

# Low-Cost, Scalable Boron Nitride-Based Sorbents with Balanced Capacity-Kinetics-Thermodynamics for Hydrogen Storage in Fossil Fuel Power Plants

• DE-FE0032010



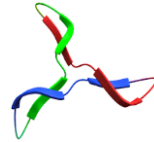
**Prime: C-Crete Technologies**



**PI: Dr. Rouzbeh Shahsavari**



**Sub: Trimeric Corporation**



**Location: Stafford, TX**

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**DOE:** \$250,000

**Non-DOE:** \$62,500

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**Total: \$312,500**

## Objectives

- Phase I: full synthesis control over sorbent and its pore-structure, and to fabricate a small module followed by optimization and various structural, chemical and thermal property characterizations.
- Phase II : evaluate the performance of H<sub>2</sub> energy storage both at the material and system levels followed by development of conceptual process flow diagram, and unit module and performance models for integration to fossil fuel power plants

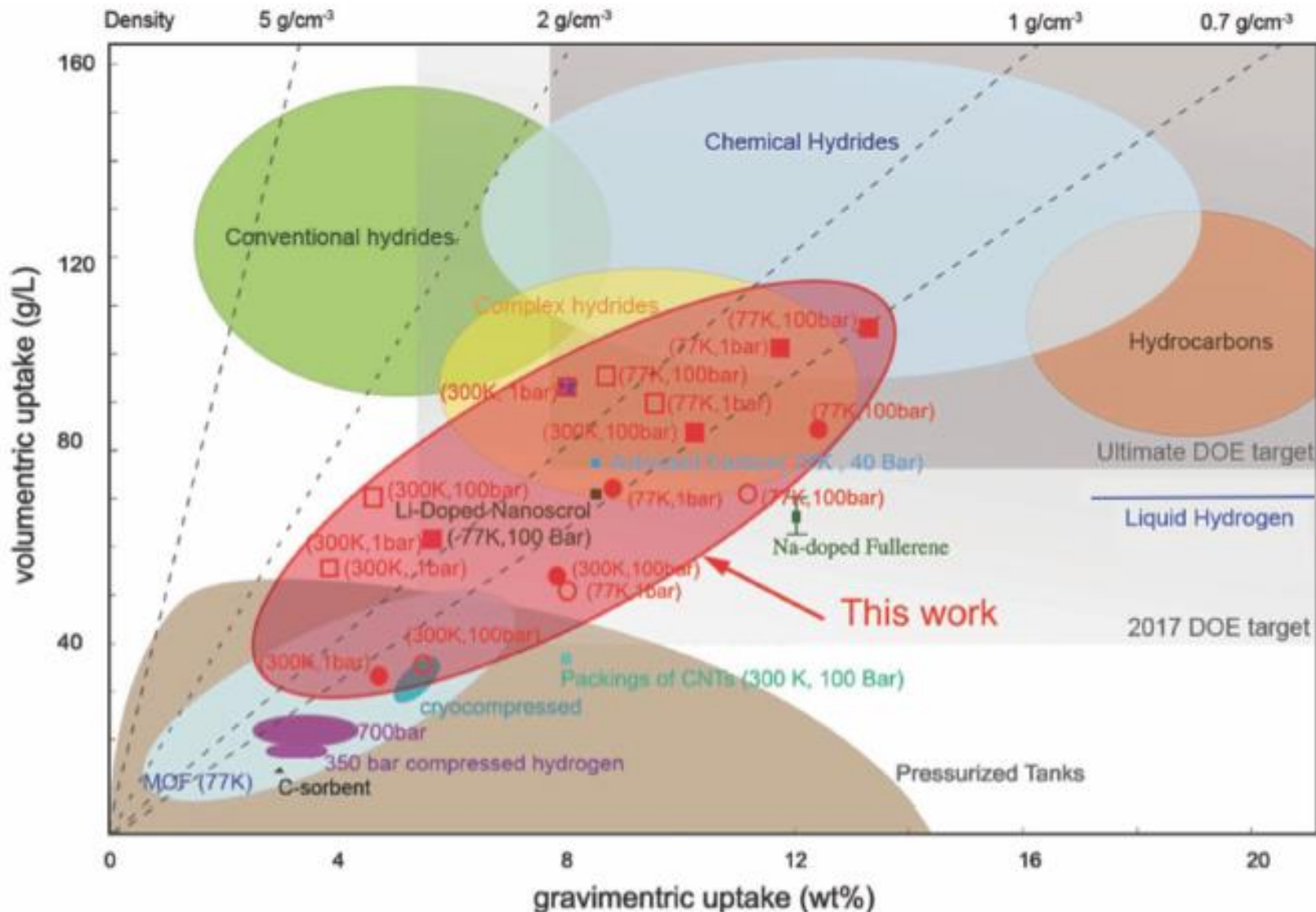
## Relevance and Outcomes/Impact

- Feasibility of a new class of scalable, low-cost sorbents with an unprecedented balance of capacity-kinetics-thermodynamics for H<sub>2</sub> storage and integration to fossil fuel power plants.
- First step toward on-grid H<sub>2</sub> power storage.

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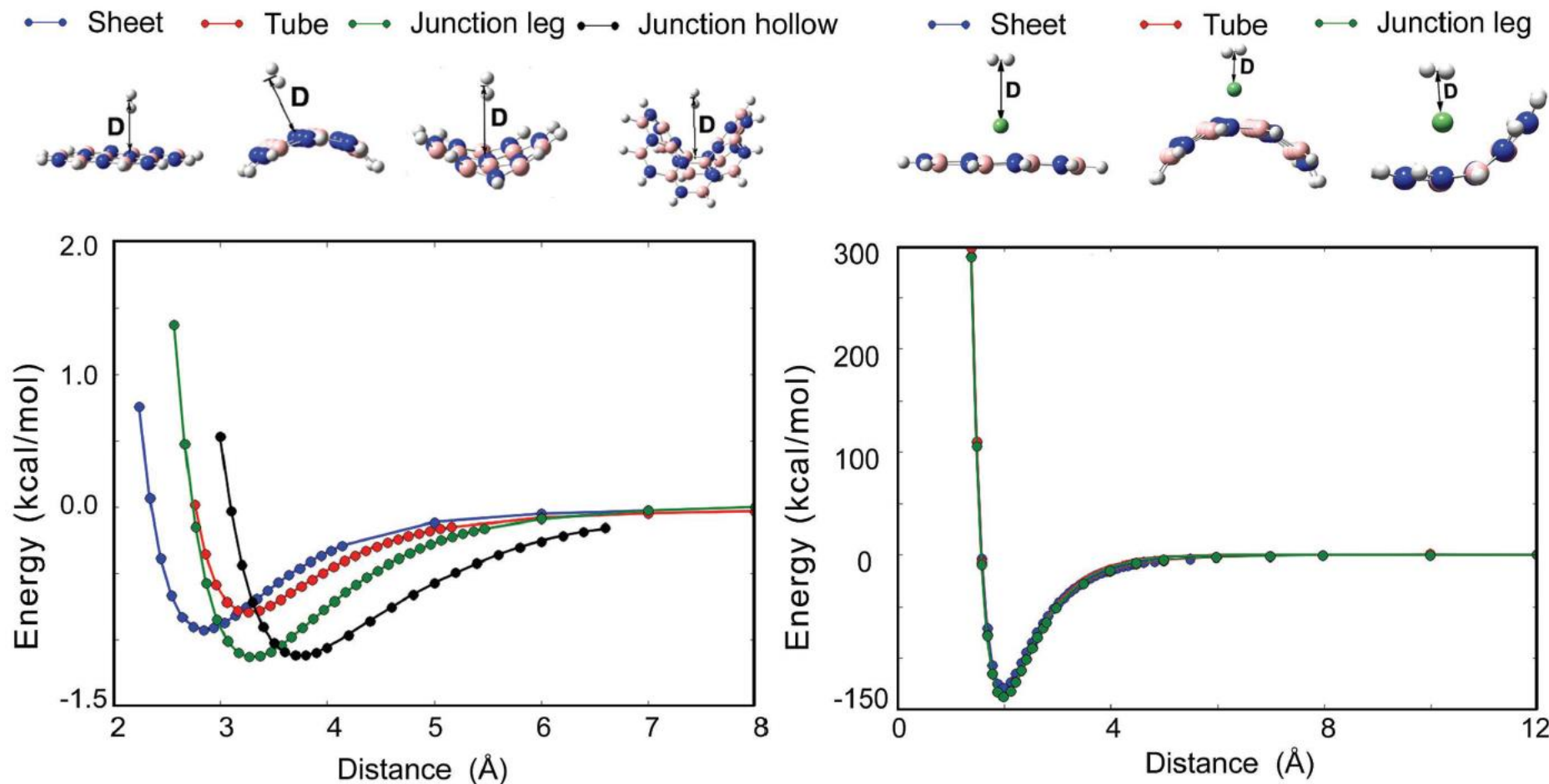
## Background



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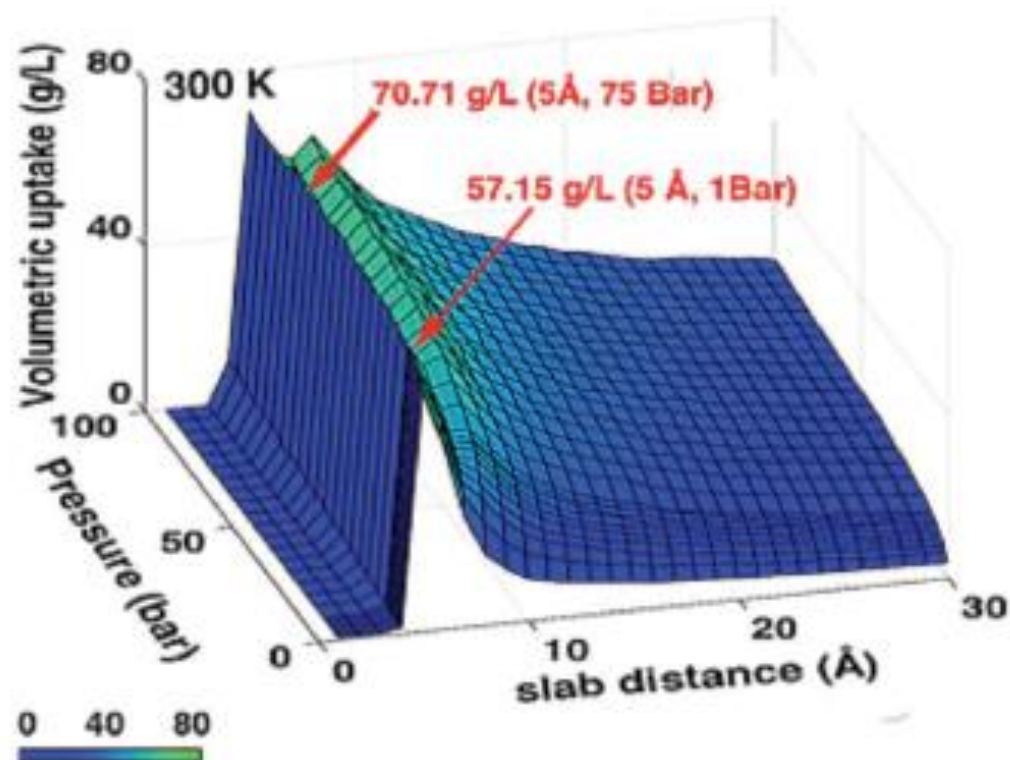
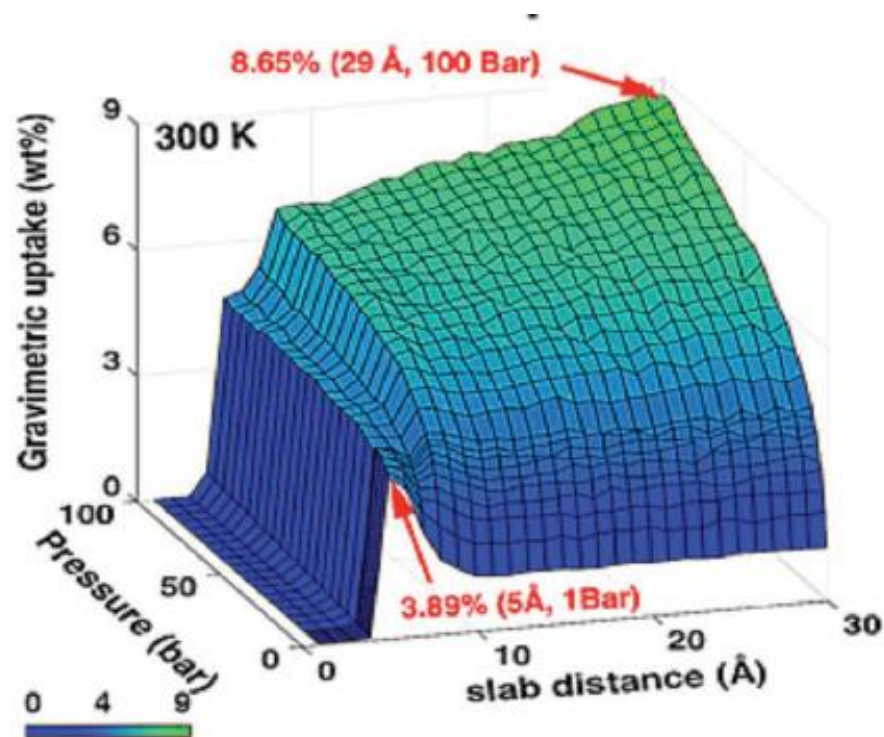
## Preliminary Results



# Low-Cost, Scalable Boron Nitride-Based Sorbents with Balanced Capacity-Kinetics-Thermodynamics for Hydrogen Storage in Fossil Fuel Power Plants

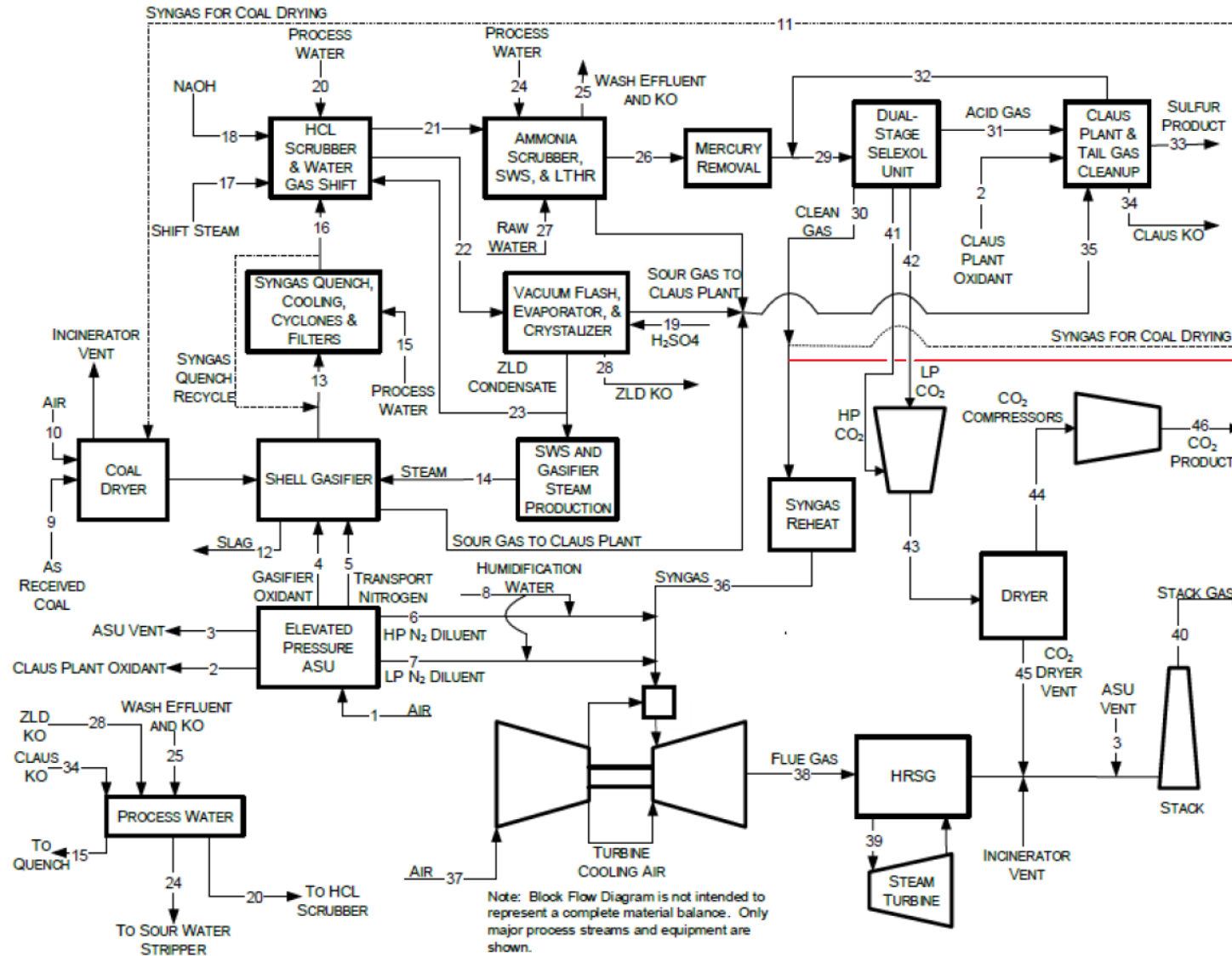
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## Preliminary Results

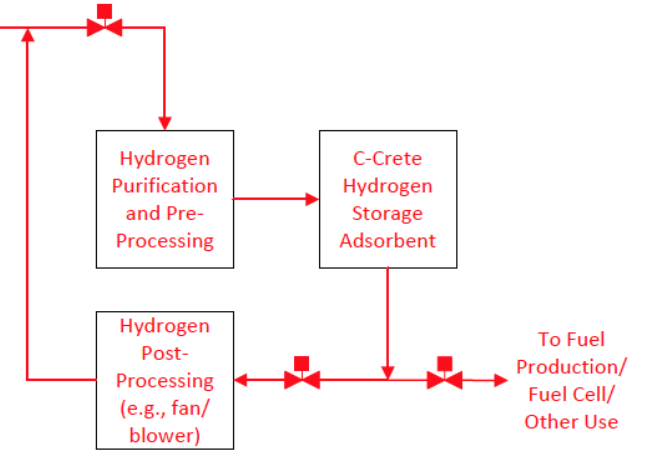


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A representative preliminary integration of our technology (red) in an IGCC power plant.



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**Thank you**