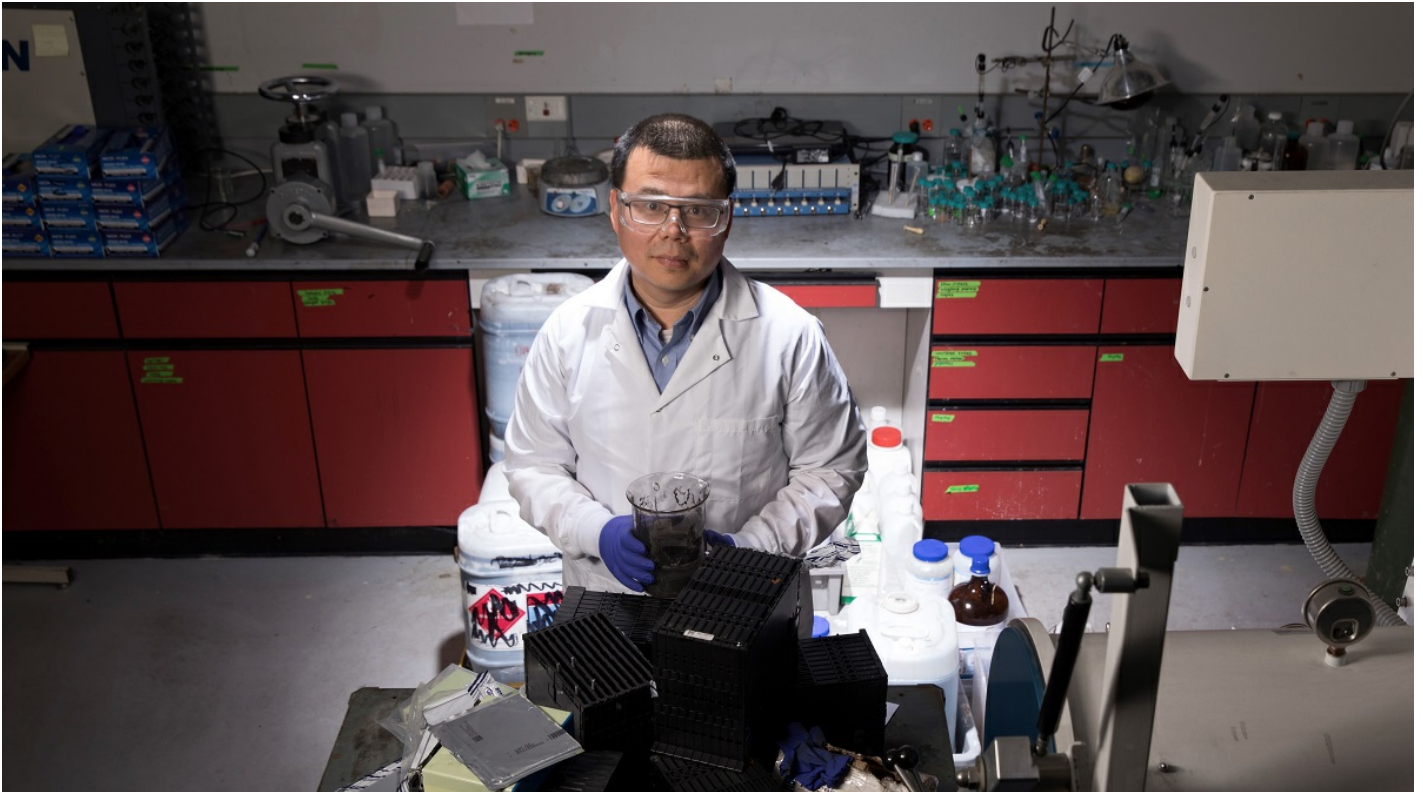


# Lithium-Ion Battery Recycling Process Produces More Power And Lessens Environmental Impact

Worcester Polytechnic Institute



WPI researcher Yan Wang.

Current lithium-ion batteries rely on mined materials largely from China, where the supply chain is less secure. Worcester Polytechnic Institute (WPI) inventor Yan Wang, Center for Resource Recovery Professor of Mechanical Engineering and researcher, invented a new way to recycle batteries. His process shreds the batteries, treats them chemically, and recovers all the key elements of the batteries. Those materials are then transformed directly into premium, cathode active materials and sold to manufacturers to build new batteries.

“Independent testing has shown these materials produce 83% more power and have at least 33% more cycles than those developed from mined materials. Recycling them saves valuable resources and lessens the environmental impact of manufacturing.”

In 2012, Wang came to the WPI Office of Technology Commercialization and disclosed the process, his first invention in this area, and tested a crude benchtop scale model in the lab. In 2014, he and his post doc, Eric Gratz, along with Todd Keiller, Director of the Office of Technology Commercialization, attended the national I-Corps program to begin exploring formation of a company.

By 2016, Gratz became the first employee of the newly formed Battery Resourcers and moved out of the WPI lab to a small incubator space. WPI licensed in the intellectual property and made an investment from the university's Commercialization Fund. Gratz was able to build a larger-scale version of the lab process in response to customer and investor requests. In 2018, Battery Resourcers moved into its own facility in Worcester, where the team began processing 50kg of batteries per day.

WPI has today licensed six different patents into the company, three pending patents and three issued patents. Newly renamed Ascend Elements, the company has raised \$90 million, has 59 employees, and is opening North America's largest battery recycling facility in Covington, Georgia in August 2022, with capacity to process 30,000 metric tons of batteries a year. Several more plants are planned to open in subsequent years in the US, UK, and Europe.

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