

KHANH AN HUYNH

National Research Council Postdoctoral Associate

U.S. Environmental Protection Agency

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EDUCATION

Ph.D. in Environmental Engineering, 2014 – Johns Hopkins University, Baltimore, MD

Advisor: Dr. Kai Loon Chen

Dissertation title: Heteroaggregation Between Engineered Nanomaterials and Hematite Nanoparticles in Aquatic Environments

M.S.E. in Environmental Engineering, 2010 – Johns Hopkins University, Baltimore, MD

M.Eng. in Environmental Engineering, 2008 – Korea University, Seoul, South Korea

Advisor: Dr. Jeehyeong Khim

Dissertation title: Effects of Chloride on H₂ Generation and TCE Degradation in Aqueous Solutions Containing Zero Valent Iron

B.Eng. in Environmental Engineering, 2005 – Ho Chi Minh City University of Technology, Ho Chi Minh City, Vietnam (ranking: 1/150)

PROFESSIONAL EXPERIENCE

Environmental Sciences Division, National Exposure Research Laboratory, U.S. Environmental Protection Agency in Las Vegas, Nevada, 03/2014 – present
National Research Council (NRC) associate

Faculty of Environment and Natural Resources, Ho Chi Minh City University of Technology, Ho Chi Minh, Vietnam, 05/2005 – 03/2006 and 02/2008 – 08/2008
Lecturer

HONORS AND AWARDS

- 2014 C. Ellen Gonter Environmental Chemistry Award (ACS Division of Environmental Chemistry)
- 2014 National Research Council (NRC) Research Associateship Award at the U.S. Environmental Protection Agency in Las Vegas, Nevada
- 2012 Sustainable Nanotechnology Organization Student Award

- 2012 Graduate Student Award in Environmental Chemistry (ACS Division of Environmental Chemistry)
- Best Poster Presentation Award at the 8th Vietnam Education Foundation Annual Conference, University of Arkansas, Fayetteville, AR (January 2011)
- Honorable Mention Award for poster presentation at Johns Hopkins Institute for NanoBioTechnology 4th Annual Symposium, Johns Hopkins University, Baltimore, MD (April 2010)
- Vietnam Education Foundation fellowship for Ph.D. studies at Johns Hopkins University (2008 – 2014)
- GS Construction – Korea University Scholarship for M.Eng. studies at Korea University, (2006 – 2008)
- Third Prize for the presentation at Young Scientists Conference, Ho Chi Minh City University of Technology, Vietnam (May 2005)
- Monthly scholarship for best students with excellent academic achievements, Ministry of Education and Training, Vietnam (2001-2005)

AREAS OF INTEREST

- Water and wastewater treatment
- Water reuse
- Membrane processes
- Detection, characterization, and quantification of engineered nanomaterials
- Applications and environmental implications of nanotechnology

RESEARCH EXPERIENCE

NRC postdoctoral associate at Environmental Sciences Division, National Exposure Research Laboratory, U.S. Environmental Protection Agency in Las Vegas, Nevada (March 2014 – present)

- Developed analytical methods to detect, quantify, and characterize engineered nanomaterials using flow field flow fractionation and single particle inductively coupled plasma mass spectrometry

Ph.D. student at Department of Geography and Environmental Engineering, Johns Hopkins University (2008 – 2014)

- Synthesized silver nanoparticles coated with different stabilizing agents and investigated their aggregation kinetics in aquatic environments
- Determined the rates and mechanisms of the heteroaggregation between carbon nanotubes and hematite nanoparticles
- Studied the impacts of solution chemistry on the disaggregation of heteroaggregates comprising carbon nanotubes and hematite nanoparticles

- Investigated the influence of heteroaggregation on the antibacterial properties of citrate-coated silver nanoparticles
- Examined the effects of dimensionality on the heteroaggregation of carbon-based nanomaterials and hematite nanoparticles

Master student at Geo Environmental Engineering Lab, Department of Civil and Environmental Engineering, Korea University, South Korea (2006 – 2008)

- Investigated the effects of chloride ions and pH on the degradation of trichloroethylene (TCE) by zero valent iron (ZVI)
- Determined the production rate of hydrogen gas generated from TCE removal by ZVI

Research assistant in Water Treatment Group, Faculty of Environment, Ho Chi Minh City University of Technology, Vietnam (2006 – 2005)

- Developed new effluent standards for industrial wastewater and landfill leachate in Vietnam
- Analyzed performance data and proposed solutions to enhance the treatment performance of Go Cat landfill leachate treatment plant

Undergraduate student at Faculty of Environment, Ho Chi Minh City University of Technology, Vietnam (2000 – 2005)

- Determined optimal parameters for the removal of copper and nickel from aqueous phase using bentonite from Binh Thuan, Vietnam
- Developed a cost-effective method to recover chromium from tannery solid waste

TEACHING EXPERIENCES

- Instructor, Department of Geography and Environmental Engineering, Johns Hopkins University (Fall 2013)
Course: Environmental Engineering Fundamentals I
- Teaching assistant, Department of Geography and Environmental Engineering, Johns Hopkins University (2008 – Spring 2013)
Courses: Physical and Chemical Processes in Environmental Engineering II, Environmental Engineering Fundamentals I
- Lecturer, Faculty of Environmental Engineering, Ho Chi Minh City University of Technology (2008)
Course: Senior Design Project
- Assistant lecturer, Faculty of Environmental Engineering, Ho Chi Minh City University of Technology (2005 – 2006)
Courses: Environmental Modeling, Water Treatment, Wastewater Treatment

PROFESSIONAL SOCIETY MEMBERSHIPS

American Chemical Society

REVIEWER FOR SCHOLARY JOURNALS

- ACS Sustainable Chemistry and Engineering
- Environmental Pollution
- Environmental Science and Technology
- Environmental Toxicity and Chemistry
- Nanoscale

PUBLICATIONS

1. Khanh An Huynh and Kai Loon Chen, Aggregation Kinetics of Citrate and Polyvinylpyrrolidone Coated Silver Nanoparticles in Monovalent and Divalent Electrolyte Solutions, *Environmental Science and Technology*, 2011, 45, 5564–5571
2. Khanh An Huynh, J. Michael McCaffery, and Kai Loon Chen, Heteroaggregation of Multiwalled Carbon Nanotubes and Hematite Nanoparticles: Rates and Mechanisms, *Environmental Science and Technology*, 2012, 46, 5912–5920
3. Khanh An Huynh and Kai Loon Chen, Disaggregation of Heteroaggregates Comprising Multiwalled Carbon Nanotubes and Hematite Nanoparticles, *Environmental Science: Process and Impact*, 2014, 16, 1371–1378
4. Khanh An Huynh, J. Michael McCaffery, and Kai Loon Chen, Heteroaggregation Reduces Antimicrobial Activity of Silver Nanoparticles: Evidence for Nanoparticle–Cell Proximity Effects, *Environmental Science and Technology Letters*, 2014, 1, 361–366
5. Li Tang, Khanh An Huynh, and Kai Loon Chen, Imparting Antimicrobial and Anti-Adhesive Properties to Membranes through Modification with Polyelectrolyte Multilayers and Silver Nanoparticles, *Journal of Colloid and Interface Science*, 2015, 451, 125–133
6. Khanh An Huynh, Emily Siska, Edward Heithmar, Soheyl Tadjiki, and Spiros A. Pergantis, Detection and Quantification of Silver Nanoparticles at Environmentally Relevant Concentrations Using Asymmetric Flow Field–Flow Fractionation Online with Single Particle Inductively Coupled Plasma Mass Spectrometry (submitted to *Analytical Chemistry*)

INVITED SEMINAR TALKS

(Underlined names indicate the presenting author)

1. Khanh An Huynh, J. Michael McCaffery, and Kai Loon Chen, Heteroaggregation Reduces Antimicrobial Activity of Silver Nanoparticles: Evidence for Nanoparticle–Cell Proximity Effects, American Chemical Society 248th National Meeting, August 10–14, 2010, San Francisco, California (Invited C. Ellen Gonter Environmental Chemistry Award Talk)
2. Khanh An Huynh and Kai Loon Chen, Rates and Mechanisms of Heteroaggregation Between Carbon Nanotubes and Hematite Nanoparticles in Aquatic Environments, Semiconductor Research Corporation Engineering Research Center TeleSeminar, June 27, 2013

CONFERENCE ORAL PRESENTATIONS

(Underlined names indicate the presenting author)

1. Khanh An Huynh, Emily Siska, and Edward Heithmard, Online Coupling of Flow-Field Flow Fractionation and Single Particle Inductively Coupled Plasma-Mass Spectrometry: Characterization of Nanoparticle Surface Coating Thickness and Aggregation State, 2016 Winter Conference on Plasma Spectrochemistry, January 10–16, 2016, Tucson, Arizona
2. Khanh An Huynh and Kai Loon Chen, Formation and Disaggregation of Heteroaggregates Comprising Carbon Nanotubes and Hematite Nanoparticles, 86th American Chemical Society Colloid and Surface Science Symposium, June 10–13, 2012, Johns Hopkins University, Baltimore
3. Khanh An Huynh and Kai Loon Chen, Heteroaggregation of Multiwalled Carbon Nanotubes and Hematite Nanoparticles in Aquatic Environments: Implications for Carbon Nanotube Fate and Transport, 85th American Chemical Society Colloid and Surface Science Symposium, June 19–22, 2011, McGill University, Montreal, Canada
4. Khanh An Huynh and Kai Loon Chen, Aggregation Kinetics of Silver Nanoparticles in Monovalent and Divalent Electrolyte Solutions: Implications for Environmental Fate and Transport, 240th ACS National Meeting & Exhibition, August 22–26, 2010, Boston, Massachusetts
5. Khanh An Huynh, Younggyu Son, and Jeehyeong Khim, Effects of Chloride on Trichloroethylene Degradation by Zero-Valent Iron, Korean Society of Environmental Engineers Annual Conference, 2007, Kangwon-do, South Korea

CONFERENCE POSTER PRESENTATIONS

(Underlined names indicate the presenting author)

1. Khanh An Huynh, Emily Siska, and Edward Heithmar, Characterization of Nanoparticles at Environmentally Relevant Concentrations in Aquatic Media by Coupling Asymmetric Flow Field-Flow Fractionation with Single Particle – Inductively Coupled Plasma Mass Spectrometry,

Gordon Research Conference – Environmental Nanotechnology, June 21–26, 2015, West Dover, Vermont

2. Khanh An Huynh, Emily Siska, and Edward Heithmar, Asymmetric Flow Field Flow Fractionation Online with Single Particle – Inductively Coupled Plasma Mass Spectrometry: Detection and Quantification of Silver Nanoparticles in Aqueous Samples, 249th ACS National Meeting & Exposition, March 22–26, 2015, Denver, Colorado
3. Khanh An Huynh, J. Michael McCaffery, and Kai Loon Chen, Formation of Heteroaggregates Comprising Multiwalled Carbon Nanotubes and Hematite Nanoparticles in Aquatic Environments: Rates and Mechanisms, First Sustainable Nanotechnology Organization Conference, November 4–6, 2012, Arlington, Virginia
4. Myunghye Lim, Khanh An Huynh, and Kai Loon Chen, Deposition Kinetics of Citrate-Coated Silver Nanoparticles on Silica Surface: A QCM-D Study, 86th American Chemical Society Colloid and Surface Science Symposium, June 10–13, 2012, Johns Hopkins University, Baltimore, Maryland
5. Khanh An Huynh and Kai Loon Chen, Aggregation of Silver Nanoparticles in Aquatic Environments, 8th Vietnam Education Foundation Annual Conference, January 3 – 5, 2011, University of Arkansas, Fayetteville, Arkansas
6. Khanh An Huynh and Kai Loon Chen, Aggregation of Silver Nanoparticles in Aquatic Environments, Johns Hopkins Institute for NanoBioTechnology 4th Annual Symposium, April 29, 2010, Johns Hopkins University, Baltimore, Maryland