

Are phase change materials suitable for wearable thermal regulation?

Phase change materials (PCMs) offer great potential for realizing zero-energy thermal management due to superior thermal storage and stable phase-change temperatures. However, liquid leakage and solid rigidity of PCMs are long-standing challenges for PCM-based wearable thermal regulation.

Can phase change materials be used for zero-energy thermal management?

Nature Communications 14, Article number: 8060 (2023) Cite this article Phase change materials (PCMs) offer great potential for realizing zero-energy thermal management due to superior thermal storage and stable phase-change temperatures.

What is latent heat storage material (PCM)?

This latent heat storage material (phase change material, or PCM) is designed to deliver heat insulation and heat-retaining benefits in a target temperature range, with variants available for temperatures ranging from about -50°C to 50°C.

Can gallium be used as a high-performance phase change material?

Gallium is expected to be used as a high-performance phase change material (PCM) for a low-temperature thermal management. However, high corrosivity of liquid gallium is a serious technical barrier to handle gallium as a PCM. To this end, we report on the development of a Ga-based microencapsulated PCM (MEPCM) by using a three-step process.

What is a flexible phase change material based on PA/TPEE/EG?

A shape-memory, room-temperature flexible phase change material based on PA/TPEE/EG for battery thermal management. Chem. Eng. J. 463, 142514 (2023). Qi, X., Shao, Y., Wu, H., Yang, J. & Wang, Y. Flexible phase change composite materials with simultaneous light energy storage and light-actuated shape memory capability. Compos. Sci.

What are form-stable phase change materials (fSPCMs)?

Pioneer studies have reported that form-stable phase change materials (FSPCMs) obtained by embedding micro-molecular PCMs in characteristic polymers or porous supporting matrixes are beneficial for suppressing irreversible damage caused by liquid leakage, e.g., container corrosion and environmental pollution 9,10,11.

HEATORAGE™ is a resin designed to absorb or release the latent heat at a specified temperature range from 20°C to 50°C, using phase change\*, and it can be easily molded by extrusion, injection, and spinning.

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Article "A comprehensive review on building integrated phase change floors with phase change materials for energy storage and indoor environment control" Detailed information of the J-GLOBAL is an information service managed by the Japan Science and Technology Agency (hereinafter referred to as "JST"). It provides free access to secondary information on ...

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The use of a latent heat storage system using Phase Change Materials (PCM) is an effective way of storing thermal energy (solar energy, off-peak electricity, industrial waste heat) and has the advantages of high storage density and the isothermal nature of the storage process.

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