

- [ScienceWatch Home](#)
- [Inside This Month...](#)
- [Interviews](#)

- [Featured Interviews](#)
- [Author Commentaries](#)
- [Institutional Interviews](#)
- [Journal Interviews](#)
- [Podcasts](#)

Analyses

- [Featured Analyses](#)
- [What's Hot In...](#)
- [Special Topics](#)

Data & Rankings

- [Sci-Bytes](#)
- [Fast Breaking Papers](#)
- [New Hot Papers](#)
- [Emerging Research Fronts](#)
- [Fast Moving Fronts](#)
- [Corporate Research Fronts](#)
- [Research Front Maps](#)
- [Current Classics](#)
- [Top Topics](#)
- [Rising Stars](#)
- [New Entrants](#)
- [Country Profiles](#)

About Science Watch

- [Methodology](#)
- [Archives](#)
- [Contact Us](#)
- [RSS Feeds](#)



[Interviews](#)

[Analyses](#)

[Data & Rankings](#)

2009 : October 2009 - Fast Breaking Papers : Hongcai Joe Zhou on Hydrogen Storage in Metal-Organic Frameworks

FAST BREAKING PAPERS - 2009

October 2009



Hongcai Joe Zhou talks with *ScienceWatch.com* and answers a few questions about this month's Fast Breaking Paper in the field of Environment/Ecology. The author has also sent along an image of his work.



Article Title: The current status of hydrogen storage in metal-organic frameworks

Authors: Zhao, D;Yuan, DQ;Zhou, HC

Journal: ENERGY ENVIRON SCI

Volume: 1

Issue: 2

Page: 222-235

Year: 2008

* Miami Univ, Dept Chem & Biochem, Oxford, OH 45056 USA.

* Miami Univ, Dept Chem & Biochem, Oxford, OH 45056 USA.

SW: Why do you think your paper is highly cited?

It is one of the first review papers focusing on hydrogen storage in metal-organic frameworks (MOFs).

SW: Does it describe a new discovery, methodology, or synthesis of knowledge?

It is a paper reviewing the most recently reported research in hydrogen storage using MOFs, including the research results from my own research group. It describes recent discoveries in this field of research.

SW: Would you summarize the significance of your paper in layman's terms?

The paper summarizes the latest findings in the study of hydrogen storage utilizing new inorganic-organic hybrid materials.

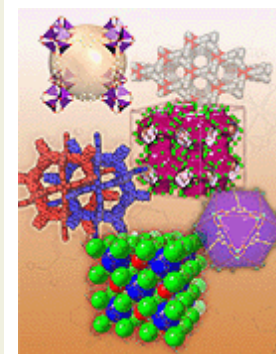
SW: How did you become involved in this research, and were there any problems along the way?

Our research in hydrogen storage has been supported by the US DOE through the [Hydrogen Sorption Center of Excellence](#). We are still trying to improve the hydrogen uptake at room temperature and applicable pressure (50 to 100 bar).

SW: Where do you see your research leading in the future?

Hydrogen storage research will eventually lead to the discovery of new adsorptive materials that can store hydrogen near room temperature under applicable pressure, paving

Figure 1 [\[+\] details](#)



Hydrogen Storage in Metal-Organic Frameworks (MOFs)... [->|](#)

the way for the ultimate commercialization of hydrogen fuel-cell-driven vehicles.

SW: Do you foresee any social or political implications for your research?

If a breakthrough is achieved in this research area, hydrogen will become the ultimate clean energy carrier for transportation because there will be no pollutant released, the only end product of the energy-releasing procedure being water!

Hong-Cai JOE Zhou, Professor
Department of Chemistry
Texas A&M University
College Station, TX, USA

Figure 1:

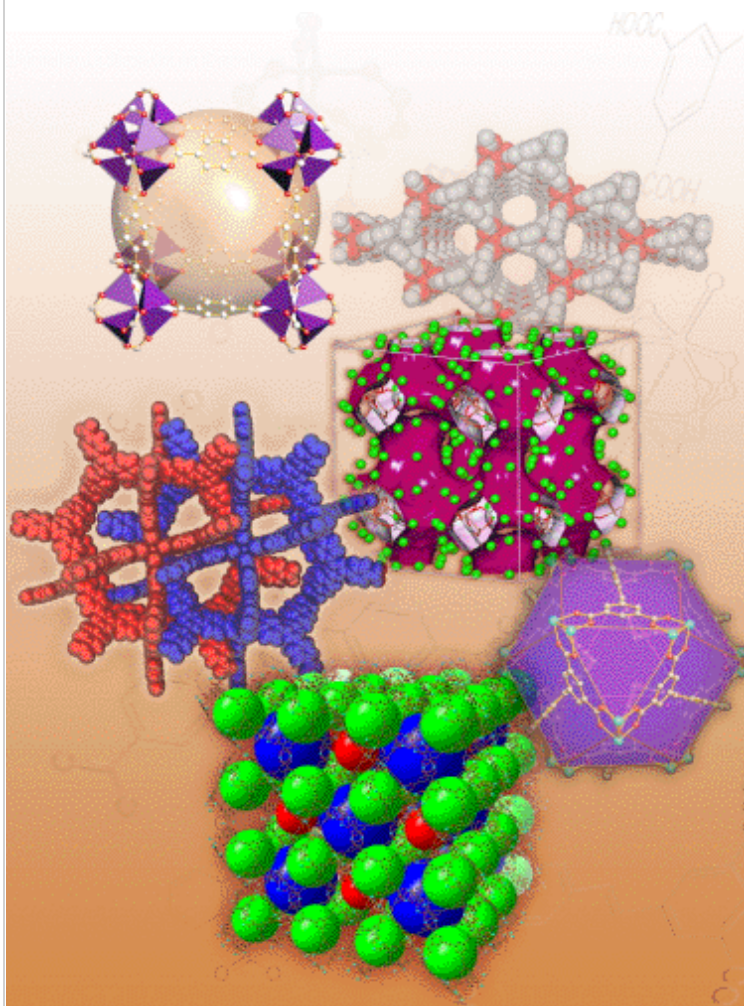


Figure 1:

Hydrogen Storage in Metal-Organic Frameworks (MOFs).

For any potential hydrogen-storage system for transportation, raw uptake capacity must be balanced with the desirable kinetics and thermodynamics of uptake and release. MOFs provide unique systems with large overall pore volumes and surface areas, adjustable pore sizes, and tunable framework–adsorbate interaction by ligand functionalization and metal choice. These remarkable materials can potentially fill the niche between other physisorbents such as activated carbon, which have similar uptake at low temperatures but low affinity for hydrogen at ambient temperature, and chemical sorbents such as hydrides, which have high hydrogen uptakes but undesirable release kinetics and thermodynamics.

KEYWORDS: WALLED CARBON NANOTUBES; GAS SORPTION PROPERTIES; HIGH H-2 ADSORPTION; MICROPOROUS COORDINATION POLYMERS; HIGH-CAPACITY HYDROGEN; HIGH THERMAL-STABILITY; MOLECULAR-HYDROGEN; BUILDING-BLOCKS; POROUS MATERIAL; SELECTIVE SORPTION.

2009 : [October 2009 - Fast Breaking Papers](#) : [Hongcai Joe Zhou](#) on [Hydrogen Storage in Metal-Organic Frameworks](#)