

Advanced manufacturing for carbon capture systems

Workshop on the Intersection of Advanced Manufacturing and Clean Coal and Carbon Capture Technologies

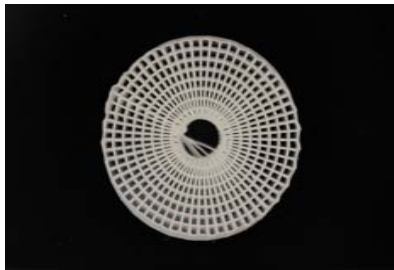
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is applying advanced manufacturing to develop carbon capture at low and flexible scale.

Printed composite sorbents



Microencapsulated solvents



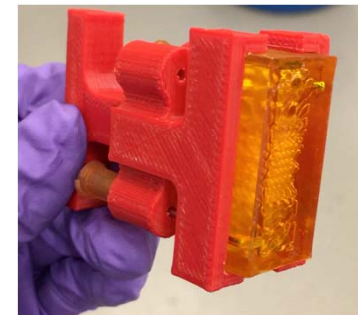
High-T, high-P heat exchangers



Functionalized packing



3-D printed reactors



Designs enhance mass/heat transfer and combine functions.

3D-printed packing can reduce the size & cost of the absorber tower for CO₂ capture.

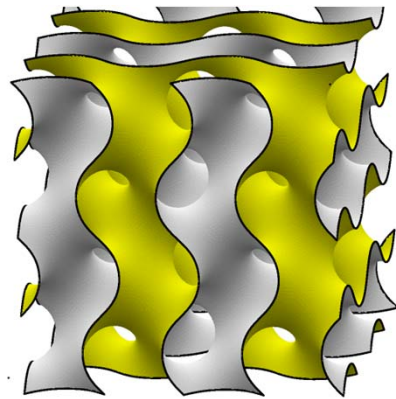


CO₂ absorber at Petra Nova (center).

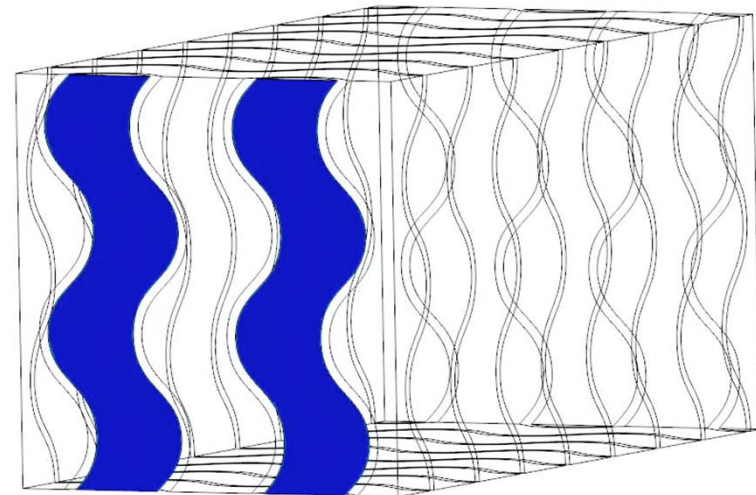
CO₂ absorption tower is the dominant capital cost in conventional capture systems.

Printed packings can reduce size by enhancing mixing or integrating heat transfer.

Gyroid-like surfaces make great heat exchangers, can only be made with additive manufacturing.



Rendering of a gyroid



Steady-state temperature in cold fluid



Heat exchanger internals printed in Inconel 625.

ations and early experiments promise order-of-magnitude reduction in
and materials cost.

