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PENDING

(IN202311071301) Na+ ion all-solid-state supercapacitor with solvent layer and methods of preparation thereof

NEED

Solid-state supercapacitors in electronics and EVs lose up to 40% energy due to poor ion flow at solid interfaces, leading to frequent failures and shorter lifespan. What if this inefficiency could be fixed—without altering the device structure?

MARKET ANALYSIS

Global supercapacitor market CAGR: 19.1% (USD 6.41B to 31.07B by 2033); India CAGR: 13.3% (USD 237M to 792M). Growth driven by EV demand, hybrid power systems, and industrial energy resilience. [Source: IMARC]

TECHNOLOGY OVERVIEW

A sodium-ion all-solid-state supercapacitor integrates a high boiling point organic solvent layer (2–5 µL/cm²) at the electrode–electrolyte junction. Combined with sodium-based ionic polymers and a stable graphite-based electrode, this enhances ionic conductivity and device durability—without disrupting solid-state architecture.

Target Industries

Target Industries: capacitor material developers, energy storage OEMs, EV/powertrain integrators and/or grid tech developers, aerospace/defense R&D labs, IoT energy systems firms and/or microgrid enablers, sustainable transport innovators, and industrial decarbonization programs.

TECHNOLOGY KEY FEATURES

Na+ solid-state; 2–5 µL/cm² organic solvent at interfaces; 65–75% activated carbon; 15–25% ionic polymer; graphite-coated electrode; sodium superionic conductor (NZSP/NTP)

AT A GLANCE

SDGs: 7 (Affordable & Clean Energy), 9 (Industry, Innovation & Infrastructure), 12 (Responsible Consumption & Production)

Read more here

Technology is available for licensing/ co-development.

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