Brown University
Panasonic Energy Co., Ltd.

Brown University and Panasonic Energy Launch Joint Development to Advance Next-Gen Lithium-ion Battery Materials through Diagnostics Analysis

Accelerating materials innovation for higher durability and higher power cells

Providence, Rhode Island, USA and Osaka, Japan, October 30, 2025 — Brown University School of Engineering (Providence, Rhode Island) and Panasonic Energy Co., Ltd., a Panasonic Group Company, have begun a joint development initiative to improve the performance of lithium-ion batteries by analyzing and addressing materials degradation mechanisms. The partnership will advance analytical methods to pinpoint how materials degrade during battery charge and discharge cycles, and apply these insights to accelerate the development of next-generation battery materials with higher durability and power output.

As rechargeable batteries become increasingly vital worldwide—supporting not only the electrification of mobility but also the rapid expansion of data-driven and AI-powered infrastructure—expectations for their performance are rising, with demands becoming more varied. Beyond the pursuit of higher energy density, industries are now demanding batteries that can deliver both high power and extended durability for a broader range of applications, from electric vehicles to industrial energy storage systems.

Lithium-ion batteries gradually lose performance as their materials degrade during repeated charge–discharge cycles. Through this partnership, Brown University School of Engineering and Panasonic Energy will develop advanced analytical methods to identify how and why these degradations occur inside the cell over long-term use. The findings will be incorporated into Panasonic Energy's materials development processes to enhance battery durability and performance. Durability-boosting technology also ensures stable operation under demanding, high input/output conditions, making these technologies particularly valuable for applications such as fast-charging of EVs and backup power systems in data centers, where both power and reliability are critical.

Associate Professor Feng Lin's laboratory in Brown University's School of Engineering leads pioneering studies using advanced materials and cell diagnostics analyses to systematically

elucidate the degradation behavior of battery materials.

Panasonic Energy is a global leader in lithium-ion battery manufacturing, operating one of the first gigawatt-hour-scale production facilities in the United States. For more than eight years, the company has supplied high-performance, safe, and reliable batteries to the U.S. market. By combining Brown University School of Engineering's deep expertise in materials engineering with Panasonic Energy's practical know-how in cylindrical cell technology, the two organizations aim to accelerate innovation and redefine the future of battery performance.

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About Brown University School of Engineering

Established in 1847, the engineering program at Brown University is the oldest in the Ivy League and the third oldest civilian engineering program in the United States. Brown University's School of Engineering educates future leaders in the fundamentals of engineering in an environment of world-class research, stressing an interdisciplinary approach and a broad understanding of underlying global issues. Collaborations across the campus and beyond strengthen the development of technological advances that address global challenges of vital importance.

About Panasonic Energy

Panasonic Energy Co., Ltd. provides innovative battery technology-based products and solutions globally. Through its automotive lithium-ion batteries, storage battery systems and dry batteries, the company brings safe, reliable, and convenient power to a broad range of business areas, from mobility and social infrastructure to medical and consumer products. Panasonic Energy is committed to contributing to a society that realizes happiness and environmental sustainability, and through its business activities the Company aims to address societal issues while taking the lead on environmental initiatives. For more details, please visit https://www.panasonic.com/global/energy.