

Could new polymer coating boost electric vehicle batteries?

Nature Energy, 2023; 8 (2): 129 DOI: 10.1038/s41560-022-01176-6 DOE/Lawrence Berkeley National Laboratory. "Electric vehicle batteries could get big boost with new polymer coating." ScienceDaily.

Could a conductive polymer coating make EV batteries more affordable?

The advance opens up a new approach to developing EV batteries that are more affordable and easy to manufacture. Scientists at Lawrence Berkeley National Laboratory (Berkeley Lab) have developed a conductive polymer coating -- called HOS-PFM -- that could enable longer lasting, more powerful lithium-ion batteries for electric vehicles.

What's new in EV batteries?

"The advance opens up a new approach to developing EV batteries that are more affordable and easy to manufacture," said Gao Liu, a senior scientist in Berkeley Lab's Energy Technologies Area. The HOS-PFM coating conducts both electrons and ions at the same time.

Could a HOS-PFM coating increase lithium-ion batteries' energy density?

The researchers recently described these findings in the journal Nature Energy. The HOS-PFM coating could allow the use of electrodes containing as much as 80% silicon. Such high silicon content could increase the energy density of lithium-ion batteries by at least 30%, Liu said.

How can surface coating tunability be achieved in battery industry?

Not constrained only to Ni-rich cathode system, the wisdom can literally be generalized to a wider context in battery industry, where surface coating tunability can be achieved by scrutinizing the chemical evolution and heuristic structural evolution that enabling further improvement of material performances.

Could a nanostructured anode make lithium ion batteries more powerful?

Scientists have now developed a new nanostructured anode material for lithium ion batteries, which extends the capacity and cycle ... Scientists have developed a polymer coating that could enable longer lasting, more powerful lithium-ion batteries for electric vehicles.

With the rapid advancement of new energy vehicles (NEVs), one key element stands out: battery cell coatings. This often-overlooked technology holds significant potential for enhancing the ...

Improving interfacial stability between cathode active material (CAM) and solid electrolyte (SE) is vital for developing high-performance all-solid-state batteries (ASSBs), with ...

Lithium iron phosphate (LFP) batteries have emerged as one of the most promising energy storage solutions

due to their high safety, long cycle life, and environmental ...

At present, ternary power batteries have basically all adopted separator lithium battery coating technology, and the coating ratio of LFP batteries is about 60%, and the application of coating technology is gradually increasing; in the field of ...

Abstract. In order to reach the fire protection standard for new energy vehicle battery packs, the incorporation of SiO₂ aerogel particles as a functional filler in the nitrogen ...

The coating of the anode slurries was applied with a doctor blade ZUA 2000.60 (Zehntner GmbH, Switzerland) and subsequently, the coating was run under the drying ...

As reported by Park et al., thermodynamic calculations (Figure 5a1-a4) revealed a lower formation energy for LTO (-5.2043 eV) coating layer along (012) plane than the ...

New coating keeps EV batteries stronger, with 94% capacity after 100 cycles. The team developed a new surface coating for high-voltage cathodes that allows operation up to ...

Taking full advantage of the waste graphite from spent lithium-ion batteries (LIBs) to prepare the regenerate graphite anode and reuse it in lithium-ion batteries is a crucial ...

The HOS-PFM coating could allow the use of electrodes containing as much as 80% silicon. Such high silicon content could increase the energy density of lithium-ion batteries ...

Dür provides the coating technology for battery electrodes from a single source. Learn more. ... To this end, the foils must be provided with a 50- to 150-micrometer-thin coating ...

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