
| James F. Walton IIVice President of Program Developmentjwalton@mohawkinnovative.comDirect Line: +1-518-419-2751Mohawk Innovative Technology, Inc.1037 Watervliet-Shaker RdAlbany, NY 12205Tel: +1 518-862-4290 | Industry |  |  | Mohawk Innovative Technology, Inc. (MiTi®) is a high technology research and product development company that offers technology solutions and engineering services in a team environment to develop oil-free, high-speed, energy efficient rotating machinery and component products for power generation, and energy conversion in systems from watts to megawatts, propulsion, gas compression/circulation and turboexpanders. MiTi® designs and manufactures innovative oil-free turboalternators, high-speed motors, and high performance compressors and blowers. |
| David Blekhman, PhDTechnical Director, Hydrogen Research and Fueling Facility2019-20 Fulbright Distinguished Chairblekhman@calstatela.eduCalifornia State University Los Angeles | Academic  | 3A and 3B, Cooling equipment (chiller testing), model validation and other technologies. | Technical and experimental expertise in operating a fueling facility. Have completed custom HD and MD fueling before. Would be interested in conducting live testing projects in some technologies in 3A-B | A full functioning hydrogen station that engages in demonstrations and research of hydrogen fueling infrastructure. Operates its own hydrogen. Currently is preparing for an upgrade, so the timing is right. Workforce development. Experienced research staff.Station video tour: <https://youtu.be/PwvbFC1MDkw>Station website: <https://www.calstatela.edu/ecst/h2station/equipment> |
| Dr. Stephen Grot, 302 293 9718, s.grot@ion-power.comIon Power, Inc720 Governor Lea RdNew Castle, DE 19720 | Small for profit business | 1 & 2 | Proton Exchange Membranes, and associated catalyst coatings for Fuel Cells , conventional and microbial-assisted water electrolysis.  Several versatile roll coating machines for prototyping different catalyst coatings on membranes |  |
| Xinfang JinXinfang\_Jin@uml.edu9789346130 (office)University of Massachusetts, Lowell1 University Ave, Lowell, MA, 01854 | Academic | 4b, Cost and Performance Analysis, Hydrogen Production | System level design, TEA and Multiphysics modeling of solid oxide fuel cells/electrolysis cells.  | I have more than 10 years' experience in modeling and simulation of high temperature solid oxide fuel cells and electrolysis cells. Specifically, my group is capable of developing user defined codes for solid oxide cells and integrate it into commercial software, such as ApenPlus for system design and optimization, as well as further technoeconomic analysis and life cycle analysis. I participated in two large DOE projects to perform TEA for solid oxide redox flow batteries, CO2 capturing membranes, etc. Just recently, one paper entitled *Performance Analysis of a 550MWe Solid Oxide Fuel Cell and Air Turbine Hybrid System Powered by Coal-Derived Syngas has* been submitted to Energy Journal and received a minor revision decision. |
| Travis SchneiderTravis.Schneider@Resquared.com412-609-8732RE2 Robotics4925 Harrison Street, Pittsburgh, PA 15201[www.resquared.com](http://www.resquared.com/) | Small Business | All (1 – 4) | (Outdoor) mobile robotics design and manufacture, Outdoor computer vision development, autonomy software, wireless communications, artificial intelligence, complete systems integration | RE2 Robotics specializes in the design and development of human-like robotic systems which can perform tasks either tele-operated, semi-autonomously, or completely autonomously. RE2 is comprised of a team of 50 leading robotics engineers and scientists with capabilities that have delivered highly optimized robotic systems for outdoor applications for nearly 20 years. RE2 Robotic manipulators are extremely compact, strong relative to their weight, and power efficient when compared to convention industrial robotics. RE2 has experience in designing not only tele-operated robotics systems, but has extensive experience in the integration of outdoor sensing to enable fully autonomous systems where necessary. |
| Dr. Conghua Wangcwang@treadstone-technologies.com609-734-3071TreadStone Technologies, Inc.    201 Washington RoadPrinceton, New Jersey 08540 | Small Business | 1A: Fuel Cell R&D for Heavy-Duty Applications – Low-Cost, Durable Bipolar Plates | Metal Bipolar Plate coatings | Patented coating technologies for fuel cells and electrolyzers including non-precious metal, carbon and precious metal coatings. |
| Nicholas E. Nanninga, Ph.D.Technical DirectorTel:   1 859 514 4989 x102 Cell:  1 859 368 6110Email:  nnanninga@secat.netSecat, Inc. ([www.secat.net](http://www.secat.net))1505 Bull Lea RoadLexington KY 40511  | Industrial/Non-Profit Organization | 4C | Administration for DOE and other funded programs- Hydrogen embrittlement of metals and alloys- Effect of hydrogen on fatigue of metals- Materials testing in high pressure gaseous hydrogen environtments- Aluminum alloy-processing-microstructure-properties relationships- Manufacturing of aluminum alloy components- Commercialization of new alloys, processes and products in the commercial vehicle market | - Consulting on fatigue, fracture and hydrogen embrittlement of metal alloys - Full metallurgical laboratory for physical and mechanical properties of metals- Access to advanced microscopy equipment at the University of Kentucky- Networking with collaborators in the aluminum industry |
| Krishnan S Rajaksraj@uidaho.edu208-885-1693University of Idaho, Moscow, ID 83844Materials Engineering, 875 Permeter Dr. M.S. 1021, Moscow, ID 83844-1021  | Academic | 1A: Fuel Cell R&D for Heavy-Duty Applications – Low-Cost, Durable Bipolar Plates, 2A: High Temperature Electrolyzer Manufacturing R&D4B: Hydrogen Production |  Electrochemistry, corrosion, material degradation, materials engineering, electrocatalysis | We have a fully equipped electrochemical engineering laboratory with several potentiostats (Gamry, CH Instruments, EG&G PAR); facility to carry out spectro-electrochemical analysis using in-situ UV-Vis absorbance spectroscopy, and Raman spectroscopy; two and three compartment electrochemical reactors, volumetric measurement of hydrogen evolution during electrochemical testing and gas chromatographic analysis, high temperature furnaces capable of holding at 1700 and 1800 degree Celsius for calcination of ceramic catalysts, controlled atmosphere glove box capable of maintaining < 2 ppm oxygen and moisture and feedthrough for conducting electrochemical experiments inside the glove box , unlimited access to TGA/DTA/DSC, FE-SEM, XRD, and TEM. Strong publication record on aqueous corrosion, high temperature corrosion, water electrolysis, photoelectrochemistry, and materials synthesis and characterization. |