

## BO WANG, PH.D.

Professor of Chemistry, Beijing Institute of Technology, China  
**National Distinguished Young Scientist; National 1000 Plan (Youth)**  
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### PROFESSIONAL EXPERIENCE

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#### Beijing Institute of Technology (BIT)

Sep, 2011 –

##### Present

##### *Professor, Vice Dean, School of Chemistry and Chemical Engineering*

- Founded the Lab of Porous Functional Materials
- Designed and synthesized series of highly porous MOF composites, BITs, for pollutants capture and decomposition
- Proposed and demonstrated new methods for MOF film and membrane preparation
- Successfully linked up MOF crystals through covalent bonds via the method of post-synthetic polymerization (PSP)
- Grew MOF thin films on various substrates using facile hot pressing strategy (HoP)
- Successfully processed MOFs into desired shapes, from 0D nanocomposites, 1D MOF fibers, 2D MOF films to 3D MOF foams for environmental and energy applications
- Proposed and designed new MOF filtration systems, MOFilters, for gas, liquid and solid pollutants (i.e. PM2.5) capture and filtration
- Designed fluorescence MOF devices for ultra sensitive detection of explosives

#### BASF/California NanoSystem Institute (CNSI)

Jan. 2008- Sep, 2011

##### *Senior Research Scientist and project leader (Los Angeles, CA)*

- Co-founded the CNSI-BASF lab and started and trained a team on the catalysis project
- Developed new high efficient catalysts based on ZIFs for hydro-cracking in petroleum industry

#### Procter & Gamble

##### *Research Associate and Market Analyst, (Beijing, China)*

2003

- Led the project for technical modeling of surfactants

### EDUCATION

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#### UCLA – Department of Chemistry and Biochemistry

Los Angeles, CA

Ph.D. of Chemistry and Material Science

Dec, 2008

- Designed and Synthesized the largest and most sophisticated crystals in human history
- Invented a new type of functional materials as nano-reservoirs to capture CO<sub>2</sub> from atmosphere

#### University of Michigan– Department of Chemistry and Biochemistry

Ann Arbor, MI

M.S. of Material Chemistry

Feb. 2006

#### Peking University– College of Chemistry and Molecular Engineering

Beijing, China

B.S., Chemistry

Jul. 2004

### SERVICES

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**Chinese Chemical Letters**, Editor

**Scientific Reports**, Editor

**Materials Chemistry Frontiers**, Guest Editor, Special Issue of Metal-Organic Frameworks

**Chinese Journal of Chemistry**, Guest Editor, Special Issue of Metal-Organic Frameworks

### SELECTED PUBLICATIONS

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- [1] **B. Wang**, A. P. Côté, H. Furukawa, M. O’Keeffe and O. M. Yaghi\* Colossal Cages in Zeolitic Imidazolate Frameworks as Selective Carbon Dioxide Reservoirs, *Nature*, 2008, 453, 207–211.
- [2] Y. Chen, S. Zhang, S. Cao, S. Li, F. Chen, S. Yuan, J. Zhou, X. Feng, X. Ma and **B. Wang**\* Roll-to-Roll Production of Metal-Organic Framework Coatings for Particulate Matter Removal, *Adv. Mater.*, 2017, in press, 10.1002/adma.201606221 **Reported by Nature, Research Highlights**
- [3] S. Wang, Q. Wang, P. Shao, Y. Han, X. Gao, L. Ma, S. Yuan, X. Ma, J. Zhou, X. Feng, and **B. Wang**\* Exfoliation of Covalent Organic Frameworks into Few-Layer Redox-Active Nanosheets as Cathode Materials for Lithium-Ion Batteries, *J. Am. Chem. Soc.*, 2017, 139, 4258–4261.
- [4] T. Kitao, Y. Zhang, S. Kitagawa, **B. Wang**\* and T. Uemura\* Hybridization of MOFs and Polymers, *Chem. Soc.*

*Rev.*, 2017, in press, 10.1039/c7cs00041c

- [5] Y. Chen, X. Huang, S. Zhang, S. Li, S. Cao, X. Pei, J. Zhou, X. Feng and **B. Wang\*** Shaping of Metal-Organic Frameworks: from Fluid to Shaped Bodies and Robust Foams, *J. Am. Chem. Soc.*, 2016, 138, 10810–10813.
- [6] N. Ding, H. Li, X. Feng,\* Q. Wang, S. Wang, L. Ma, J. Zhou and **B. Wang\*** Partitioning MOF-5 into Confined and Hydrophobic Compartments for Carbon Capture under Humid Conditions, *J. Am. Chem. Soc.*, 2016, 138, 10100–10103.
- [7] Y. Zhang, S. Yuan, X. Feng, H. Li, J. Zhou and **B. Wang\*** Preparation of Nanofibrous Metal-Organic Framework Filters for Efficient Air Pollution Control, *J. Am. Chem. Soc.*, 2016, 138, 5785–5788. (**Highlighted by Emerging Applications of Metal-Organic Frameworks & Covalent Organic Frameworks, ACS Virtue Issue**)
- [8] Y. Chen, S. Li, X. Pei, J. Zhou, X. Feng, S. Zhang, Y. Cheng, H. Li, R. Han and **B. Wang\*** A Solvent-Free Hot-Pressing Method for Preparing Metal-Organic Framework Coatings, *Angew. Chem. Int. Ed.*, 2016, 55, 3419–3423
- [9] Q. Wang, X. Feng, S. Wang, N. Song, Y. Chen, W. Tong, Y. Han, L. Yang\* and **B. Wang\*** Metal-Organic Framework Templated Synthesis of Copper Azide as the Primary Explosive with Low Electrostatic Sensitivity and Excellent Initiation Ability, *Adv. Mater.*, 2016, 28, 5837–5843
- [10] Y. Zhang, X. Feng,\* H. Li, Y. Chen, J. Zhao, S. Wang, L. Wang and **B. Wang\*** Photoinduced Postsynthetic Polymerization of a Metal–Organic Framework toward a Flexible Stand-Alone Membrane, *Angew. Chem. Int. Ed.* 2015, 54, 4259–4263. (**‘hot paper’ and ‘cover story’; Reported by Nature Material, Research Highlights**)
- [11] L. Wang, X. Feng, L. Ren, Q. Piao, J. Zhong, Y. Wang and **B. Wang\*** Flexible Solid-State Supercapacitor Based on a Metal–Organic Framework Interwoven by Electrochemically-Deposited PANI, *J. Am. Chem. Soc.*, 2015, 137, 4920–4923.
- [12] Y. Guo, X. Feng,\* T. Han, S. Wang, Z. Lin, Y. Dong and **B. Wang\*** Tuning the Luminescence of Metal-Organic Frameworks for Detection of Energetic Heterocyclic Compounds, *J. Am. Chem. Soc.*, 2014, 136, 15485–15488. (**Highlighted by ACS ‘Noteworthy Chemistry’**)
- [13] L. Tan, H. Li, Y. Qiu, D. Chen, X. Wang, R. Pan, Y. Wang, S. Zhang, **B. Wang\*** and Y. Yang\* Stimuli-Responsive Metal-Organic Frameworks Gated by Pillar[5]arene Supramolecular Switches, *Chem. Sci.*, 2015, 6, 1640–1644. (**Cover Story**)
- [14] Y. Guo, S. Gu, X. Feng,\* J. Wang, H. Li, T. Han, Y. Dong, T. D. James, X. Jiang\* and **B. Wang\*** 3D Cross-Correlative Matrix Temperature Detection and Non-Invasive Thermal Mapping based on a Molecular Probe, *Chem. Sci.*, 2014, 5, 4388–4393.
- [15] L. Tan, H. Li, Y. Tao, S. Zhang,\* **B. Wang\*** and Y. Yang\* Pillar[5]arene-Based Supramolecular Organic Frameworks for Highly Selective CO<sub>2</sub>-Capture at Ambient Conditions, *Adv. Mater.* 2014, 26, 7027–7031.
- [16] J. Zhou, R. Li, X. Fan, Y. Chen, R. Han, W. Li, J. Zheng, **B. Wang\*** and X. Li\* Rational Design of a Metal-Organic Framework Host for Sulfur Storage in Fast, Long-Cycle Li-S Batteries, *Energ. Environ. Sci.*, 2014, 7, 2715–2724.
- [17] L. Wang, Y. Han, X. Feng, J. Zhou, P. Qi and **B. Wang\*** Metal–organic Frameworks for Energy Storage: Batteries and Supercapacitors, *Coord. Chem. Rev.*, 2016, 307, 361–381 (Review IF=12.2)
- [18] S. Li, X. Fu, J. Zhou,\* Y. Han, P. Qi, X. Gao, X. Feng and **B. Wang\*** An Effective Approach to Improve the Electrochemical Performance of LiNi<sub>0.6</sub>Co<sub>0.2</sub>Mn<sub>0.2</sub>O<sub>2</sub> Cathode by an MOF-Derived Coating, *J. Mater. Chem. A*, 2016, 4, 4823–4827.
- [19] J. Zhao, Y. Wang, J. Zhou,\* P. Qi, S. Li, K. Zhang, X. Feng, **B. Wang\*** and C. Hu\* A Copper(II)-Based MOF film for Highly Efficient Visible-Light-Driven Hydrogen Production, *J. Mater. Chem. A*, 2016, 4, 7174–7177.
- [20] L. Wang, Y. Wu, R. Cao, L. Ren, M. Chen, X. Feng, J. Zhou and **B. Wang\*** Fe/Ni Metal–Organic Frameworks and Their Binder-Free Thin Films for Efficient Oxygen Evolution with Low Overpotential, *ACS Appl. Mater. Interfaces*, 2016, 8, 16736–16743.
- [21] Y. Zhang, X. Feng, S. Yuan, J. Zhou and **B. Wang\*** Challenges and Recent Advances in MOF–Polymer Composite Membranes for Gas Separation, *Inorg. Chem. Front.*, 2016, 3, 896–909
- [22] P. Qi, Y. Han, J. Zhou, X. Fu, S. Li, J. Zhao, L. Wang, X. Fan, X. Feng and **B. Wang\*** MOF Derived Composites for Cathode Protection: Coatings of LiCoO<sub>2</sub> from UiO-66 and MIL-53 as Ultra-Stable Cathodes, *Chem. Commun.*, 2015, 51, 12391–12394.
- [23] Y. Chen, X. Feng, X. Huang, Z. Lin, X. Pei, S. Li, J. Li, S. Wang, R. Li and **B. Wang\*** A Tale of Copper Coordination Frameworks: Controlled Single-Crystal-to-Single-Crystal Transformations and Their Catalytic C-H Bond Activation Properties, *Chem. Eur. J.*, 2015, 21, 13894–13899.
- [24] Y. Han, P. Qi, X. Feng, S. Li, X. Fu, H. Li, Y. Chen, J. Zhou, □ X. Li and **B. Wang\*** In Situ Growth of MOFs on the Surface of Si Nanoparticles for Highly Efficient Lithium Storage: Si@MOF Nanocomposites as Anode Materials for Lithium-Ion Batteries, *ACS Appl. Mater. Interfaces*, 2015, 7, 2178–2182.
- [25] Y. Han, P. Qi, J. Zhou, X. Feng, S. Li, X. Fu, J. Zhao, D. Yu, and **B. Wang\*** Metal–Organic Frameworks (MOFs)

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- [26] Y. Han, P. Qi, S. Li, X. Feng, J. Zhou, H. Li, S. Su, X. Li, and **B. Wang\*** A Novel Anode Material Derived from Organic-Coated ZIF-8 Nanocomposites with High Performance in Lithium Ion Battery, *Chem. Commun.*, 2014, 50, 8057–8060.
- [27] X. Huang, Y. Chen, Z. Lin, X. Ren, Y. Song, Z. Xu, X. Dong, X. Li, C. Hu\* and **B. Wang\*** Zn-BTC MOFs with Active Metal Sites Synthesized via a Structural-Directing Approach for Highly Efficient Carbon Conversion, *Chem. Commun.*, 2014, 50, 2624–2627.
- [28] R. Li, X. Ren, X. Feng, X. Li, C. Hu\* and **B. Wang\*** A Highly Stable Metal- and Nitrogen-Doped Nanocomposite Derived from Zn/Ni-ZIF-8 capable of CO<sub>2</sub> Capture and Separation, *Chem. Commun.*, 2014, 50, 6894–6897.
- [29] Y. Chen, X. Huang, X. Feng, J. Li, Y. Huang, J. Zhao, Y. Guo, X. Dong, R. Han, P. Qi, Y. Han, H. Li, C. Hu\* and **B. Wang\*** Facile Fabrication of Magnetically Recyclable Metal-Organic Framework Nanocomposites for Highly Efficient and Selective Catalytic Oxidation of Benzylic C-H Bonds, *Chem. Commun.*, 2014, 50, 8374–8377.
- [30] B. Chen, X. Huang, **B. Wang\*** Z. Lin, J. Hu, Y. Chi and C. Hu\* Three New Imidazole-Functionalized Hexanuclear Oxidovanadium Clusters with Exceptional Catalytic Oxidation Properties for Alcohols, *Chem. Eur. J.*, 2013, 19, 4408–4413.
- [31] X. Huang, X. Zhang, D. Zhang, S. Yang, X. Feng, J. Li, Z. Lin, J. Cao, R. Pan, Y. Chi,\* **B. Wang\*** and C. Hu\* Binary Pd-Polyoxometalates and Isolation of a Ternary Pd-V-Polyoxomolybdates Active Species for Selective Aerobic Oxidation of Alcohols, *Chem. Eur. J.*, 2014, 20, 2557–2564.
- [32] J. Zhao, H. Li, Y. Han, R. Li, X. Ding, X. Feng\* and **Bo Wang\*** Chirality From Substitution: Enantiomer Separation via a Modified Metal-Organic Framework, *J. Mater. Chem. A*, 2015, 3, 12145 – 12148.
- [33] J. Zhou, X. Yu, X. Fan, X. Wang, H. Li, Y. Zhang, W. Li, J. Zheng, **B. Wang\*** and X. Li\* The Impact of the Particle Size of a Metal–Organic Framework for Sulfur Storage in Li–S Batteries, *J. Mater. Chem. A*, 2015, 3, 8272–8275
- [34] R. Li, X. Ren, J. Zhao, X. Feng, X. Jiang, X. Fan, Z. Lin, X. Li, C. Hu\* and **B. Wang\*** Polyoxometallates Trapped in a Zeolitic Imidazolate Framework Leading to High Uptake and Selectivity of Bioactive Molecules, *J. Mater. Chem. A*, 2014, 2, 2168–2173.
- [35] R. Li, X. Ren, H. Ma, X. Feng, Z. Lin, X. Li, C. Hu\* and **B. Wang\*** Nickel-Substituted Zeolitic Imidazolate Frameworks for Time-Resolved Alcohol Sensing and Photo Catalysis under Visible Light, *J. Mater. Chem. A*, 2014, 2 (16), 5724–5729.
- [36] H. Li, X. Feng,\* Y. Guo, D. Chen, R. Li, X. Ren, X. Jiang, Y. Dong and **B. Wang\*** A Malonitrile-Functionalized Metal-Organic Framework for Hydrogen Sulfide Detection and Selective Amino Acid Molecular Recognition, *Sci. Rep.* 2014, 4, 4366–4370
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- [45] X. Pei, Y. Chen, S. Li, S. Zhang, X. Feng, J. Zhou and **B. Wang\*** Metal-Organic Frameworks Derived Porous Carbons: Syntheses, Porosity and Gas Sorption Properties, *Chin. J. Chem.*, 2016, 34, 157–174.
- [46] S. Li, Y. Chen, X. Pei, S. Zhang, X. Feng, J. Zhou and **B. Wang\*** Water Purification: Adsorption over Metal-Organic Frameworks, *Chin. J. Chem.*, 2016, 35, 175–185.
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Composites and Performance of the Composites for Adsorb Metal Ions, *中国科学:化学*, 2014, 44, 1521–1527.

- [48] R. Banerjee, A. Phan, **B. Wang**, C. Knobler, H. Furukawa, M. O’Keeffe and O. M. Yaghi\* High-Throughput Synthesis of Zeolitic Imidazolate Frameworks and Application to CO<sub>2</sub> Capture, *Science*, 2008, 319, 939–943.
- [49] H. Deng, C. J. Doonan, H. Furukawa, R. B. Ferreira, J. Towne, C. B. Knobler, **B. Wang** and O. M. Yaghi\* Multiple Functional Groups of Varying Ratios in Metal-Organic Frameworks, *Science*, 2010, 327, 846–850.
- [50] X. Fan, W. Wang, W. Li, J. Zhou, **B. Wang**, J. Zheng,\* X. Li Highly Porous ZIF-8 Nanocrystals Prepared by a Surfactant Mediated Method in Aqueous Solution with Enhanced Adsorption Kinetics, *ACS Appl. Mater. Interfaces*, 2014, 6, 14994–14999.
- [51] Z. Lu, C. B. Knobler, H. Furukawa, **B. Wang**, G. Liu and O. M. Yaghi\* Synthesis and Structure of Chemically Stable Metal-Organic Polyhedra, *J. Am. Chem. Soc.* 2009, 131, 12532–12533.
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