

Constructing a solar-powered photothermal system that can self-regulate temperature without requiring extra energy input is significant for energy saving, but how to achieve zero-energy building remains ...

The key components of this solar cooking method are an evacuated tube solar collector, heat storage unit, and steam regulating heat pipe. A simple cylindrical-shaped heat storage ...

Thermal management textiles provide an energy-efficient strategy for personal thermal comfort by regulating heat flow between the human body and the environment. However, textiles with a single ...

Transmittance of visible and NIR light (380-2500 nm) controls the solar heat gain in the room, while LWIR thermal emissivity (?LWIR) dominates the radiative cooling (RC) to the cold outer ...

The air-laid paper inserted in water is connected to the bottom end of the GCB film to continuously supply water. The whole device is placed on an electronic balance in the center of the ...

The ultra-high enthalpy guarantees the temperature regulation ability during the alternating process of cooling and heating. In hot environment, the temperature regulation time is 6.59 min, and the ...

This technology seeks to create and distribute a nano-composite coating that is projected to lower solar energy system maintenance costs and increase solar panel efficiency.

A temperature-regulating material (TRM) is a substance that undergoes phase transition at a specific temperature, which enables it to absorb and release latent heat when isothermal conditions are ...

Smart self-regulating heating devices utilising the positive temperature coefficient (PTC) effect have shown great potential in advancing applications across healthcare, soft robotics, and ...

However, previously devices for radiative cooling or solar heating were mostly static or quasi dynamic, making it difficult to meet the dynamic cooling and heating demands to maintain a ...

The design incorporates Y-shaped fins within the tilted tube to elevate the temperature of the water-based nanofluid, while tree-shaped fins are strategically placed inside the sinusoidal ...

In this work, a strategy based on a high emittance polymer, thermochromic hydrogel, and black solar absorber was proposed to passively control temperature by regulating solar heating under sunlight.

# Nano solar container temperature regulating heating paper

Temperature regulation based on cooling and heating accounts for global energy consumption and global greenhouse gas emissions. In this work, a strategy based on a high emittance polymer, ...

Therefore, the development of TENGs is important to develop low-temperature self-regulating heating and self-powered flexible devices for extreme environments. Solar energy is ...

By regulating air temperature effectively, indirect dryers ensure that products are dried gently, preventing damage while optimizing the drying process [8]. ITSDs provide superior product ...

Highly temperature-sensitive heat-storing microparticles constructed by phase change microcapsule (PCM) core and tightly incorporated BN nanoparticle shell are designed, which is ...

Therefore, this paper intends to prepare high enthalpy temperature regulating fibers by bicomponent melt spinning, further increase the content of ssPCM, break through the bottleneck of its ...



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