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Supercapacitor Electrodes from MoS2, Carbon Nanotubes, and Metal-organic Framework

Hybrid electrodes deliver battery-like energy density with capacitor-like power and life.

Researchers at Purdue University have developed composite electrodes to improve the energy density of supercapacitors. This hybrid electrode framework demonstrates a specific capacitance over 262 F/g and an energy density of ~52.4 Wh/kg while keeping a high power density (~3680 W/kg). Another advantage of this electrode is its high durability, maintaining high capacitance retention over 50,000 charge/discharge cycles. This technology has applications in energy storage solutions and takes an important step towards bridging the gap between the energy density differential between capacitors and batteries.

Advantages:

- High energy and power density

- High durability shown over 50,000 cycles

Applications:

- Energy Storage Systems

Technology Validation:

This technology has been validated through laboratory experimentation.

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TRL: 4

Intellectual Property:

Technology ID

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Category

Energy & Power Systems/Energy Storage

Materials Science & Nanotechnology/Nanomaterials & Nanostructures

Materials Science & Nanotechnology/Composites & Hybrid Materials

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