

In order to study the performance and feasibility of magnesia-alumina spinel (MgAl_2O_4) ceramics for thermal storage in solar thermal power generation, MgAl_2O_4 was prepared by theoretical composition using $\alpha\text{-Al}_2\text{O}_3$ as aluminium source, fused magnesia, magnesite, and light burned magnesia as different magnesium sources and kaolin as additive. The effects of magnesium ...

DOI: 10.1016/J.CERAMINT.2016.08.059 Corpus ID: 137873385; In situ synthesis of SiC-bonded cordierite-mullite ceramics for solar thermal energy storage @article{Xu2016InSS, title={In situ synthesis of SiC-bonded cordierite-mullite ceramics for solar thermal energy storage}, author={Xiaohong Xu and Yinfeng Zhang and Jianfeng Wu and ...

DOI: 10.1016/J.APENERGY.2015.05.074 Corpus ID: 107568824; Compatibility tests between Solar Salt and thermal storage ceramics from inorganic industrial wastes @article{Motte2015CompatibilityTB, title={Compatibility tests between Solar Salt and thermal storage ceramics from inorganic industrial wastes}, author={Fabrice Motte and Quentin Falcoz ...

Ceramic-based energy storage systems have gained interest in recent years due to their ability to withstand the high temperatures often associated with energy supplies. For instance, in 2010, Kraftanlagen München developed a ceramic-based storage system that successfully stored solar thermal energy.

The employment of solar energy in recent years has reached a remarkable edge. It has become even more popular as the cost of fossil fuel continues to rise. Energy storage system improves an adjustability and marketability of solar thermal and allowing it to produce electricity in demand. This study attempted to prepare cordierite/mullite composite ceramics ...

Solar thermal power generation is an important direction of energy utilization, and thermal storage materials are the key to ensure the continuous use of energy. In this paper, forsterite - zirconia composite ceramics were prepared by adding different contents of 3Y-ZrO_2 and their physical properties, phase composition, microstructure thermal shock resistance and ...

Dynamic simulations of a honeycomb ceramic thermal energy storage in a solar thermal power plant using air as the heat transfer fluid. Appl Therm Eng, 129 (2017), pp. 636-645, 10.1016/j.applthermaleng.2017.10.063. Google Scholar [21] N. Watson, M.S. Janota. Turbocharging the internal combustion engine

Mullite thermal storage ceramics were prepared by low-cost calcined bauxite and kaolin. The phase composition, microstructure, high temperature resistance and thermophysical properties were characterized by modern testing techniques. The experimental results indicate that sample A3 (bauxite/kaolin ratio of 5:5) sintered at $1620 \pm 176^\circ\text{C}$ has the ...

Solar high-temperature thermal power generation systems require thermal storage materials with excellent thermal shock resistance due to the large temperature difference during operation (in the range of 20-800 °C). In this study, mullite-based absorption and storage integrated ceramics were prepared using low-cost bauxite and kaolin as raw materials and Fe ...

In this study, solar thermal storage ceramics were prepared using high calcium and high iron steel slag as the main raw material, adding cordierite and using the pressureless sintering method. The effects of cordierite addition on the physical properties, phase composition, microstructure, thermal storage and thermal shock resistance of the ...

We developed cordierite-mullite composite ceramic materials to package and encapsulate PCM, and presented a preparation process from raw materials of kaolin, talc and alumina. The properties and microstructure of cordierite-mullite composite ceramic were studied. Due to the strengthening effects of mullite, the sample C2 (80 wt% of cordierite and 20 wt % of ...

Solar thermal storage ceramic materials use photothermal power generation technology to store heat energy, which is an important way to use clean energy and reduce carbon emissions. In this paper, MgAl_2O_4 ceramics were prepared by pressureless sintering with fused magnesia and $\alpha\text{-Al}_2\text{O}_3$ as the primary raw materials and TiO_2 as the additive.

Sudhan et al. [22] presented a short review paper, mainly focused on the optimization and design implementation of thermal energy storage and concentrated solar power plants. Boretto et al. [23], published a review in the present and future status of concentrating solar power tower technology. The authors focused on one CSP configuration, solar ...

In this study, aluminum titanate/anorthite ($\text{Al}_2\text{TiO}_5\text{-CaAl}_2\text{Si}_2\text{O}_8$) ceramics were fabricated from ferrotitanium slag through phase reconstruction. Stabilization of the ceramic ...

For a potential application of solar thermal energy storage, in order to improve the mechanical strength and thermal conductivity of cordierite-mullite composite ceramics, the SiC-bonded composites were prepared by in situ synthesis method at 1420 °C, with different SiC content and various SiC-synthesis routes. The effects of content and ...

The absorptivity of solar thermal absorber materials affects the heliothermal conversion efficiency of concentrated solar power systems. The solar absorbing ceramics were prepared by the fixed mixture of bauxite, Fe_2O_3 ...

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