

PIENAAR ENERGY (PTY) LTD

Solar Calcium Carbonate Thermal Storage



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Dark calcium carbonate particles for simultaneous full-spectrum solar

Dark calcium carbonate particles for simultaneous full-spectrum solar thermal conversion and large-capacity thermochemical energy storage April 2020 Solar Energy Materials and Solar Cells ...

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Granular porous calcium carbonate particles for scalable and ...

Here, novel granular porous calcium carbonate particles with very high solar absorptance, energy storage density, abrasive resistances, and energy storage rate are proposed for direct solar ...



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Compressed reactive unit of CaCO₃ and Co₃O₄ with improved solar

Thermochemical energy storage (TCES) under direct irradiation mode is a promising technology that promotes the widespread utilization of high-temperature concentrated solar energy. ...

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Research progress in calcium-based thermochemical energy storage

It focuses on three critical areas: modification of energy storage materials, development of directly and indirectly irradiated reactors for solar thermal applications, and thermodynamic optimization of solar ...


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Dark calcium carbonate particles for simultaneous full-spectrum solar

Abstract Possessing nontoxicity, high thermochemical energy storage density, and good compatibility with supercritical CO₂ thermodynamic cycles, calcium carbonate (CaCO₃) is a very ...

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Calcium-based composite materials for thermochemical heat storage

Calcium-based thermochemical reactions represented by CaCO₃ /CaO and Ca (OH) ₂/CaO has the characteristics of high heat storage density and low material cost, which is easy to be ...


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Long-stable solar energy capture and storage via negative ...

This effect excellently ameliorates the problem of sintering and agglomeration and improves the recycling rate of calcium oxide from the perspective of microscopic thermal regulation. ...

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Al/Mn Co-Doped Calcium-Based Materials for High Performance

...

ABSTRACT CaO/CaCO₃ thermochemical energy storage, also known as calcium looping (CaL), has promising applications in high-temperature concentrating solar power (CSP) plants due to ...



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Granular porous calcium carbonate particles for scalable and ...

Calcium carbonate is promising thermochemical heat storage material for next-generation solar power systems due to its high energy storage density, low cost, and high operation temperature. ...

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