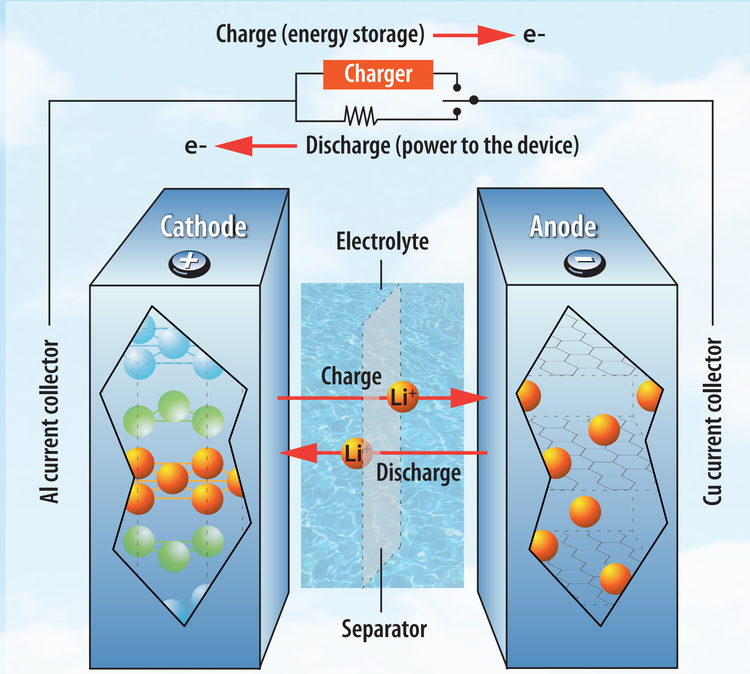
Lithium-ion Batteries
Paving the Way for Electric Vehicles

Argonne NATIONAL LABORATORY
Chemical Sciences and Engineering

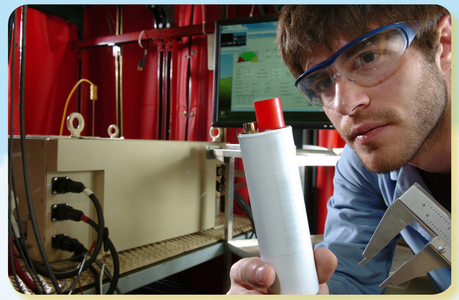
Did you know...

Compared to other rechargeable batteries, lithium-ion batteries can store more energy in smaller, lighter packages. This makes them the battery of choice for consumer electronics like laptops, cameras, and cell phones.

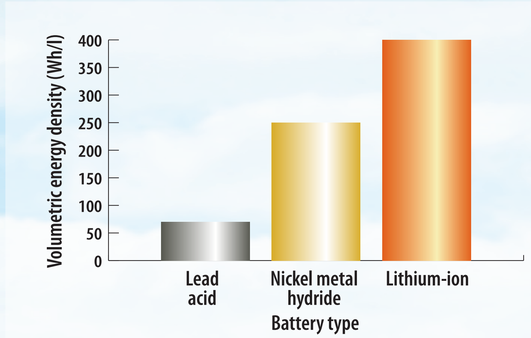
The positive benefits of lithium-ion technology have also made them a popular energy storage device for the automotive, aerospace, and defense industries.



When delivering energy to a device, the lithium ion moves from anode to cathode. The ion moves in reverse when recharging.



Argonne researcher Panagiotis Prezas examines a lithium-ion battery cell at Argonne's Battery Test Facility.



Lithium-ion batteries have a higher energy output than other battery types of the same size.

Opportunity

The unsurpassed energy-to-weight ratio of lithium-ion batteries make them a great fit for hybrid electric vehicles, plug-in electric vehicles and electric vehicles. But despite their potential, these batteries still have a lot of room for improvement. Battery manufacturers are faced with the following challenges: cost, safety, battery life, and performance over a wide range of temperatures.

Argonne's Solution

Argonne is considered a world-class center for lithium-ion battery research, development and testing. As the lead battery R&D laboratory for the Department of Energy's Advanced Battery Research program, Argonne researchers are focusing on the development of novel electrode and electrolyte materials that can help advance lithium-ion battery technology for transportation applications.

Potential Benefits

Development of advanced lithium-ion batteries will lead to more efficient, affordable, and safer vehicles. Battery-powered vehicles will be a huge step toward realizing the vision of petroleum-free transportation.

Industry Partnerships

Argonne is partnering with various materials, battery manufacturing, and automotive companies to solve technical problems and help deploy a domestic supply of rechargeable lithium-ion batteries for transportation applications.

Visit www.transportation.anl.gov to learn more!

INVENTING THE FUTURE. efficient. clean. safe.

U.S. DEPARTMENT OF ENERGY

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