

Inhibiting Molten Salt Infiltration of Porous Materials

Track Code: 2020-SAND-68768

Categories:

- Materials and Manufacturing

Keywords:

- Ceramics
- Chemical Processing
- Energy Harvesting
- Energy Production
- Energy Storage
- Hard Carbon
- High Temperatures
- Low Cost
- Materials and Manufacturing
- Materials Science
- Pulsed Valves
- Salt
- Seal
- Solar Technology
- Thermal

Researchers at Purdue University have developed a method for inhibiting the infiltration of molten salt into porous materials and devices. Molten salts can be used as a heat transfer fluid in high temperature applications for chemical processing, energy production and storage, and waste heat recovery because of desirable heat transfer properties and earth abundance. Ceramics are currently used in these environments for piping, valves, seals, and tanks; however, these ceramics are often porous necessitating a barrier coating on the ceramic which is prone to degradation, difficult to apply, or provides insufficient long term protection. By instead injecting a carbonaceous material into the ceramic, Purdue engineers were able produce an inexpensive pore filling coating that has better properties than existing solutions. A potential applications for this low-cost solution is Concentrated Solar Power plants.

Advantages:

- Inhibits molten salt infiltration
- Operations in thermal environments
- Low cost

Potential Applications:

- Energy production

- Energy Storage
- Waste heat recovery
- Chemical processing

People:

- Sandhage, Kenneth H (Project leader)

Intellectual Property:

Application Date: August 17, 2020

Type: Utility-Gov. Funding

Country of Filing: United States

Patent Number: (None)

Issue Date: (None)

Application Date: August 16, 2019

Type: Provisional-Patent

Country of Filing: United States

Patent Number: (None)

Issue Date: (None)

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