

Hexiang Deng

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■ PROFESSIONAL CAREER

Professor of Chemistry, Wuhan University	2013 to present
Postdoc Research Fellow, Lawrence Berkeley National Lab	2012 to 2013

■ EDUCATION

University of California-Los Angeles	Ph.D in Chemistry, 2011
Advisor: Omar M. Yaghi	
Fudan University	B.S. in Chemistry, 2007
Advisor: Dongyuan Zhao	

■ WORKING/TEACHING EXPERIENCE

Thousand Talent Plan, China	2013
Award for Outstanding Chinese Student Studying Abroad,	2011
Consulate General of the People's Republic of China in Los Angeles	
Excellence in Academics and Research Award, UCLA	2010

■ RESEARCH INTERESTS

1. Carbon Dioxide Capture and Conversion

CO₂ (carbon dioxide) emission has caused a series of negative impacts to our environment, such as global warming and ocean acidification. It is imperative to find a solution not only to capture CO₂ but also to convert it into useful product, such as methanol like the photosynthesis, but in a more efficient manner. One of our mission is to use nano-porous crystals to capture CO₂ and convert it in-situ.

2. Hydrogen Storage

As a next generation fuel, hydrogen has attract enough attention in the past few decades. Aside from large scale production of H₂ through water splitting, the storage is another critical issue. Our strategy is to develop porous materials with extremely large surface area to store H₂ through physical adsorption

3. Enrichment and Storage of Natural Gas

Nowadays, natural gas become a popular fuel option due to less hazardous gas emission and lower cost in comparison to gasoline. With the design and application of novel porous materials, we aim at obtaining natural gas will higher quality during

the mining process and store them more efficiently.

4. Production of Green Porous Materials From Natural Materials

The synthesis of porous materials usually involve extensive use of industrial chemical products, which eventually add more burden to the self-cleaning system of the earth. Replacement of traditional industrial chemicals with natural product such as glucose and amino acid to make useful porous materials will be a greener process.

■ PUBLICATIONS

14. H. S. Cho, H. Deng, K. Miyasaka, Z. Dong, M. Cho, A. V. Neimark, J. K. Kang, O. M. Yaghi and O. Terasaki, Extra Adsorption and Adsorbate Superlattice Formation in Metal-Organic Frameworks, *Nature*, 2015, ASAP
13. X. Wang, Z., Dong, H. Cheng, S. Wan, W. Chen, M. Zou, J. Huo, H. Deng, X. Zhang, A Multifunctional Metal-Organic Framework Based Tumor Targeting Drug Delivery System for Cancer Therapy. *Nanoscale*, **7**, 16061-16070 (2015).
12. F.-S. Ke, Y.-S. Wu, H. Deng, Metal-Organic Frameworks for Lithium Ion Batteries and Supercapacitors. *J. of Solid State Chem.*, **223**, 109-121 (2015).
11. Y.-B. Zhang, H. Furukawa, N. Ko, W. Nie, H. J. Park, S. Okajima, K. E. Cordova, H. Deng, J. Kim, O. M. Yaghi, Introduction of Functionality, Selection of Topology, and Enhancement of Gas Adsorption in Multivariate Metal-Organic Framework-177. *J. Am. Chem. Soc.*, **137**, 2641-2650 (2015).
10. Wang, L. J., Deng, H., Furukawa, H., Gándara, F., Cordova, K. E., Peri, D. & Yaghi, O. M. Synthesis and Characterization of Metal-Organic Framework-74 Containing 2, 4, 6, 8, and 10 Different Metals. *Inorg. Chem.*, **53**, 5881(2014)
9. Li, D., Furukawa, H., Deng, H., Liu, C., Yaghi, O. M., & Eisenberg, D. S. Designed Amyloid Fibers as Materials for Selective Carbon Dioxide Capture. *Proc. Natl. Acad. Sci. U.S.A.*, **111**, 191 (2014)
8. Kong, X.[†], Deng, H.[†], Yan, F.[†], Kim, J., Swisher, J. A., Smit, B., Yaghi, O. M., & Reimer, J. A. Mapping of Functional Groups in Metal-Organic Frameworks. *Science* **341**, 882-885 (2013)
7. Brown, J., Henderson, B. L., Kiesz, M. D., Whalley, A. C., Morris, W., Grunder, S., Deng, H., Furukawa, H., Zink, J. I., Stoddart, J. F., & Yaghi, O. M. Photophysical Pore Control in an Azobenzene-Containing Metal-Organic Framework. *Chem. Sci.* **4**, 2858-2864 (2013)
6. Deng, H.[†], Grunder, S.[†], Cordova, K., Valente, C., Furukawa, H., Hmadeh, M., Gándara, F., Walley, A. C., Liu, Z., Asahina, S., Kazumori, H., O'Keeffe, M., Terasaki, O., Stoddart, J. F., & Yaghi, O.M. Large pore apertures in a series of metal-organic frameworks. *Science* **336**, 1018-1023 (2012)
5. Deng, H., Olson, M. A., Stoddart, J. F., & Yaghi, O. M. Robust dynamics. *Nature Chem.*

- 2, 439-443 (2010)
4. Deng, H., Doonan, C. J., Furukawa, H, Ferreira, R. B., Towne, J., Knobler, C.B., Wang, B., & Yaghi, O. M. Multiple functional groups of varying ratios in metal-organic frameworks. *Science* **327**, 846850 (2010)
3. Yan, X., Wei, G., Zhao, L., Yi, J., Deng, H., Wang, L., Lu, G., & Yu, C.
Synthesis and in vitro bioactivity of ordered mesostructured bioactive glasses with adjustable pore sizes. *Microporous Mesoporous Mater.* **132**, 282-289 (2010)
2. Yan, X., Huang, X., Yu, C., Deng, H., Wang, Y., Zhang, Z., Qiao, S., Lu, G., & Zhao, D.
The in-vitro bioactivity of mesoporous bioactive glasses. *Biomaterials* **27**, 3396-3403 (2006)
1. Yan, X., Deng, H., Huang, X., Lu, G., Qiao, S., Zhao, D., & Yu, C.
Mesoporous bioactive glasses. I. Synthesis and structural characterization. *J. Non-Cryst. Solids*, **351**, 3209-3217 (2005)

■ TEACHING

Intermediate Inorganic Chemistry, Chemical Structure, Organic Synthesis Lab

■ PROFESSIONAL AFFILIATIONS

Member, American Chemical Society (ACS)

Member, the center on Functional Engineered Nano Architectonics (FENA)

■ MEETINGS

July 2015

3rd International Conference on Advanced Complex Inorganic Nanomaterials
Belgium

Aug 2014

244th ACS National Meeting San Francisco, CA

May 2013

8th International Mesostructure Material Symposium Awaji, Japan

Aug 2011

242th ACS National Meeting Denver, CO

May 2011

FENA 2011 Annual Review Meeting Boston, MA

Mar 2011

241th ACS National Meeting Anaheim, CA

Dec 2010

The 2010 International Chemical Congress of Pacific Basin Societies
Honolulu, HI

Nov 2010

Seaborg Symposium, California NanoSystems Institute

Los Angeles, CA

Mar 2010

239th ACS National Meeting

San Francisco, CA

Jan 2010

FENA 2010 Annual Meeting

Los Angeles, CA