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DESIGN AND MANUFACTURING OF SUSTAINABLE BATTERY ELECTRODE WITH HIGH ACTIVE MATERIAL CONTENT

High-active-content CVD battery electrodes improve capacity retention while reducing inactive material weight.

Researchers at Purdue University have developed a method of coating a battery electrode to decrease the amount of inactive materials, leading to high active material weight ratio of the battery electrode. Approximately 10% of the electrode weight in lithium ion batteries is comprised by inactive materials. Purdue researchers have eliminated inactive materials by using a modified chemical vapor deposition (CVD) technique that leads to only 1% of the materials being inactive. Additionally, the conjugated polymers deposited onto the electrodes form a barrier between the electrodes and the electrolyte, preventing the formation of undesired interfaces.

Advantages

-High active material ratio

-Effective

-Can coat complex surfaces

-Flexible

Applications

-Batteries

Technology Validation: The optimized cathode exhibits 80% capacity retention after 300 cycles.

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