



# Energy storage research scientist

What is the Energy Storage Research Alliance (Esra)?

The Energy Storage Research Alliance will focus on advancing battery technology to help the U.S. achieve a clean and secure energy future. Berkeley Lab's contributions to ESRA include world-leading energy storage research expertise and capabilities, such as the Advanced Light Source. Credit: Marilyn Sargent/Berkeley Lab

How can NREL develop transformative energy storage solutions?

To develop transformative energy storage solutions, system-level needs must drive basic science and research. Learn more about our energy storage research projects. NREL's energy storage research is funded by the U.S. Department of Energy and industry partnerships.

What is the future of energy storage?

Storage enables electricity systems to remain in balance despite variations in wind and solar availability, allowing for cost-effective deep decarbonization while maintaining reliability. The Future of Energy Storage report is an essential analysis of this key component in decarbonizing our energy infrastructure and combating climate change.

Why is energy storage important?

Energy storage is a potential substitute for, or complement to, almost every aspect of a power system, including generation, transmission, and demand flexibility. Storage should be co-optimized with clean generation, transmission systems, and strategies to reward consumers for making their electricity use more flexible.

What is Esra science?

ESRA science opens the door to creating ultra-high energy density rechargeable batteries known as metal-air cells. It will also help accelerate solid-state battery chemistry and spur the development of organic soft materials to enable energy storage that involves multiple electron reactions. ESRA thrives within a dynamic ecosystem of collaboration.

What does Berkeley Lab do for ESRA?

Berkeley Lab's contributions to ESRA draw from its years of scientific leadership in energy storage research, which today focuses on working with national lab, academic, and industry partners to enable the nation's transition to a clean, affordable, and resilient energy future.

The group's initial studies suggested the "need to develop energy storage technologies that can be cost-effectively deployed for much longer durations than lithium-ion batteries," says Dharik Mallapragada, a research scientist with MITEI. In a new paper published in Nature Energy, Sepulveda, Mallapragada, and colleagues from MIT and ...



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The coordinated effort announced today combines JCESR's deep knowledge of the basic science in energy storage research with NASA Glenn's expertise engineering battery technologies with aerospace applications. JCESR and Glenn intend to perform the required research so that NASA can identify promising technologies to develop, test and build ...

The U.S. Department of Energy has selected Argonne National Laboratory to spearhead the Energy Storage Research Alliance (ESRA), one of two new Energy Innovation Hubs. This energy innovation hub unites top ...

"The demand for high-performance, low-cost and sustainable energy storage devices is on the rise, especially those with potential to deeply decarbonize heavy-duty transportation and the electric grid," said Shirley Meng, chief scientist at the Argonne Collaborative Center for Energy Storage Science. "To achieve this, energy storage ...

Four energy storage experts from the Pacific Northwest National Laboratory were among 3,300 national and international scientists named to Clarivate Analytics annual Highly Cited Researchers list. The list--released November 15--identifies the top 1 percent most frequently cited researchers as determined by the extent to which their papers have ...

Dr. Endler is the chief scientist for Energy Storage and Integration at Shell, where she provides strategic leadership in the development of technologies and business opportunities for the energy transition, especially in the areas of electrification, system integration, and energy storage. ... He is a professor and VP for Research at Howard ...

The Energy Storage and Distributed Resources Division of the Lawrence Berkeley National Laboratory (LBNL) has created the John S. Newman Early Career Scientist position to support exceptional early career researchers who demonstrate leadership, academic excellence, the ability to conduct innovative research, and publish impactful research articles.

Materials research; Computational modeling; Advanced spectroscopic and imaging characterization tools; Our Strategy. ESRA's research will provide the scientific underpinning to address some of the nation's most pressing battery challenges, including safety, high-energy density, and long-duration batteries made from inexpensive, abundant ...

Dr. Hee Jung Chang is an early-career scientist in the Battery Materials and Systems Group at the Pacific Northwest National Laboratory, with expertise in the processing, characterization, and testing of energy storage ...

Kang Xu, Army Research Laboratory, has extensive expertise in electrolytes and interphasial chemistries. He is an authority in electrolyte materials and fundamental science of interphases; high voltage non-aqueous, aqueous and hybrid electrolytes; non-flammable electrolytes; solvation-interphase correlation; and the interphase-formation mechanism model, In addition, ...

Furthermore, another gap is related to sensible TES applied in large-scale electro-mechanical energy storage such as compressed air energy storage and liquid air energy storage. Also in this case, the low number of studies available in the literature identified another possible area of research that was still unexplored.

Shirley Meng, ESRA Director Y. Shirley Meng is a professor of molecular engineering at the Pritzker School of Molecular Engineering at The University of Chicago. She also serves as chief scientist for the Argonne Collaborative Center for Energy Storage Science (ACCESS) at Argonne National Laboratory. Meng's research focuses primarily on energy storage materials and ...

Dr. Hee Jung Chang is an early-career scientist in the Battery Materials and Systems Group at the Pacific Northwest National Laboratory, with expertise in the processing, characterization, and testing of energy storage devices and components. Her research is focused on the discovery and development of new battery materials that can help resolve the cost and ...

Our charter is the development and understanding of next generation energy storage materials and energy storage devices. Batteries are extremely complex devices with fundamental ...

Argonne is recognized as a global leader in energy storage research. Our 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. ACCESS leverages multidisciplinary teams, world-class facilities, and powerful scientific tools to help public- and private-sector partners ...

Waldemar Jungner, a Swedish scientist, invented the nickel-cadmium battery, a rechargeable battery that has nickel and cadmium electrodes in a potassium hydroxide solution. ... The Pinnacle Research Institute (PRI) developed the first supercapacitor with low internal resistance in 1982 for military applications. ... In cryogenic energy storage ...

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