Bin Xu

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PROFESSIONAL PROFILE

- Excellent project designer, investigator, planner, and operator in innovative air filtration unit research.
- Proficient in research projects: innovative filter media and unit in air filtration application, air pollution investigation in various indoor area (residence, airliner cabin, terminal building), characterization of pollutant properties (morphology, electric charge, volatility), etc.

EDUCATION, HONORS &AWARDS (selected)

- **Ph.D.** Environmental Engineering, Texas A&M University-Kingsville (2010) G.P.A. 3.9/4.0
  - 1st Ph.D. to graduate in 3 years (in the university's history)
  - 1st Ph.D. to graduate with 3 first-author journal publications (in the university's history)
  - Graduated in the top 5th percentile
  - Who's Who Among Students, Academic Excellence Award (2009)
  - American Association for Aerosol Research (AAAR), Student Grant Winner (2009)
- **M.S.** Environmental Engineering, Tianjin University, China (2007) G.P.A. 3.6/4.0
- **B.E**. Environmental Engineering, Tianjin University, China (2005) G.P.A. 3.2/4.0

PROFESSIONAL EXPERIENCE PROFILE

TONGJI UNIVERSITY, Shanghai, China 12/2011-present

Associate Professor

- Awarded a pilot research grant entitled: The effect of volatility and electric charge on particle filtration
- Assessed the novel technology on the fabric filter elements in aircraft cabin air filter applications.
- Optimized the fiber structure to achieve the balance between high filtration efficiency and dust loading capacity.
- Develop filter materials for particle and gas pollutant removal simultaneously.
- Conducted air quality monitoring campaigns at 3 primary airports in China. Characterized the impacts of PM2.5 related air pollution in terminal buildings and airliner cabins.

UNIVERSITY OF CALIFORNIA at LOS ANGELES, Los Angeles, CA 08/2010-11/2011

Post-doc Research Associate, Project Co-investigator

- Managed two research projects funded by the National Science Foundation ($400 thousand) and the Health Effects Institute ($300 thousand): responsibilities included, but were not limited to - developing the overall strategy to conduct the research; overseeing and delegating tasks to several group members; orchestrating meetings to enhance the flow of information between colleagues and group members; and optimizing methods used to extrapolate and analyze the data.
- Awarded a pilot research grant entitled: Reducing Transportation Workers' Exposure to Vehicular Emitted Ultrafine Particles
- Conducted air quality monitoring campaigns at multiple sites near Los Angeles. Characterized the impacts of traffic related air pollution on near-road air quality.
- Assessed the impact of novel technology (diesel oxidation catalyst mufflers; spiracle crankcase filtration systems; California Air Resource Board certified level-three particulate filter traps) on the reduction of human exposure to vehicular exhaust pollutants (PM2.5, Ultrafine particle, CO, CO_2, Black Carbon).
- Assessed characteristics of air pollutants (CO, CO_2, Black Carbon, particular matters) with traditional and alternative fuel types, e.g. gasoline, diesel, biodiesel, hybrid.
- Assessing the adverse health effect (cardiovascular and respiratory) of exposure to vehicular UFP using *in vivo* mouse experiment.
- Composed professional reports and oversaw the work product of several research assistants in detail for several ongoing engagements and presented the results in the international conferences.

TEXAS A&M UNIVERSITY-KINGSVILLE, Kingsville, TX 08/2007-08/2010

Research Assistant, Project Co-investigator

- Acquired the leading role of two research projects (totaling $420 thousand) extending over 3 consecutive years resulting in authoring 3 publications, delivering 2 international conference presentations and creating 1 annual report submitted to the National Science Foundation, and maintained frequent communication with co-workers to establish supportive collaboration.
- Built a mobile platform and multiple aerosol monitoring stations; developed a cost and time efficient method of on-road vehicle emission sampling; offered practical solutions to the reduction of traffic-related pollutants.
- Designed and conducted mechanistic laboratory and field experiments to assess aerosol exposure level and investigated the methods to reduce the pollutant exposure level.
- Assessed the effects of electric charge and morphology on vehicular emitted ultrafine particle dynamics
    - Characterized volatility, morphology, electric charge on the vehicular exhaust particles, and examine pollutant aging, transformation, interactions from vehicle tailpipe.
    - Designed and built mechanistic laboratory experiments to assess and simulate transport and transformation of UFPs from vehicle tailpipes to in-cabin microenvironments.
    - Generated different particles with different methods (electro-spray, atomizer, nebulizer) in the lab.
- Assessed children's exposure to ultrafine particles (UFP) from vehicular emissions**.**
    - Provide guidance to implement institutional controls to reduce children’s exposure to vehicular emitted UFPs.
- Assessing human exposure level to vehicular pollutants during commuting time.
    - Quantify vehicular pollutant exposure level in the vehicle in-cabin environment.

PUBLICATIONS & PRESENTATIONS

- Bin Xu, Shusen Liu, Junjie Liu, Yifang Zhu. ‘Effects of vehicle cabin filter efficiency on ultrafine particle concentration ratios measured in-cabin and on-roadway.’ Aerosol Science and Technology, 2011, 45: 215-224.
- Bin Xu, Shusen Liu, Yifang Zhu. ‘Ultrafine Particle Penetration through Idealized Vehicle Cracks.’ Journal of Aerosol Science, 2010, 41: 859-868.
- Bin Xu, Yifang Zhu. ‘Quantitative Analysis of the Parameters Affecting In-cabin to On-roadway (I/O) Ultrafine Particle Concentration Ratios.’ Aerosol Science and Technology, 2009, 43: 400-410.
- Longwen Gong, Bin Xu, Yifang Zhu. ‘Ultrafine Particles Deposition inside Passenger Vehicles.’ Aerosol Science and Technology, 2009, 43: 544-553.
- Junjie Liu, Meng Wang, Bin Xu, Yifang Zhu. ‘An Experimental Method to Determine Enzyme Particle Emission Rate in Workplace.’ Building and Environment, 2009, 44: 2327-2334.
- Submitted grant annual reports entitled in ‘Effects of Volatility and Morphology on Vehicular Emitted Ultrafine Particle Dynamic’ to National Science Foundation (NSF), 2009-2010.
- Presented a research paper titled ‘What commuters can do to lower their in-cabin ultrafine particle exposures.’ at 29th AAAR annual conference, Portland, OR. October 2010.
- Presented a research paper titled ‘Ultrafine Particle Penetration through Vehicle Cracks.’ at 28th AAAR annual conference, Minneapolis, MN. October 2009.
- Presented a research paper titled ‘Parameters Affecting In-cabin to On-roadway (I/O) Ultrafine Particle Concentration Ratios.’ at 27th AAAR annual conference, Orlando, FL. October 2008.

ADDITIONAL INFORMATION

- Air pollutant sampling instruments operation, including: SMPS, CPC, Scanning Electron Microscope, Dust-trak, Q-trak, Aethalometer, Atomizer, Nitric Oxide monitor.
- RELEVANT COURSES: Multivariate Analysis • Nonparametric Methods • Environmental Regulation and Policy • Fundamentals of Air Pollution and Quality Control • Air Quality Modeling• Chemical Principles of Environmental Engineering Design • Aerosol Science and Technology • Fundamentals of Solid Hazardous Waste • Environmental Monitoring and Measurement • Engineering Thermodynamics • Atmospheric Dynamics • Combustion • Heat Transfer • Fundamentals of Fluid Dynamics and Aerodynamics • Project of Machine Design • Numerical Analysis • Stochastic Mathematical Methods