COLLABORATIVE RESEARCH (CRADA)

Leveraging Your Research Dollars

A **Cooperative Research and Development Agreement (CRADA)** enables collaborative projects and shared IP or data through cost sharing and/or funding from an industrial partner. In FY2010, DOE Laboratories executed nearly 700 CRADAs for over $62 million in external funds.

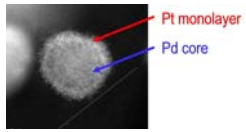
Industry reaps benefits from CRADAs by

- Leveraging and optimizing resources
- Sharing technical expertise in a protected environment
- Keeping research results confidential for up to 5 years, in some cases
- Retaining title to own employee inventions
- Jointly owning company/lab inventions
- Negotiating an exclusive license for Lab inventions

How do I get started?
Contact the scientist whose research is of interest or the Technology Transfer office at the Labs.

PLATINUM MONOLAYER ELECTROCATALYSTS

BROOKHAVEN NATIONAL LABORATORY



High resolution electron micrograph of a palladium nanoparticle coated with a monolayer of platinum.

Technology

Through cooperative research with leading auto manufacturers under a CRADA, Brookhaven National Laboratory developed a core-shell catalyst with a twenty-fold improvement in catalytic activity in fuel cells.

Outcomes/Impacts

- A dramatic reduction in degradation of the catalyst when a monolayer of platinum was deposited on a palladium nanoparticle core in lab tests
- Ready for deployment in electric vehicle fuel cells that can potentially survive 100,000 charge/discharge cycles

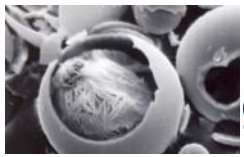
UNIQUE MICROSPHERES

Technology

Savannah River National Laboratory applied its extensive experience in ceramics and glass encapsulation to develop Porous-Walled Hollow Glass Microspheres, which incorporate interconnected, size-controlled pores that absorb, hold and release a range of materials.

Outcomes/Impacts

- CRADA executed with Toyota Motor Engineering & Manufacturing to develop onboard hydrogen storage systems
- Collaboration with Georgia Health Sciences University to explore drug delivery applications
- Licensing to the Mo-Sci Corporation, a precision glass technology company



A Palladium-filled microsphere opened to show its contents.

SRNL

FUEL CELL MOBILE LIGHT

Technology

The Fuel Cell Mobile Light uses a quiet, zero-emissions hydrogen fuel cell instead of noisy diesel-powered generators to provide mobile lighting for highway construction, airport maintenance and filming, among other applications. The technology initially arose out of a Sandia National Laboratories/Boeing CRADA.

Outcomes/Impacts

- Formation of a coalition of institutional partners, including Altergy Systems, Stray Light Optical Technologies, Boeing, Caltrans, and diverse end users to advance the development of hydrogen fuel cells
- Development of a commercial product, the H_2LT (H_2 Light Tower), by partner Multiquip.

Fuel Cell Mobile Light (foreground) used in the construction of the Red Carpet at the 2011 Golden Globe Awards.

Sandia National Laboratories

HARVESTING VIBRATIONAL ENERGY

Technology

Galfenol alloys exhibit qualities suitable for harvesting energy from vibrations over a large bandwidth. Etrema Products received DOD SBIR/STTR Phase I funding to develop and optimize the use of Galfenol energy harvesting devices specifically for Navy ships. A CRADA with Ames Laboratory offered Etrema the lab's materials processing expertise in magnetorestrictive materials, such as Galfenol alloys, and the ability to create a prototype device.

Outcomes/Impacts

- High volume production methods of bulk polycrystalline and large single crystalline sheet for use in high-strength transducers, acoustic damping, and energy harvesting devices.

The Ames Laboratory
Creating Materials & Energy Solutions
U.S. DEPARTMENT OF ENERGY

LOW-COST, BULK ELECTRICITY STORAGE SYSTEM

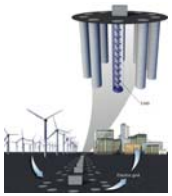
Lawrence Livermore National Laboratory

Technology

EMB Energy, Inc. is developing a utility scale electromechanical battery with a projected 95% storage efficiency. The company entered into a CRADA with Lawrence Livermore National Laboratory to leverage the lab's expertise in developing and prototyping low density, high strength composite materials.

Outcomes/Impacts

- Increased energy storage capacity and a significant weight reduction of EMB Energy's technology using LLNL's flywheel design. Next steps: prototype manufacture and commercial deployment.
- Plans for underground arrays to capture, store and dispatch energy from solar, wind and other sources and boost the existing energy grid.



left: EMB's electrostatic generator design both powers and discharges kinetic energy stored in the rotating rotor-flywheel assembly.

top: LLNL's high-strength, low-density carbon composite material wrapped to create a rotor-flywheel assembly.