

FEDERAL RESEARCH FUNDING DRIVES MATERIALS SUCCESS



Batteries and Batteries Recycling



South 8 Technologies' patented LiGas[®], liquefied gas electrolyte for advanced lithium-ion batteries, is used for battery safety for soldiers, electric vehicles, stationary storage, and industry. LiGas[®] reduces lithium-ion fire risk and operates from -60°C to 60°C. The development of this battery was made possible from federal funding the company received from ARPAe and EERE of the **Department of Energy**. The company's investors now include Anzu Partners, LG Technology Ventures, Shell Ventures, Foothill Ventures, Taiyo Nippon Sanso, and Lockheed Martin Ventures.

▶ South 8 Technologies LiGas[®] Cells

LiGas[®] is a blend of non-toxic, non-corrosive gases that liquefies under pressure, enabling several safety and performance benefits.

Source: South 8 Technologies

Federal Funding

The **CHIPS and Science Act of 2022** provided \$52.7 billion for US semiconductor research, development, manufacturing, and workforce development, with a 5-year authorization of \$169.9 billion.

Source: US Congress

The Materials Research Society expertise is at your service

Materials Research Society expertise spans materials in the areas of semiconductors, batteries, and artificial intelligence and machine learning and understands the role of science in helping inform policy. To communicate with an expert, contact MRS at Advocacy@mrs.org.

Scan the QR Code
to learn more or visit
mrs.org/advocacy



THANK YOU Federal Research Funding allows for these advances to continue impacting the world and improving the quality of life.

MRS MATERIALS
RESEARCH
SOCIETY[®]
Advancing materials. Improving the quality of life.

Basic R&D Leads to Commercialization

Ascend Elements raises the value of the battery supply chain by manufacturing advanced battery materials using valuable elements reclaimed from discarded lithium-ion batteries. The patented Hydro-to-Cathode[®] and Hydro-to-Anode[®] technology produces new cathode and anode materials from spent lithium-ion cells more efficiently than traditional methods, resulting in reduced cost, improved performance, and lowered greenhouse gas emissions. The development and commercialization of this battery materials technology was made possible from federal funding such as the **National Science Foundation** and the **Department of Energy**.

Precursor and finished cathode materials



Recycled graphite reclaimed using the Hydro-to-Anode[®] process.

Credit: Ascend Elements

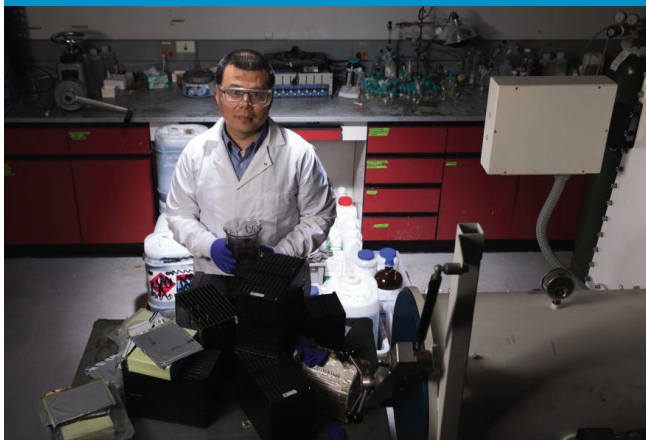
Battery in Honda Accord



An associate at the Marysville Auto Plant installs a battery in a hybrid Accord.

Credit: Honda

Basic R&D



After their initial research at Worcester Polytechnic Institute that led to their patents, company founders Yan Wang (shown), Diran Apelian, and Eric Gratz received **NSF** and **United States Advanced Battery Consortium, LLC** grants to make cathode materials from recycled batteries.

Credit: WPI

Commercialization



Arata Ichinose, Operating Executive and Head Business Development at American Honda Motor Company, Inc. (left) meets with Ascend Elements CEO Mike O’Kronley in Westborough, Mass. The use of recycled battery materials in new EV batteries can dramatically reduce the carbon footprint of electric vehicles.

Credit: Ascend Elements

THANK YOU Federal Research Funding allows for these advances to continue impacting the world and improving the quality of life.

MRS MATERIALS RESEARCH SOCIETY[®]
Advancing materials. Improving the quality of life.