Mohammadreza Bohloul

Ph.D Student in Environmental Engineering

mbohloul@gmu.edu

Sid and Reva Dewberry Department of Civil, Environmental and Infrastructure Engineering

Volgenau School of Engineering, George Mason University, Fairfax, VA 22030

Education

- **Ph.D in Environmental Engineering** (August 2024 – Present)
  Civil, Environmental and Infrastructure Engineering Department, George Mason University, Fairfax, VA, USA

- **M.Sc. in Chemical Engineering** (September 2011 to January 2014)
  Chemical Engineering Department, College of Engineering, University of Tehran, Iran
  GPA: 4.0 on a scale of 4.0
  Thesis: The process of Carbon Dioxide (CO_2) absorption by different solvents

- **B.Sc. in Chemical Engineering** (September 2005 to February 2010)
  Chemical Engineering Department, Azad University, Iran
  GPA: 3.5 on a scale of 4.0
  Thesis: Simulation of adsorption process

Research Interests

- Air pollution modeling
- Accountability for air pollution across large spatial and temporal scales
- Air quality and environmental justice
- Environmental impact monitoring and assessment
- Separation processes for the treatment of flue gases

Professional Experiences

- **Graduate Research Assistant,** Civil, Environmental and Infrastructure Engineering Department, George Mason University, Fairfax, VA, USA (August 2024 – Present)
  - Quantify the influence of Unconventional Oil and Natural Gas Development (UOGD) emissions sources on observed concentrations in Karnes City, TX, and evaluate the air quality modeling using a framework that employs observations of total pollutant
  - Quantify the influence of UOGD emissions sources on exposure across Karnes County, TX, and
  - Quantify the relative influence of UOGD processes to air quality in Karnes County, TX

    - Quantify the relative influence of emissions, meteorology on UOGD contributions to air quality in Karnes County, TX
    - Identify the sensitivity of the above calculations to varying spatial and temporal scales that may be used in exposure and health studies
- **Research Advisor,** Department of Chemical Engineering, Azad University, Iran (November 2013 – June 2023)
    - Analysis of quantity and modeling different pollutants dispersion including gaseous pollutants and heavy metals from incinerator exhaust by AERMOD
    - Measurement of air pollutant emission rates form petrochemical stacks and air pollution dispersion modeling by AERMOD coupled with WRF model and its environmental impact assessment
- **Reviewer,** (November 2013 – Present)
    - Springer Nature
    - International Journal of Greenhouse Gas Control
    - Journal of Natural Gas Science & Engineering
    - Applied Thermal Engineering Journal
- **Lecturer,** Department of Chemical Engineering, Azad University, Iran (September 2014 – September 2015)
    - Taught undergraduate courses and research methods to graduate students
    - Training course on air pollution dispersion modeling by AERMOD model for graduate students
    - Training course on air pollution dispersion modeling by AERMOD model for the Environmental Protection Office, Ahvaz, Iran

Journal Publications

- Hallaji, H., **M. R. Bohloul**, S. M. Peyghambarzadeh, and S. Azizi. "Measurement of air pollutants concentrations from stacks of petrochemical company and dispersion modeling by AERMOD coupled with WRF model." International Journal of Environmental Science and Technology (2023): 1-20. (https://doi.org/10.1007/s13762-023-04959-w)
- Hoda Hallaji, S.M. Peyghambarzadeh, **M.R. Bohloul** and Shima Azizi, "The optimum conditions for calcium sulfate fouling rate under subcooled flow boiling using Taguchi method", International Journal of Heat and Mass Transfer 204 (2023): 123859. (https://doi.org/10.1016/j.ijheatmasstransfer.2023.123859)
- **M.R. Bohloul**, M. Arab Sadeghabadi, S. M. Peyghambarzadeh, and M. R. Dehghani. "CO_2 absorption using aqueous solution of potassium carbonate: Experimental measurement and thermodynamic modeling." Fluid Phase Equilibria 447 (2017): 132-141. (https://doi.org/10.1016/j.fluid.2017.05.023)
- Peyghambarzadeh, S. M., H. Hallaji, **M. R. Bohloul**, and N. Aslanzadeh. "Heat transfer and Marangoni flow in a circular heat pipe using self-rewetting fluids." Experimental Heat Transfer 30, no. 3 (2017): 218-234. (https://doi.org/10.1080/08916152.2016.1233148)
- Gholami, F., S. Azizi, S. M. Peyghambarzadeh, and **M. R. Bohloul**. "The modelling and experimental study on molecular diffusion coefficient of CO2 in N-methyl pyrolidone." Separation Science and Technology 52, no. 15 (2017): 2435-2442. (https://doi.org/10.1080/01496395.2017.1329842)
- **M.R. Bohloul**, S. M. Peyghambarzadeh, A. Lee, A. vatani, Experimental and analytical study of solubility of carbon dioxide in aqueous solutions of potassium carbonate, An International Journal of Greenhouse Gas Control, 29 (2014) 169-175.(https://doi.org/10.1016/j.ijggc.2014.08.009)
- **M.R. Bohloul**, A. vatani, S. M. Peyghambarzadeh, Experimental and theoretical study of CO_2 solubility in N-methyl-2-pyrrolidone (NMP), Fluid Phase Equilibria, 365 (2014) 106-111. (https://doi.org/10.1016/j.fluid.2013.12.019)

Conference Publications

- **Mohammadreza Bohloul**, Lucas Henneman, Application of AERMOD in Air Dispersion Modeling of Methane Emissions: A Case Study from Karnes County in the Eagle Ford Shale, 23rd Annual CMAS Conference at the University of North Carolina, October 2024.
- **M. Bohloul**, A. Vatani and M. Peyghambarzadeh, Prediction of CO_2 Solubility in Dimethylsulfoxide and N-methyl-2- pyrrolidone Using Peng-Robinson Equation of State, The 8th International Chemical Engineering Congress & Exhibition, Iran, February 2014.

Books

- Air pollutants dispersion modeling by AERMOD
  Authors: Mohammadreza Bohloul, Seyed Mohsen Peyghambarzadeh
  Azad University Publication, Iran, 2020
- Adsorption process and simulation by Aspen Adsorption (Adsim) software
  Seyed Mohsen Peyghambarzadeh, Mohammadreza Bohloul
  Andishehsara Publishing Company, Iran, 2011

Technical Skills

- Air Pollution Modeling: AERMOD, AERMET, AERMAP, VERDI
- Programming Language: Python
- General: Microsoft office (Word, Excel, PowerPoint, Visio)