

## Qiang Wei

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### Professional Preparation:

Shandong University, China	Chemical Engineering	B.E.	1996
Fujian Institute China	Chemistry	M.Sc.	1999
Queen's University Belfast, UK,	Chemistry	Ph.D.	2005
University of California at Los Angeles		Post-Doc	2005-2007
Las Alamos National Laboratory		Post-Doc	2007-2010

### Appointments:

2014 – present	Trevi Systems, Inc., Director of Membrane Engineering
2013 – present	New Mexico Highlands University, Research Professor
2014 – present	New Mexico Institute of Mining and Technology, Adjunct Professor
2010 – 2013	Santa Fe Science and Technology, Chief Technology Officer
2007 – 2010	Los Alamos National Laboratory, Post Doctoral Fellow
2005 – 2007	University of California at Los Angeles, Post Doctoral Fellow
2004 – 2005	University of Manchester, UK, Research Associate

### Products Ten Publications/Products Most Relevant to Proposed Project

Ordonez, C., M.S. Fonari, F. Lindine, Q. Wei, & T. Timofeeva. 2014. How structure-directing cations tune the fluorescence of Metal-Organic Frameworks. *Crystal Growth and Design*. Submitted. Provisional patent application filed as first inventor. (U.S. Serial No. 61/980,227).

Kenarsari, S.D., D. Yang, G. Jiang, S. Zhang, J. Wang, A.G. Russell, Q. Wei, & M. Fan. 2013. Review of recent advances in carbon dioxide separation and capture. *RSC Advances*. 3: 22739-22773. doi:10.1039/C3RA43965H.

Wei, Q., D. Yang, M. Fan, & H.G. Harris. 2013. Applications of nanomaterial-based membranes in pollution control. *Critical Reviews in Environmental Science and Technology*. 43(22): 2389-2438. doi:10.1080/10643389.2012.672066.

Wei, Q., D. Yang, T.E. Larson, T.L. Kinniburgh, R. Zou, N.J Henson, T. Timofeeva, H. Xu, Y. Zhao, & B.R. Mattes. 2012. Kinetic hysteresis in gas adsorption behavior for a rigid MOF arising from zig-zag structures. *Journal of Materials Chemistry*. 22: 10166-10171. doi:10.1039/C2JM15860D.

Wei, Q., H.W. Xu, X.H. Yu, T. Shimada, M.S. Rearick, D.D. Hickmott, Y.S. Zhao, & S.N. Luo. 2011. Shock resistance of metal-organic framework Cu-1,3,5-benzenetricarboxylate with and without ferrocene inclusion. *Journal of Applied Physics*. 110(5): 056102.

Laye, R.H., Q. Wei, P.V. Mason, M. Shanmugam, S.J. Teat, E.K. Brechin, D. Collison, & E.J. McInnes. 2006. A Highly Reduced Vanadium(III/IV) Polyoxovanadate Comprising an Octavanadyl Square-Prism Surrounding a Dimetallic Vanadium(III) Fragment. *Journal of the American Chemical Society*. 128(8): 9020-1.

Wei, Q., & S.L. James. 2005. A metal-organic gel used as a template for a porous organic polymer. *Chem. Communications*. 1555-1556. doi:10.1039/B418554D.

Wei, Q., M. Nieuwenhuyzen, F. Meunier, C. Hardacre, & S.L. James. 2004. Guest sorption and desorption in the metal-organic framework [Co(INA)<sub>2</sub>] (INA = isonicotinate)—evidence of intermediate phases during desorption. *Dalton Transactions*. June 21(12): 1807-1811. doi:10.1039/B404485A.

## Synergistic Activities

- Teaching and research: NM Highlands University: Conduct research on nanoscale porous materials (eg. metal-organic frameworks, aerogels) for photoluminescence; Supervise students.
- Technology Officer: Santa Fe Science and Technology: Plan, lead, and conduct team research on developing new hollow fiber based membranes for applications including water purification, desalination, osmosis power development, and gas purification. Projects included: Highly water permeable hollow fiber for forward osmosis application sponsored by Trevi System; CO<sub>2</sub> capture of using integrated skin membranes collaborated with the University of Texas at Dallas; Pressure Retarded Osmosis technology for energy harvesting sponsored by Statkraft, Electroactive polymers for free piston stirling engine power generation sponsored by NASA (SBIR Phase I); and Environmentally degradable conductive fiber sponsored by ATK.
- Post-Doctoral Fellowship activities: (LANL – H. Xu) Research on nanoporous materials for hydrogen storage, CO<sub>2</sub> capture and membrane distillation; Developed in situ gas cell (up to 50 bar) with gas manifold for hydrogen storage, an ultrahigh gas cell (up to 8000 bar) for extreme condition studies; and electric cell for battery materials in Lujan Neutron Center in LANSCE. (UCLA – Dr. O. Yaghi) Conducted research on the MOFs with amidinate ligands, and active metal sites such as Pt, for hydrogen storage, developed the postfunctionalization of MOFs, and optimized large scale synthesis of MOFs such as MOF-5, IRMOF-3, MOF-177, ZIF-8 and COF-1 etc.
- EPSCoR activities: Seed grant: “Synthesis, Structural Studies and Characterization of Charge Transfer Materials for Solar Cells Applications and Metal Organic Frameworks for Gas Storage” (with Dr. Timofeeva); NM Institute of Mining and Technology (Adjunct): “Osmotic Power Development: Guide and train students on fibers spinning and analysis of mass transfer properties”.
- Other external funding: (LANL – DOE) Capacitive Hydrogen Storage Systems: Molecular Design of Structured Dielectrics Improved Energy Efficiency in Refineries Through Hollow Fiber Technology Novel Inclusion Compounds for Hydrogen Storage;

## Collaborators during last 48 months

Carmignani, G. (Trevi Systems)  
El-Kaderi, H.M. (VCU)  
Fan, M. (U Wyoming)  
Fonari, M.S. (Inst Applied Physics - Moldavia)  
Magnar, G. (Statkraft)  
Harris, H.G. (U Wyoming)  
Henson, N.J. (LANL)  
Hickmott, D.D. (LANL)  
Hoek, E. (UCLA)  
Huang, F. (NM Tech)  
Jiang, G. (U Wyoming/GA Inst Tech)  
Kenarsari, S.D. (U Wyoming)  
Kinnibrugh, T.L. (APS, ANL)  
Larson, T.E. (U TX - Austin)

Lindline, F. (NMHU)  
Luo, O. (NMSU)  
Luo, S.N. (Sichuan Univ)  
Mattes, B.R. (Santa Fe Sci & Tech, Inc.)  
Nicoll, P. (Modern Water-plc)  
Ordonez, C. (NMHU)  
Rearick, M.S. (LANL)  
Russell, A.G. (GA Inst Tech)  
Shimada, T. (LANL)  
Timofeeva, T. (NMHU)  
Wang, J. (Henan Normal Univ, China)  
Wang, Y. (Oakland University)  
Xu, H. (LANL)  
Xu, G. (CMU and Tsinghua University)

Yu, X.H. (Chinese Acad Sciences)  
Yang, D. (LANL)  
Zhang, S. (Chinese Acad Sciences)  
Zhao, Y.S. (U Nevada)  
Zou, R. (Peking Univ)

**Graduate Advisor(s) and Postdoctoral Sponsor(s)**  
Zhuang, B. (MS -Fujian Inst Research, China)  
James, S. (PhD – Queen’s Univ, Belfast)  
Yahghi, O. (UCLA Postdoc)  
Xu, H. (LANL Postdoc)