Compressed expanded graphite solar container

Why is graphite important for the production of solar cells?
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Can hybrid expanded graphite and carbon nanotubes be used together?
Herein, this work reports the employment of hybrid expanded graphite (EG) and carbon nanotubes (CNTs) to simultaneously realize leakage-proofness, high solar absorptance, high thermal conductivity, and large latent heat storage capacity.

Is expanded graphite suitable for PCM synthesis?
Due to its chemical inertness,high thermal conductivity,mechanical and thermal stability,wide porous network,and high specific surface area,Expanded graphite (EG) is a viable choicefor composite PCM (CPCM) synthesis [28,29]. Also,due to its chemical inertness,it is compatible with both organic and inorganic PCM [30,31].

Why is graphite important for the production of solar cells?
For the production of multicrystalline and monocrystalline silicon,the most important raw material in the production of solar cells in the photovoltaic industry,we are developing essential components based on specialty graphite for the highly sensitive process of crystal growth.

Can hPa-EG-CNT composites convert concentrated solar illumination into high-temperature storable heat?
The main bulk HPA composite,which is loaded with 20 wt% of EG and 1 wt% of CNT,achieved an axial and in-plane thermal conductivity of 4.15 W/m K and 18.22 W/m K,respectively. We demonstrated that such double-layer HPA-EG-CNT composites could rapidlyconvert concentrated solar illumination into high-temperature storable latent heat.

What is the surface solar absorptance of HPA-EG-CNT composites?
Through increasing the loading of CNTs to 10 wt% in the top thin layer,we further prepared double-layer HPA-EG-CNT composites,which have a high surface solar absorptance of 92.9%for the direct conversion of concentrated solar illumination into storable latent heat.

Can graphite powders be continuously expanded and exfoliated to produce graphene?
Here we show that if graphite powders are contained and compressed within a permeable and expandable containment system,the graphite powders can be continuously intercalated,expanded,and exfoliated to produce graphene. Our data indicate both high yield (65%) and extraordinarily large lateral size (>30 um) in the as-produced graphene.

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Effective integration of the latent heat thermal energy storage system with solar thermal collectors depends on heat storage materials and heat exchangers. The practical limitation of ...

A new synthesis method is developed for preparing form-stable expanded graphite (EG)/stearic acid (SA) composite phase change material (CPCM) by using "impregnation of liquid ...

Abstract Two types of host for activated carbon (AC) adsorbents intended for use in compressed systems are studied: expanded natural graphite (ENG) and expanded natural graphite ...

Compressed Expanded Natural Graphite Graphite flakes are intercalated with acid Thermal shock causes rapid expansion Expanded graphite "worms" are compressed to form a CENG matrix

Although the composite bipolar plates prepared by the method of the vacuum resin impregnation in compressed expanded graphite (CEG) sheets have been applied in the KW-class stacks, there have ...

Low stability, reliability, and corrosion are considerable challenges to widespread application of succinic acid (SA) as phase change material (PCM). Here, we present a novel medium ...

Mesophase pitch based graphite foams (GFs) with different thermal properties and pore-size were used to increase the thermal diffusivity of phase change material (PCM), paraffin wax, for ...

The excellent thermoelectric property of expanded graphite/cement-based composites (EGCC) has promising prospects for converting the thermal energy of solar radiation into electric ...

Compressed, the ENG forms a matrix called Compressed Expanded Natural Graphite (CENG), where the PCM can stand within the materials without leaks. This shape-stabilized ...

References (20) Abstract As a phase change material, Wood"s alloy is infiltrated into the compressed expanded natural graphite (CENG) in an attempt to improve the thermal conductivity of the alloy.

Scalable synthesis of graphene sheets is challenging due to the complex production processes. Few-layered graphene sheets with high lateral sizes (4-5 um) through a state-of-the-art ...

This work studies factors that affect the thermal conductivity of an organic phase change material (PCM), RT44HC/expanded graphite (EG) composite, which include: EG mass ...

In a similar study, Merlin et al. [28] compared the thermal performance of a concentric tube PCM system with systems employing various heat transfer enhancement methods such as ...

This shortfall can be mitigated using composite PCM (CPCM) as the thermal storage medium, consisting of

form-stable porous graphite foam impregnated with PCM. Compressed ...

Researchers have proposed strontium chloride hexahydrate (SrCl2·6H2O, SCH) as an effective lattice-matched nucleating agent for CCH; additionally, porous compressed expanded graphite (EG) offers ...

Since Zhang et al. reported the paraffin/expanded graphite composite PCM in 2006 [9], expanded graphite (EG) has been widely employed as the porous matrix for preparing composite ...

Abstract In this study, expanded graphite (EG)/paraffin (PA)/silica (SiO2) composite phase change materials (PCM), with good thermal conductivity and impermeability, were fabricated ...

In the current work, an expanded graphite/graphene composite (EGC) by integrating graphene oxide (GO) into expanded graphite (EG) via a vacuum-assisted self-assembly method ...

In this work, a plastic, form-stable PCM was fabricated by in-situ encapsulation of phase change wax (PCW) and expanded graphite (EG) composites into a three-dimensional (3D) network ...

Compressed expanded natural graphite (CENG) matrices with different densities were used to increase the thermal property of paraffin wax. To predict the performance of the paraffin ...

The amount of expanded natural graphite flake used in CENG is measured by bulk density, or the mass of graphite in the sample volume. PCM can be absorbed into the graphite matrix ...

Therefore, an effective encapsulation method should be chosen to package the Alum with thermal conductivity improvement and without leakage. Expanded graphite (EG) is a universal ...