

## Methods for Acetylene/Gas Storage using Metal-Organic Framework

Microporous metal-organic frameworks (MOFs) have been rapidly emerging as promising porous materials for gas storage, separation, sensing and heterogeneous catalysis. This invention introduces methods for acetylene/gas storage using metal-organic frameworks.

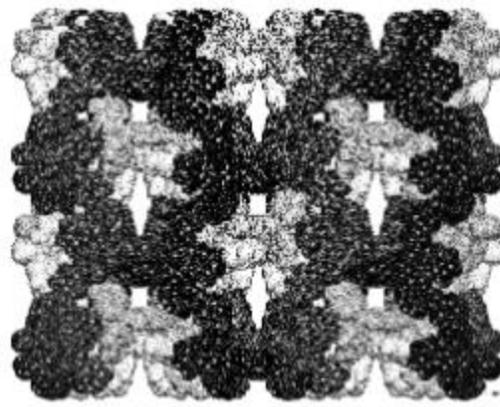
### Problem

Acetylene is a very important raw material for various industrial chemicals, consumer products and for oxy-acetylene cutting in metal fabrication shops. Due to its high flammability, instability and unique transportation requirements, developing new methods for acetylene storage and transportation is necessary.

### Solution

The present technology provides multiple novel metal-organic framework materials for acetylene/gas storage using open metal sites, MOFs with repeat unit  $M_2(\text{DHTP})$  or MOFs with repeat unit  $\text{Zn}_5(\text{BTA})_6(\text{TDA})_2$ .

Interpenetrated  $\text{Zn}_5(\text{BTA})_6(\text{TDA})_2$  MOF



### Value Proposition

This invention presents effective, low cost, novel, and efficient MOF materials for storing acetylene/gas. Their highly porous nature and permanent porosity allows for large volumes of gas storage.

### Competitive Advantages

- Easy synthesis
- Significantly improved storage capacities
- Safe and easy transportation and delivery at low pressure and room temperature
- Highly robust materials
- Applications include selective sorption and detection of gas molecules

### Status of Development

- Seeking commercial partners

### IP Status

- Licensing available
- Patent #US8664419B2, US9120080B2, US9127025B2