

Can flexible energy storage devices improve mechanical performance?

In general, realizing the ultimate improvement of the mechanical performance of energy storage devices is challenging in the theoretical and experimental research of flexible electronics. As an important component of flexible electronics, flexible energy sources, including LIBs and SCs, have attracted significant attention.

Why is flexible energy storage important?

The development of flexible electronics critically demands highly flexible energy storage devices, which not only have high energy/power density and rate performance similar to conventional power sources but also possess robust mechanical properties. ¹⁵ These devices can further improve the integration degree of the entire electronic systems.

Are flexible energy storage devices reliable?

Unlike those of traditional power sources, the mechanical reliability of flexible energy storage devices, including electrical performance retention and deformation endurance, has received much attention.

What are bending parameters?

Three parameters can generally describe the bending status of devices: (1) L : the end-to-end distance along the bending direction; (2) θ : the bending angle; (3) R : the bending radius of curvature. The schematics of these parameters are shown in Figure 2 b for the flexible device as a mechanical beam.

What are the mechanical deformation characteristics of flexible energy storage devices?

Reproduced with permission. ^{2,6} Copyright 2009, American Association for the Advancement of Science and Copyright 2016, Nature Publishing Group. Tolerance in bending into a certain curvature is the major mechanical deformation characteristic of flexible energy storage devices.

What are the parameters for describing the bending state?

As for the parameters for describing the bending state, the bending radius of curvature R is preferable, and the mandrel method with given radii is the most credible among the various measurement methods for R because it is simple and generic regardless of the shape and size of flexible devices.

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Flow direction and velocity distribution of air inside the cabinet of case 1. Velocity and flow direction of a cross-section off-set by 20 cm of the cabinet center (a) arrow plot of ...

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Energy Storage Cabinet Bending Center

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In this paper, the capacitor energy storage cabinet on the roof of the monorail elevated train is taken as the research object, and its finite element model is built. The grid of the

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