



# Inhibiting Molten Salt Infiltration of Porous Materials

**A low-cost pore-filling method blocks molten salt penetration into ceramics for solar, energy, and chemical systems.**

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

**TRL: 2**

## Technology ID

2020-SAND-68768

## Category

Chemicals & Advanced  
Materials/Coatings, Adhesives &  
Sealants  
Energy & Power Systems/Power  
Generation  
Chemicals & Advanced  
Materials/Materials Processing &  
Manufacturing Technologies

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**Intellectual Property:**

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