

Can a 3D-printed ceramic core be used for portable solar desalination devices?

Surfaces, Interfaces... Cite this: ACS Appl. Mater. Interfaces 2021, 13, 19, 23220-23229 This paper proposes the fabrication process of the first fully 3D-printed ceramic core structures for portable solar desalination devices optimized to tackle water scarcity from an energy and sustainability perspective.

Can ceramics be used as solar absorbers?

This approach necessitates materials that can simultaneously function as both solar absorbers and porous supports. Fortunately, we noticed ceramics. Most ceramics inherently possess excellent weather resistance, outstanding mechanical strength, and tunable porosity.

Can abrasive ceramics be produced using solar energy?

Industrial tests of abrasive ceramics based on corundum (Fig. 2 a), guard rings based on aluminum titanate for glass melting furnaces (Fig. 2 b), and ZrO₂-MgO spinnerets (5 mol.%) for glass fiber production (Fig. 2 c) demonstrate the possibility of producing ceramic materials using solar energy as a heating source.

Why do we need a complex energy-consuming process for ceramic material production?

In traditional technological processes for ceramic material production, when additional oxygen enrichment at high temperatures is required, complex energy-consuming processes are necessary.

How efficient is solar evaporation in ceramics?

Ceramics exhibit both efficient solar-driven interfacial evaporation and robust mechanical stability. Oxygen-deficient TiO₂ ceramics demonstrate simultaneous photodegradation of pollutants during evaporation. Evaporation rates reach 1.61 kg/m²/h and 1.72 kg/m²/h under 1 kW/m² simulated solar irradiation.

Are solar energy-based technologies a renewable natural resource?

The article reveals the necessity of developing solar energy-based technologies as an energy-saving renewable natural resource.

Key insights are presented for the design and fabrication of porous ceramics in solar thermal chemical fuel synthesis, bridging sustainable energy conversion with technological advancements.

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Container Ceramics is a small batch pottery studio based in Manchester. All pieces are handcrafted from design stage to firing and glazing stages by Leah in her ceramics studio which is a blue shipping ...

energy, mobility, and ...

Shandong Industrial Ceramics Research and Design Institute (called Shandong Institute of Industrial Ceramics for short) dates back to the year 1950, when the ...

Solar-driven interfacial evaporation has attracted widespread attention due to its high solar evaporation efficiency and transformative industrial potential. However, previous studies have primarily focused ...

Plasma-sprayed ceramics and fiber-reinforced composites are assessed as structural components in concentrated solar thermal technology. All materials are considered as promising to ...

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Multifunctionality: Discuss how solar containers can power various applications, making them a versatile energy solution. Section 4: Applications of ...

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Concentrated solar thermal technology (CST) using solid particles as integrated thermal absorptance, transport, and storage medium offers higher storage densities and lower ...

Abstract Solar-driven interfacial evaporation presents significant potential for water purification due to its environmentally friendly and efficient utilization of solar energy. In this work, we ...

Solar Container industry insights on factors that are driving the growth of the Solar Container Market and key players along with their go to market strategies and new revenue sources.

Abstract A kind of optical data storage medium based on electron-trapping materials, $Y_3Al_5O_{12}:Ce^{3+}$ + fluorescent ceramic, was developed by vacuum ...

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