

Yixi Tian

Ph.D. Candidate, Columbia University in the city of New York
500 West 120th Street, Mudd 926
New York, NY 10027
Email: yt2532@columbia.edu



Education

Columbia University, School of Engineering and Applied Science, New York, NY Sep.2018 – Present

- Ph.D. candidate, Earth & Environmental Engineering, expected May 2021, cumulative GPA: 3.86/4.0
- Honor: Columbia University, Earth Engineering Center Fellowships-2018, 2019, 2020.
- Concentration: Sustainable of Waste Management, Mineral and Metallurgical Engineering
- Ph.D. Thesis Topic: Physical and Chemical Transformation of Waste-to-Energy Residues to Materials for Civil Engineering Applications
- Advisor: Athanasios Bourtsalas, Nickolas J. Themelis, Shiho Kawashima
- Core Courses: Energy Sources and Conversion, Energy Harvesting, Numerical Methods in Geotechnics, CO₂ Utilization and Conversion, Photovoltaic Systems Engineering, Industrial Ecology-Earth Resource, Engineering Separations.
- Projects: Life Cycle of Lightweight Aggregate, Life Cycle assessment for Apple Production in Organic farming and Integrated Farming, Methanol Production Plant form CO₂ Hydrogenation by Using Solar Power (Shell Renewable Energy Competition-Best Project Award)

Columbia University, School of Engineering and Applied Science, New York, NY Sep.2016 – May 2018

- Master of Science, Earth & Environmental Engineering, May 2018, GPA: 3.77/4.0
- Honor: Floyd Hasselriis Educational Award-ASME (The American Society of Mechanical Engineers)
- Concentration: Sustainable of Waste Management, Environmental Materials
- M.S. Thesis: Production of Structural Concrete from Waste-to-Energy Bottom Ash, May 2018
- Core Courses: Thermal Treatment-Waste/Biomass, Environmental Biochemical Processing, Particle Technology, Air Pollution Prevention/Control, Industrial Catalysis, GIS-Resource Environmental Infrastructure, Aquatic Chemistry, Surface and Colloid Chemistry
- Projects: ArcGIS-Potential Impact of Vesuvius on Population in Campania (Italy); Evil Twin Brewery Water Resource Recovery Facility-A Comparison of Two Systems; Transforming South Oak Creek CPP into a Waste-to-Energy Facility

Hefei University of Technology, School of Resource and Environmental Engineering, Hefei, China Sep. 2012-Jun 2016

- Bachelor of Engineering in Environmental Engineering, Jun.2016, GPA: 88.14/100
- Honors: Third-class Scholarship for Academic Performance (2015), Single Scholarship for Social Activity (2014), University Excellent Graduation Thesis (2016)
- Concentration: Environmental Engineering, Environmental Materials
- B.S. Thesis: Technical Study of Palygorskite Clayey Dolomite for Removal Lead Ions from Aqueous Solution (2016)
- Core Courses: Solid Waste Treatment and Disposal Engineering, Reinforced Concrete, Construction Technology, Control Engineering of Water Pollution, Industrial Wastewater Treatment Technology, Environmental Materials, Principles of Environmental Engineering, Microbiology, Ecological Rehabilitation Engineering, Pollution and Prevention of Ground Water, Control Engineering of Gas Pollution, Physical Pollution and Control Engineering, Pumping Station and Pipeline Engineering, Environmental Law, Environmental Economics, Economic and Cost Management, Fluid Mechanics, Mechanics of Materials, Theoretical Mechanics, Physical Chemistry, Analytical Chemistry, Organic Chemistry, Inorganic Chemistry.
- Projects: Sewage Treatment Plant with the Obel Oxidation Ditch; Design an Acid Mist Control System for a Metal Product Factory.

Experience

Teaching Assistant, Columbia University, New York, NY Sep. 2018 – Dec.2018, Jan.2019 – May 2020

- The courses in the Department of Earth and Environmental Engineering: Thermal Treatment-Waste/Biomass, Solid and Hazardous Waste Management, Industrial Ecology-Earth Resource
- Activities: Assist the instructor with daily course work. Organize the students with activities and presentations. Help students with projects. Provide homework session, midterm and final exam reviews. Grade homework and exams.

Research Associate, Earth Engineering Center, Columbia University, New York, NY Jun.2017 – Present

- Research: Transforming industrial residues into high value civil engineering products. Focus on Waste-to-Energy (WTE) residues: combustion bottom ash and air pollution control fly ash. Explore the sustainable utilization and assess the viability of using WTE residues in civil engineering applications. Identify the beneficial uses, the mechanisms of physical and chemical transformation. Determine the optimum solution and valuable application for WTE residues. Set up the experimental workshop in lab.
- Advisors: Athanasios Bourtsalas, Shiho Kawashima, Nickolas J. Themelis
- Symposium: Production of Structural Concrete from Waste to Energy Bottom Ash (oral presentation, Oct. 2017).
The Performance and Utilization from Waste to Energy Residues (poster presentation, Oct. 2018).
The Beneficial Utilization of Waste-to-Energy residues (oral presentation, Oct. 2019)

Ph.D. Researcher, Global WTER Council Inc., New York, NY Sep. 2018 – Present

- Council to Global WTER council: <http://gwcouncil.org/>. Explore the Waste-to-Energy residues utilization in global scale. Analyzing the characteristics and source difference of Waste-to-Energy residues.

Independent Researcher, Laboratory for Nano-mineralogy and Environmental Material, Hefei University of Technology
Hefei, China, Jun.2014 – Jul.2016

- Program: National College Students Innovation and Entrepreneurship Training Program, Team Leader
- Research: Investigate the performance and mechanisms for the removal heavy metal ions from aqueous solution by clayey dolomite in palygorskite clay deposit. Devote over 1000 hours in experimental work. Write proposals, accomplish academic report, pass oral defense and succeed in obtaining project approval.
- Advisor: Tianhu Chen
- Result: A higher solid-aqueous rate and higher pH value can improve the removal efficiency. The main mechanism of removal is that lead ions are induced to deposit by clayey dolomite, and meanwhile produce hydrocerussite after dolomite dissolution.

Industrial Experience, Hefei University of Technology, Hefei, China Jun. 2015

- Anhui Conch Cement Company dry cement clinker production line to survey its pollution distribution
- Flue gas desulfurization system of Masteel No.2 ironmaking plant, Maanshan energy plant sewage treatment station and Magang Coking Co., Ltd

Publications & Patents

- Yixi Tian, A. C.(Thanos) Bourtsalas, Shiho Kawashima, Siwei Ma, and Nickolas J. Themelis. 2020. "Performance of Structural Concrete Using Waste-to-Energy (WTE) Combined Ash." *Waste Management* 118: 180–89. <https://doi.org/10.1016/j.wasman.2020.08.016>.
- Yixi Tian, Hongwei Li, Jingjing Xie, Gao Qiu, and Tianhu Chen. The Function and Mechanism of the Removal of the Lead Ions from Aqueous Solutions by Clayey Dolomite, *Acta Petrologica et Mineralogica*, Vol.36, No. 1: 104-109, Jan., 2017.
- Gao Qiu, Qiaoqin Xie, Tianhu Chen, Haibo Liu, Jingjing Xie, Hongwei Li, and Yixi Tian. Performance and Mechanisms for the Removal of Copper ions from Aqueous Solutions by Clayey Dolomite, *Geological Journal of China Universities*, December 2015, Vol 21, No,4, pp.616-622.
- Patent for Invention: Qiaoqin Xie, Tianhu Chen, Gao Qiu, Jingjing Xie, Yuke Zhu, Hongwei Li, and Yixi Tian. Method for treating heavy metal wastewater. State Intellectual Property Office, China. Application No.: CN:201510582084:A, Publication No.: CN105110445A.
- Patent for Invention: Hongwei Li, Yixi Tian, Tianhu Chen, Jingjing Xie, Hanlin Wang, and Peng Cheng. Heavy metal wastewater treatment material and method thereof. State Intellectual Property Office, China. Application No.: CN:201610224584:A, Publication No.: CN105858832A.

Technical Skills

- X-ray Diffraction Certification in SMCL, Columbia Nano Initiative
- Zeiss SEM/EDS Certification in Electron Microscopy, Columbia Nano Initiative

- Instron 600DX 135k Universal Testing Machine, Lab Access in Robert A.W. Carleton Strength of Materials Laboratory, Columbia University
- ICP-OES Operation and Data Analysis, Lamont-Doherty Earth Observatory
- AAS (Atomic Absorption Spectroscopy) Operation and Data Analysis
- C14 Certificate Issued by NYC Fire Department
- French Horn, Grading Test Level 7 Certificate, China Conservatory of Music
- R Language, C/C++ Language
- OpenLCA, SimaPro, Biowin, MDI Jade, OriginLab
- ArcGIS, AutoCAD