POLSKY Center for Entrepreneurship and Innovation
THE UNIVERSITY OF CHICAGO

INNOVATIONS IN ENERGY STORAGE

at the University of Chicago

The Polsky Center for Entrepreneurship and Innovation

Your Partners in Innovation

The Polsky Center for Entrepreneurship and Innovation manages the University of Chicago's technology portfolio.

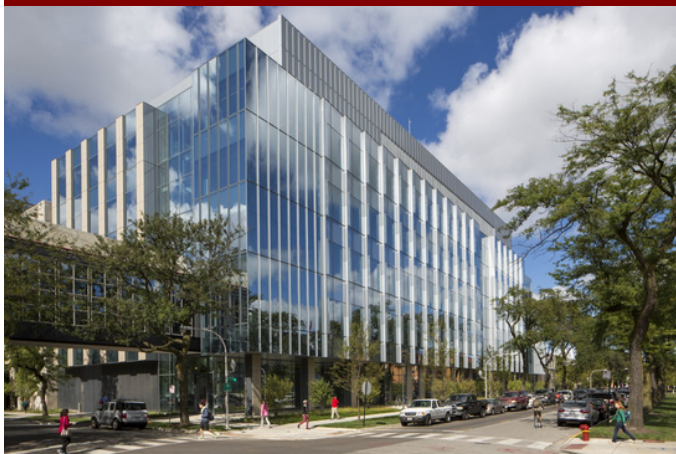
We can help you find new technologies to add to your product development pipeline and will work closely with you through the diligence and licensing process.

The University of Chicago brings together the power of two U.S. Department of Energy National Labs, Argonne National Laboratory and Fermi National Accelerator Laboratory, and the Marine Biological Laboratory, with 140 institutes and centers across campus to create a powerful research and development enterprise of more than 15,000 faculty and staff.

The Pritzker School of Molecular Engineering

The Pritzker School of Molecular Engineering (PME) integrates science and engineering to address global challenges from the molecular level up.

We apply molecular-level science to the design of advanced devices, processes, and technologies. Organized by interdisciplinary research themes, we seek to develop solutions to important societal issues and to educate the next generation of leaders in the fast-growing field of molecular engineering.



RESEARCHERS TO KNOW

Y. Shirley Meng

Meng's research focuses primarily on energy storage materials and systems – including rechargeable batteries for electric vehicles and trucks, power sources for Internet of Things (IOTs), as well as grid-scale storage for deep renewable energy penetration. Meng is the principal investigator of the research group - Laboratory for Energy Storage and Conversion (LESC).

Chong Liu

Liu Group's research focuses on design and synthesis of materials as well as development of electrochemical and optical tools to address the challenges in water-energy nexus. Areas include resource extraction from water systems, separation in liquid and gas phases, and catalysis.

Chibueze Amanchukwu

Amanchukwu Lab's mission ais to creatively solve energy-related challenges, especially focused on energy storage and electrocatalysis. The lab is focused on the design and synthesis of novel electrolyte media (solid state and liquid), and the study of electrolyte instability and ionic transport phenomena for applications in batteries and electrocatalysis.

John Anderson

The Anderson Lab is a group of synthetic inorganic chemists focused on transition metal chemistry. At the heart of the research lies the interplay between natural and synthetic systems. The lab uses principles employed by biological systems to develop challenging reactivity or properties in complexes or materials.

Shrayesh Patel

The Patel Group focuses on functional polymers for energy conversion and storage applications. The current focus is on batteries and thermoelectrics. The group has a strong expertise in the characterization of polymers to understand charge transport, electrochemical, and morphological properties.

AVAILABLE TECHNOLOGIES

Chibueze Amanchukwu

Co-intercalation-free ether solvent for lithium ion batteries

A substitute for carbonate-based electrolytes – a class of compounds called fluorinated ethers, which are able to support reversible lithium-ion intercalation and deintercalation within graphite.

John Anderson

Lamellar Iron Sulfides with Embedded Cations for Electrical Energy Storage

A new lamellar material with enhanced ion intercalation for increased levels of capacitor charge storage.

Sulfur-Containing Organic-Inorganic Hybrid Materials

Organic-inorganic hybrid sulfur-containing materials provide precise control over electronic properties through controlled doping and feature long-term chemical stability for a variety of applications.

Shrayesh Patel

Low-Cost Organic Thermoelectrics

A novel thermoelectric material comprised of semiconducting polymers for use in solid-state cooling applications that is cost-effective and simple to manufacture.

Chong Liu

A Controllable Synthesis Method Of Layered Oxides By Electrochemical Assisted Ion-Exchange

A novel method to controllably synthesize LixNayTMO2 layered oxides in chemical composition and in spatial distribution via electrochemical assisted ion-exchange in a Li, Na mixture solution.

Pre-seeding lithium in 1D olivine hosts for Li extraction

Platform technology to seed Li into the intercalation hosts by electrochemical or chemical ways to increase Li competitiveness during Li extraction frokm dilute waters/brines.

Improved electrochemical Li extraction from seawater and other dilute Li sources using mixed Li and Na layered oxides

An economical and environmentally friendly technique to extract Li from seawater could provide an abundant and sustainable source of this material for future applications.

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Argonne NATIONAL LABORATORY

UChicago, through its wholly-owned affiliate, UChicago Argonne LLC, has been the prime contractor for Argonne since the lab's founding in 1946.

The U.S. Department of Energy's Argonne National Laboratory is recognized as a global leader in energy storage research. The lab's cutting-edge science has enabled electric vehicles to travel farther, electronic devices to last longer, and renewable energy to be integrated into the nation's electric grid.

Argonne has demonstrated achievement in meeting a spectrum of energy storage challenges. The laboratory has amassed a portfolio of more than 250 patented advanced cathode, anode, electrolyte, and additive components for lithium-ion, lithium-air, lithium-sulfur, sodium-ion, and flow batteries. Licensing agreements – with leading companies such as General Motors, BASF, LG Chem, General Electric, and Toda America – to mass produce Argonne's patented materials for advanced batteries have led to construction of new plants and creation of jobs in the U.S.