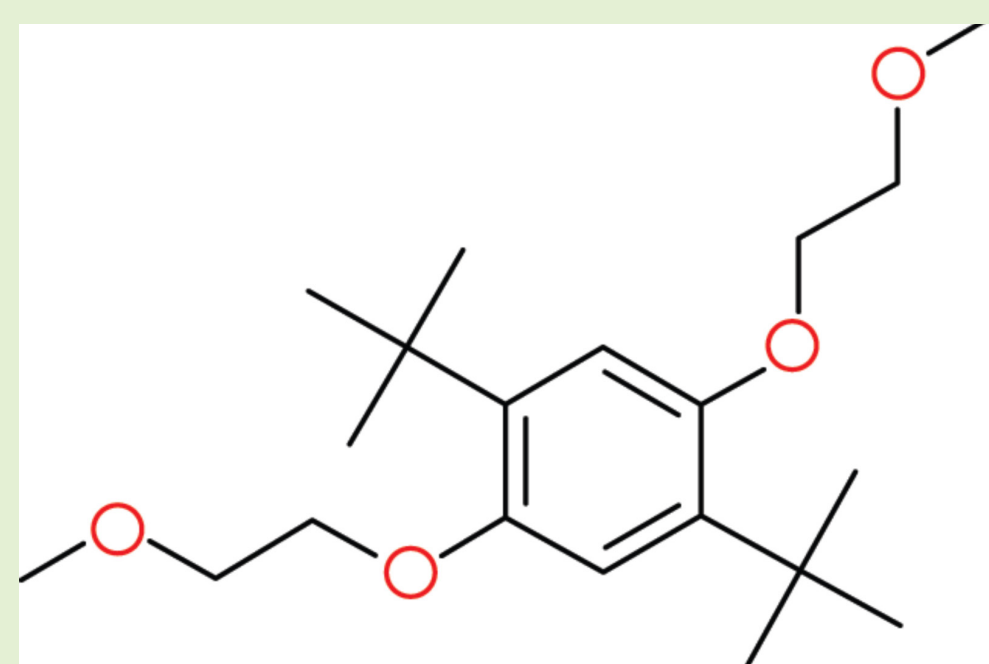


BATTERIES AT ARGONNE

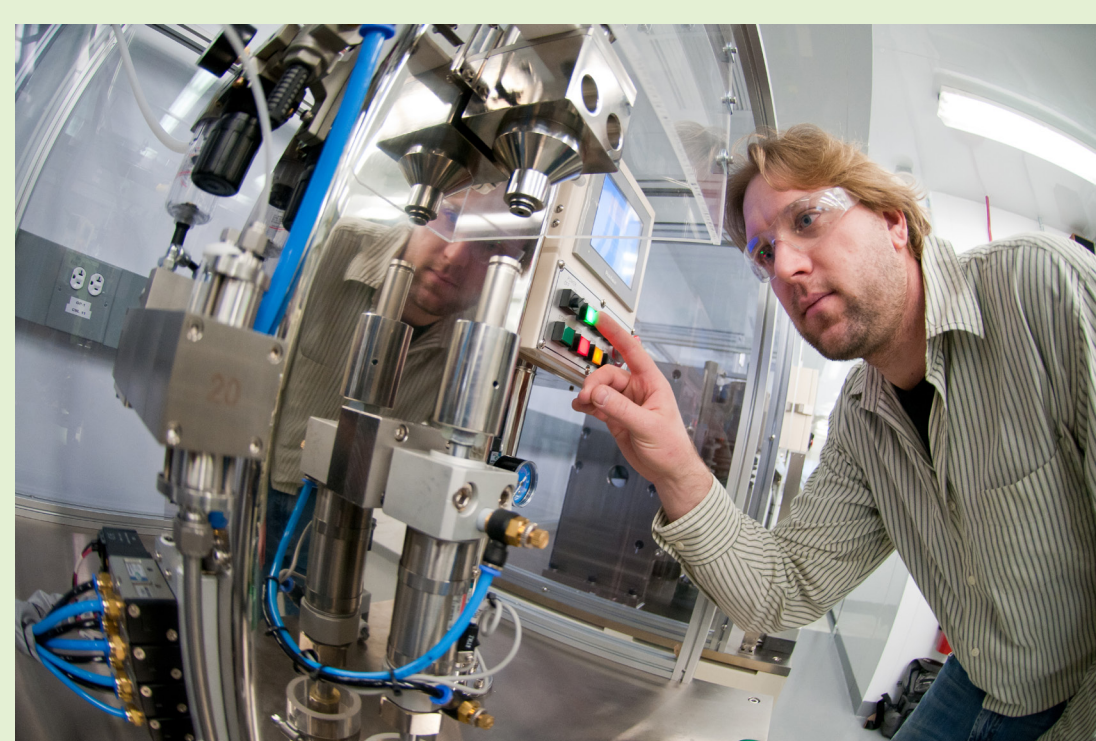
From Invention to Industry

INVENTION & DISCOVERY



Argonne is uniquely capable of inventing new battery technologies because it has both the facilities and the expertise to do so. Research on new battery materials (electrolytes, electrodes and interfaces) is the first step in the development of next-generation batteries. Discoveries such as new Li-ion battery chemistries are made using Argonne's Center for Nanoscale Materials, Advanced Photon Source and research laboratories.

CELL FABRICATION



In Argonne's climate-controlled Cell Fabrication Facility, scientists manufacture full-size prototype battery cells (both pouch and 18650 cells) and battery electrodes for their own research. Outfitted with state-of-the-art pilot-scale production equipment, the climate-controlled facility is one of a few of its kind in the country.

PROCESS SCALE UP



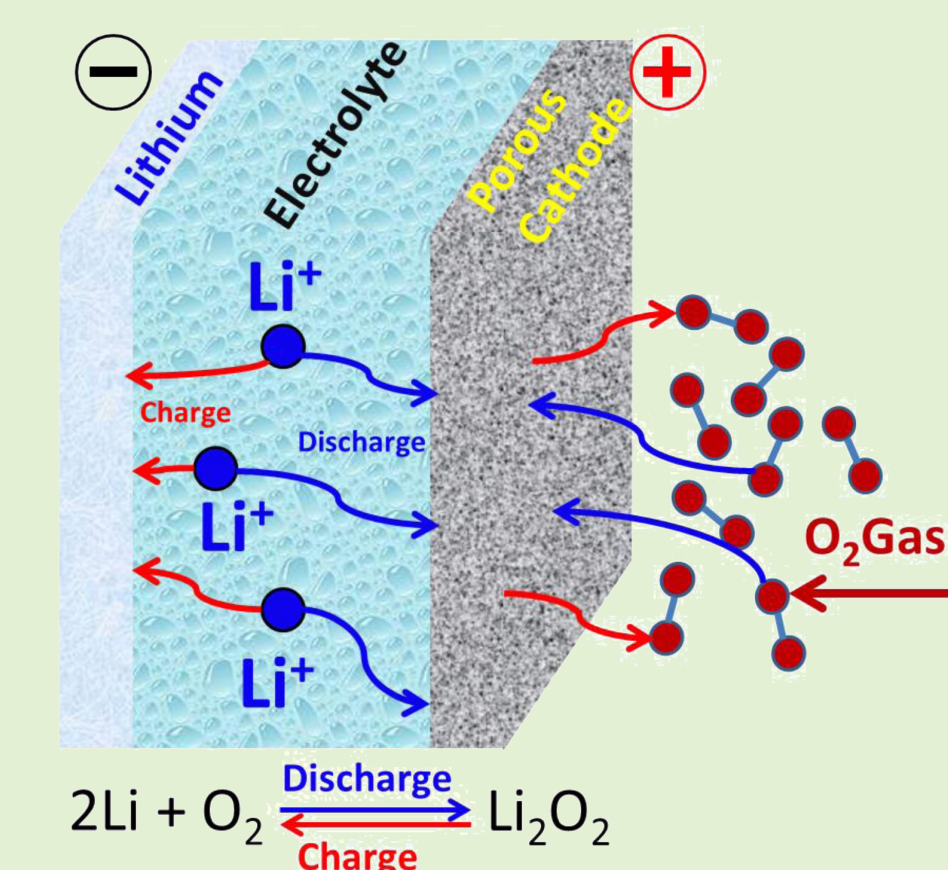
Argonne's Material Engineering Research Facility enables the development of manufacturing processes for producing advanced battery materials in sufficient quantity for industrial testing.

PERFORMANCE TESTING



In Argonne's Electrochemical Analysis and Diagnostics Laboratory, researchers examine the factors that limit the performance and life of advanced battery systems. The Battery Post-Test Facility allows the lab's researchers to dissect, harvest and analyze battery materials from used and previously tested battery cells. And in Argonne's Advanced Powertrain Research Facility, scientists study the interplay of vehicle components from battery to powertrain.

INDUSTRY & BEYOND



Argonne's ultimate goal is to transfer battery innovations to the marketplace, providing industry with processes, materials, performance testing data and finished cells. And what lies beyond the lithium-ion battery? Argonne is constantly working on new battery chemistries and materials. Take the futuristic lithium-air battery: it uses air as fuel and offers up to 10 times the energy density of lithium-ion.

