

Title: Elastic energy storage device

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Do stretchable energy storage devices perform well under high stretch ratios?

For stretchable energy storage devices (SESDs), electrochemical properties of the electrolytes under large deformation, especially ionic conductivity, are the key to the good performance of SESDs under high stretch ratios. We measured the ionic conductivity of PEU-4 at 10 °C from 0% to 4000% strain.

What are hyperelastic materials?

Hyperelastic materials include most polymers and rubbers, which are materials normally used to absorb energy for vibration isolation applications in cars and machinery.

What is a highly elastic lithium-ion battery?

A highly elastic lithium-ion battery with strain up to 1200% is created based on an intrinsically super-stretchable polymer lithium-ion conductor.

What is Young's modulus of elasticity?

The slope of the elastic region before yield takes place is usually linear which means it is constant (see inset) and is called the modulus of elasticity or Young's modulus. Its values are tabulated for most known materials in the Mechanics of Materials textbooks.

The goals of this project were to build a prototype of an elastic energy storage system and to demonstrate that it could be a cost-effective grid-scale technology.

In this paper, the design of a compact, lightweight energy storage device combined with a rotary series elastic actuator (ES-RSEA) ...

Elastic elements are among the earliest utilized energy storage techniques in history. Strings in bows and elastic materials in catapults were used to control energy storage ...

This paper elaborates the operational principles and technical properties and summarizes the applicability of elastic energy storage technology with spiral springs. Elastic energy storage ...

Our study provides a new approach to designing elastic energy storage materials, promising advancements in flexible electronics, and expanded applications in organic relaxor ...

Beyond foldable and rollable devices, the era of stretchable IT devices is arriving. For these devices, the

development of small, elastic energy storage devices is essential.

In this paper, the design of a compact, lightweight energy storage device combined with a rotary series elastic actuator (ES-RSEA) is proposed for use in a lumbar support ...

A wind-up toy car from your childhood, its tiny spring coiling tightly to store energy before zipping across the floor. Now imagine scaling that concept to power entire cities. Welcome to the ...

Elastic energy storage devices operate on the principle of accumulating potential energy through deformation. When materials like ...

Elastic energy storage devices operate on the principle of accumulating potential energy through deformation. When materials like rubber or specific alloys undergo changes in ...

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