PURDUE INNOVATES | Office of Technology Commercialization

Never Ending Rechargeable Batteries

Cells with an internal lithium source maintain near-100% capacity retention and flat voltage profiles for longer-life EV and grid storage.

High-energy batteries are attracting large amounts of attention due to their possible applications in electric vehicles and grid storage applications. Current lithium ion batteries are attractive as a potential high-energy battery source, but lack full scale implementation due to their high cost for a short lifetime.

Researchers at Purdue University have developed rechargeable lithium ion batteries that yield 100% recovered charge-discharge capacities with stable flat-voltage profiles. Through providing an additional lithium source within the battery, this technology provides the required amount of lithium ions necessary to boost its performance via interconnecting electrodes. Furthermore, this technology has high coulombic efficiency (99%) after tests of 100 cycles. This technology opens the door for further development of lithium ion, sodium ion, and potassium ion batteries for large-scale energy storage applications.

Advantages:

-No battery life decay

-High coulombic efficiency

-Stable

Potential Applications:

-Lithium ion batteries

-Electric vehicles

-Energy storage

TRL: 2

Technology ID
2019-POL-68592

Category
Energy & Power Systems/Energy Storage
Energy & Power Systems/Power Generation

Further information
Will Buchanan
wdbuchanan@prf.org

View online

Intellectual Property:

Provisional-Patent, 2019-06-24, United States

Utility Patent, 2020-06-23, United States

Utility Patent, 2020-06-24, United States

Keywords: Batteries, Chemical Engineering, Chemistry and Chemical Analysis, Electric Vehicles & Cars, Lithium-Ion