Elastic strain energy storage

Subsequently, the W et, PES, peak-strength strain energy storage index (, and peak-strength potential energy of elastic strain (PES p) were used to assess the rockburst proneness of the cylindrical and cuboid specimens. In addition, the fragment ejection course of specimens under test was recorded by a high-speed camera.

With the elastic energy storage-electric power generation system, grid electrical energy can drive electric motors to wind up a spiral spring group to store energy when power ...

This relaxor ferroelectric elastomer maintains a stable energy density (>8 J cm -3) and energy storage efficiency (>75%) under strains ranging from 0 to 80%. This strain-insensitive, high elastic relaxor ferroelectric elastomer holds significant potential for flexible electronic applications, offering superior performance in soft robotics ...

To validate this assumption, a series of experiments are carried out. The results show that the critical elastic strain energy storage decreases linearly with the increase of crack length ...

In this case, the residual elastic strain energy is the source of kinetic ejection during rockburst. 60, 61 For brittle rocks, the pre-peak deformation and failure process of rock mass is usually dominated by the storage or accumulation of ESE, whereas during post-peak failure some of the stored ESE contributes to rock failure (this part of ...

The peak elastic strain energy consumption ratio (PEECR) is a rock brittleness index proposed by Gong and Wang. In the present study, based on the linear energy storage law of rock under triaxial compression, a new method was proposed to calculate the PEECR.

Based upon the optimal control solutions to a maximum-height countermovement jump (CMJ) and a maximum-height squat jump (SJ), this paper provides a quantitative description of how ...

Focusing on the low energy-storage efficiency and unstable energy output of existing accumulators, this paper proposes a novel constant-pressure elastic-strain energy accumulator based on the rubber material ...

sarcomere model lets us parse how strain energy is partitioned between the filaments and the cross-bridges in maximally activated isometric sarcomeres. We show that the cross-bridges ...

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A New Rock Brittleness Index Based on the Peak Elastic Strain Energy Consumption Ratio Fengqiang

Elastic strain energy storage

Gong1,2 · Yunliang Wang 3 Received: 10 August 2021 / Accepted: 5 December 2021 / Published online: 20 January 2022 ... reaches its energy storage limitation, it will begin to fail. A part of the accumulated elastic strain energy will induce the

A new concept for mechanical energy storage and retrieval using surface energy as reservoir in body-centered cubic (bcc) tungsten nanowire is demonstrated, achieving a combination of unique features such as large and constant actuation stress, exceptionally large actuation strain and energy density, and >98% energy storage efficiency. Expand

To evaluate rock brittleness more accurately, a new rock brittleness index based on the peak elastic strain energy consumption ratio (PEECR) was proposed in this study. Considering the relationship between rock brittleness and energy evolution characteristics of rock materials under confining pressure, the PEECR was defined as the dissipated proportion of ...

confirmed, and the energy storage coefficient was found to be unrelated to specimen shape. On the basis of LES law, two rockburst proneness indexes, namely the strain energy storage index (W et) and the potential energy of elastic strain (PES), were modified. Subsequently, the W et, PES, peak-strength strain energy storage index (Wet)

Storage of strain energy in elastic materials has important roles in mammal running, insect jumping and insect flight. The elastic materials involved include muscle in every case, but only in ...

Elastic materials that store and release elastic energy play pivotal roles in both macro and micro mechanical systems. Uniting high elastic energy density and efficiency is crucial for emerging technologies such as artificial muscles, hopping robots, and unmanned aerial vehicle catapults, yet it remains a significant challenge.

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