

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

Track Code: 2022-CHOI-69570

Categories:

- Electrical Engineering
- Mechanical Engineering

Keywords:

- electrode design
- Energy Storage
- Energy Systems
- Supercapacitors

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.

People:

- Choi, Jong Hyun (Project leader)
- Houpt, Duncan Neal
- Ji, Jaehoon

Intellectual Property:

Application Date: December 13, 2021

Type: Provisional-Gov. Funding
Country of Filing: United States
Patent Number: (None)
Issue Date: (None)

Application Date: (None)
Type: Utility-Gov. Funding
Country of Filing: United States
Patent Number: (None)
Issue Date: (None)

Contact OTC:

Purdue Office of Technology Commercialization
The Convergence Center
101 Foundry Drive, Suite 2500
West Lafayette, IN 47906

Phone: (765) 588-3475
Fax: (765) 463-3486
Email: otcip@prf.org