

## WEI WANG

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### PROFESSIONAL EXPERIENCE

**Visitor, Research Applications Laboratory, National Center for Atmospheric Research, May 2019 – present.**

**Research Associate, Institute of Arctic and Alpine Research, University of Colorado, December 2013 – April 2019.**

**Visitor, Atmospheric Chemistry Division, National Center for Atmospheric Research, Fall, 2012 - Fall, 2013.**

#### Projects:

- Leaf-level to canopy-scale atmospheric nitrogen oxides (NO<sub>x</sub>) and ozone (O<sub>3</sub>) bidirectional exchanges in a hardwood forest in North America. **(co-PI)**
- Monitoring halogenated atmospheric trace gases and non-methane hydrocarbon compounds at German Umweltbundesamt Station Schneefernerhaus, Germany
- Ozone reactivity of biogenic volatile organic compounds (BVOCs) in a temperate forest in southeast United States
- Identification and semi-quantitation of BVOCs from lab-cultured fungi
- Exposure to volatile organic compounds (VOCs) of Wyoming farmers living and working near oil and gas fields
- In-situ ground-based VOC monitoring during the Front Range Air Pollution and Photochemistry Experiment (FRAPPE) campaign, 2014
- Intercomparison of measurement methods for oxygenated volatile organic compounds
- Methods development and construction of a comparative reactivity measurement apparatus for determining the reactivity of hydroxyl radicals with BVOCs

#### Responsibilities and accomplishments:

- Prepared research proposals, research reports, and manuscripts for publications
- Presented research results at international conferences
- Processed, archived, and analyzed data using MATLAB and a one-dimensional atmospheric processes model
- Led the research group during a month-long field campaign in Michigan and successfully completed the research objectives
- Managed the logistics for fieldwork preparation and activities
- Automated data processing, visualization, and reporting routines to streamline the workflow for the trace gas monitoring measurements in Germany using MATLAB. Increased the productivity, number of species monitored, and data quality

- Constructed and tested measurement apparatuses and instruments including enclosure chambers for measuring trace gas exchange at plant leaf surfaces, chemiluminescence detectors for NO<sub>x</sub>, and a hydroxyl radical reactivity system, using LabView and other software to automate instrument control and data acquisition.
- Successfully deployed the above instruments in the field.
- Measured volatile organic compounds using a gas chromatography and mass spectrometry (GC/MS) system, including conducting daily operations and trouble-shooting remotely located instruments.

**Research Associate III, Department of Marine Chemistry and Geochemistry, Woods Hole Oceanographic Institution, 2002 – 2012.**

**Postdoctoral Fellow/Investigator, Department of Marine Chemistry and Geochemistry, Woods Hole Oceanographic Institution (Dr. Oliver C. Zafiriou), 1998 – 2002 and Department of Chemistry, Brandeis University (Professor I. Y. Chan), 2001 – 2002.**

Projects:

- Pool isotope exchange method for measuring photochemical production of CO<sub>2</sub> from marine dissolved organic matter.
- Photochemical production of carbon monoxide from marine dissolved organic in the Sargasso Sea.
- Photochemical production rate of hydrated electrons from dissolved organic matter.

Responsibilities and accomplishments:

- Constructed a laser pump-probe apparatus to measure hydrated electrons from photolysis of dissolved organic matter. (Won EPA Level III Scientific and Technological Achievement Award, 2008)
- Developed novel pool isotope exchange measurement methods to accurately measure CO<sub>2</sub> against a large ambient background.
- Completed design and implementation of the automation of a continuous surface water sampling system to measure carbon monoxide in sea water.
- Collected data during a three-week research cruise on board R/V Endeavor.

**Research Assistant, Department of Chemistry, Brandeis University (Professor I. Y. Chan), 1994 – 1998.**

Projects:

- Pressure effects on the tunneling of the electronic spin states of iron ions in coordination complexes.
- Pressure effects on the electronic triplet state of aromatic organic compounds

**Chemist, Harvard-Smithsonian Center for Astrophysics, 1991 – 1992. (Dr. H. E. Radford and Professor Patrick Thaddeus)**

**Assistant Engineer, Guangming Chemical Engineering Institute, Dalian, China, 1988 – 1990**

**ADDITIONAL PROFESSIONAL EXPERIENCE**

**Board member, Chinese-American Oceanic and Atmospheric Association, Colorado Chapter (2015 – present)**

**Reviewer, National Science Foundation  
Atmospheric Chemistry and Physics  
Environmental Science and Technology  
Limnology and Oceanography  
Estuarine, Coastal and Shelf Science**

**Adjunct Faculty, Natural and Applied Science Division, Northern Virginia Community College, Spring, 2009.**

**Teaching Assistant, Department of Chemistry, Brandeis University, 1992 – 1994 (Department of Chemistry Teaching Assistant Award, 1993-1994)**

**PROFESSIONAL AFFILIATION**

Member, American Geophysical Union

**EDUCATION**

Ph.D., Physical Chemistry, Brandeis University, Waltham, Massachusetts, May 1998  
*Dynamic and Static Effects of Pressure: Spin Transition Kinetics and Zero-Field Splitting*  
(Professor I. Y. Chan)

B.Sc., Chemistry, Shandong University, Jinan, China, July 1988  
*Research on Optimal Middle-Phase Microemulsion Formation Using  $C_{16}H_{33}N(CH_3)_3Br$*   
(Professor Y. Lin)

**RECENT PRESENTATIONS**

Wang W., Ganzeveld L., Helmig D., Hueber J., and Rossabi S. (2018), In Search of the Compensation Point: Leaf-Level Exchange of Nitrogen Oxides and Ozone for Selected Tree Species at a North America Temperate Forest, *poster*, Abstract A43N-3299, 2018 Fall Meeting, AGU, Washington, DC, Dec 10-14.

Wang W., Ganzeveld L., Helmig D., Hueber J., Rossabi S., and Vogel C. (2017), Leaf-level to Canopy Exchange of NO<sub>x</sub> and Ozone in a Forest at the University of Michigan Biological Station, *talk*, Abstract A53J-08, 2017 Fall Meeting, AGU, New Orleans, LA, Dec. 11-15.

Wang W., Helmig D., Hueber J., Couret C., Ries L., Claude A., Kubistin D., Plass-Duelmer C., Steinbrecher R. (2017), Comparison of VOC measurements at the two GAW stations Zugspitze and Hohenpeissenberg, *talk*, The 6<sup>th</sup> WMO-GAW Expert Workshop on Volatile Organic Compounds, INSTAAR, University of Colorado, Boulder, Colorado, May 24-26.

Wang W., Hueber J., Curtis A.J., Couret C., Ries L., and Helmig D. (2016) Halogenated Trace Gases and Volatile Organic Compounds at the Global Atmospheric Watch Observatory Schneefernerhaus/Zugspitze, Germany, *poster*, NOAA ESRL Global Monitoring Annual Conference, NOAA, Boulder, Colorado, May 17-18.

Desrochers S., Slade J., Shepson P., Alwe H., Millet D., Kavassalis S., Shi Q., Murphy J., Bloss W., Wood E., Stevens P., Mauldin L., Cantrell C., Kim T., Zhou X., Helmig D., Shutter J., Rivera J., Keutsch F., Flynn J., Alvarez S., Erickson M., Wang W., Griffin R., Bui A., Kim K., and Wallace H. (2017) Below-Canopy Isoprene Nitrate Chemistry and Dynamics in a Mixed Coniferous/Deciduous Forest Canopy during the 2016 PROPHET-AMOS Summer Field Campaign, Abstract A51B-2050 presented at 2017 Fall Meeting, AGU, New Orleans, LA, 11-15 Dec.

Smith, K.R., Helmig, D., Thompson, C.R., Wang, W., Terrell, R.M., and Lewis, A.C. (2014), Evaluation and Application of a Solid Adsorbent Method for Monitoring Exposure to Volatile Organic Compounds from Oil and Gas Operations, Abstract A13F-3241, 2014 Fall Meeting, AGU, San Francisco, Calif., 15-19 Dec

Thompson, C.R., Evans, J.M., Wang, W., Hueber, J., Smith, K.R., Terrell, R., and Helmig, D. (2014), Influence of Oil and Gas Emissions on Ambient Atmospheric Volatile Organic Compounds in Residential Areas of Northeastern Colorado, Abstract A13E-3236, 2014 Fall Meeting, AGU, San Francisco, Calif., 15-19 Dec

## **PUBLICATIONS**

Wang, W; Ganzeveld L; Rossabi, S; Hueber, J; Helmig D. Leaf-scale gas exchange of atmospheric reactive trace species (NO<sub>2</sub>, NO, O<sub>3</sub>) at a northern hardwood forest in Michigan. In preparation.

Rossabi, S; Hueber, J; Wang, W; Milmoie, P; Helmig, D. Atmospheric Distribution of Volatile Organic Oil and Natural Gas Compounds in the Northern Colorado Front Range during FRAPPE and DISCOVERY-AQ. Submitted. *Elementa*.

Wang, W; Johnson, C. G.; Takeda, K.; Zafiriou, O. C. Measuring the Photochemical Production of Carbon Dioxide from Marine Dissolved Organic Matter by Pool Isotope Exchange. *Environmental Science & Technology* 2009, 43 (22), 8604-8609.

Zafiriou, O. C.; Xie, H.; Nelson, N. B.; Najjar, R. G.; Wang, W. Diel Carbon Monoxide Cycling in the Upper Sargasso Sea Near Bermuda at the Onset of Spring and in Midsummer. *Limnology and Oceanography* 2008, 53(2), 835-850.

Wang, W.; Zafiriou, O. C.; Chan, I.-Y.; Zepp, R. G.; Blough, N. V. Production of Hydrated Electrons from Photoionization of Dissolved Organic Matter in Natural Waters\*. *Environmental Science & Technology* 2007, 41(5), 1601-1607.

Zafiriou, O. C.; Andrews, S. S.; Wang, W. Concordant Estimates of Oceanic Carbon Monoxide Source and Sink Processes in the Pacific Yield a Balanced Global "Blue-Water" CO Budget. *Global Biogeochemical Cycles* 2003, 17(1), 15/1-13.

Xie, H.; Zafiriou, O. C.; Wang, W.; Taylor, C. D. A Simple Automated Continuous Flow Equilibration Method for Measuring Carbon Monoxide in Seawater. *Environmental Science & Technology* 2001, 35(7), 1475-1480.

Schenker, S.; Hauser, A.; Wang, W.; Chan, I.-Y. High-Spin  $\rightarrow$  Low-Spin Relaxation in  $[\text{Zn}_{1-x}\text{Fe}_x(6\text{-mepy})_3(\text{py})_y\text{tren}](\text{PF}_6)_2$ . *J. Chem. Phys.* 1998, 109 (22), 9870-9878.

Schenker, S.; Hauser, A.; Wang, W.; Chan, I.-Y. Matrix Effects on the High-Spin  $\rightarrow$  Low-Spin Relaxation in  $[\text{M}_{1-x}\text{Fe}_x(\text{bpy})_3](\text{PF}_6)_2$  (M = Cd, Mn and Zn, bpy = 2,2'-bipyridine). *Chem. Phys. Lett.* 1998, 297 (3-4), 281-286.

Wang, W.; Chan, I.-Y.; Schenker, S.; Hauser, A. Pressure Effects on the HS  $\rightarrow$  LS Relaxation in  $[\text{Zn}_{1-x}\text{Fe}_x(6\text{-mepy})_3\text{tren}](\text{PF}_6)_2$ . *J. Chem. Phys.* 1997, 106 (9), 3817-3820.

Chan, I.-Y. and Wang, W. Comparative Studies of Triplet Monocyclic Aromatic Diazines under Pressure. *J. Chem. Phys.* 1996, 104 (7), 2476-2481.

Vrtilek, J. M.; Gottlieb, C. A.; Gottlieb, E. W.; Wang, W.; Thaddeus, P. Laboratory Measurement of the Rotational Spectrum of HCCS. *Astrophys. J.* 1992, 398 (1), L73-L76 Part 2.

Radford, H. E., Wang Wei, and T. J. Sears, The Rotational Spectrum of *Trans*-HOCO and DOCO. *J. Chem. Phys.* 1992, 97 (6), 3989-3995.

Lin, Y.; Shu, Y.; Li, G.; Wang, W. Research on Optimal Middle-Phase Microemulsion Formation Using  $\text{C}_{16}\text{H}_{33}\text{N}(\text{CH}_3)_3\text{Br}$ . *China Surfactant, Detergent and Cosmetics (Riyong Huaxue Gongye)* 1991, 9, 1.