**CURRICULUM VITAE**

# GUANGBIN LI, Ph.D.

Assistant Professor
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## RESEARCH INTERESTS

My main research interests include: sustainable biological water/wastewater treatment, nutrient removal/recovery, (bio)transformation and fate of hazardous contaminants, microbial toxicity, and environmental chemistry.

## EDUCATION

***Ph.D.*** University of Arizona, 2016, Environmental Engineering

***M.S.*** University of Arizona, 2016, Environmental Engineering

***M.S.*** Harbin Engineering University, China. 2012, Environmental Engineering

***B.S.*** Harbin Engineering University, China. 2009, Environmental Engineering

## APPOINTMENTS

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| Assistant Professor, 2019 - present | Dept. Chemical and Environmental Engineering, University of Arizona |
| Research Assistant Professor, 2017-2019 | Dept. Chemical and Environmental Engineering, University of Arizona |
| Postdoctoral Research Associate, 2016-2017 | Dept. Chemical and Environmental Engineering, University of Arizona |

## RESEARCH & INDUSTRY EXPERIENCE

***Research Assistant Professor (2017 - 2019) & Postdoctoral Research Associate (2016 - 2017)***. Prof. Jim Field and Prof. Reyes Sierra-Alvarez's research group. University of Arizona.

1) My research project aims to investigate the feasibility of anammox process in main- and side-stream in wastewater treatment, and deepen the understanding of strategy to recover the anammox system from failure caused by nitrite stress;

2) Mechanisms, fate, and toxicity of emerging nitroaromatic pollutants and their daughter products (e.g. 3-nitro-1,2,4-triazole-5-one (NTO) and 3-amino-1,2,4-triazole-5-one (ATO)) in anaerobic and aerobic environments.

***Engineering Intern***. Pima County Regional Wastewater Reclamation Dept. (PCRWRD), Tucson, AZ. Feb 2016 – Dec. 2016.

1) Wastewater treatment group: Investigated the optimal operation for wastewater treatment processes (e.g. Bardenpho and Anita-Mox) in PCRWRD;

2) Odor control group: Investigated the feasibility of using high purity oxygen to control odor problems in sewer system.

## RESEARCH & INDUSTRY EXPERIENCE (continued)

***Research Assistant***. Prof. Jim Field and Prof. Reyes Sierra-Alvarez's research group. University of Arizona. Jan 2013 – May 2016.

1) The objective of my research was to study the mechanism of inhibitory impact of nitrite on anammox bacteria and provide the information to avoid failure of anammox bioreactors and recover it from the nitrite stress;

2) Furthermore, the toxicity of heavy metals on anammox bacteria was evaluated as a potential reference for the application anammox process in treating landfill leachate and wastewater from industrial processes such as semiconductor manufacturing.

***Research Assistant***. Prof. Guangmin Liu's research group. Harbin Engineering Univ., China. 2009–2012.

1) The objective of my research was to compare the effects of A/O process, membrane bioreactors, and advanced oxidation processes in treating acrylonitrile wastewater;

2) Studied the transformation of immediate products in treatment of the acrylonitrile wastewater.

***Engineering Intern***. Daqing Oilfield Engineering Co. Ltd, China. 2008–2009 & 2011–2012

1) Focused on in-situ experiment of denitrification inhibiting sulfate reducing bacteria. Designed research project, managed bench scale and in-situ experiment, analyzed samples and writing report.

2) Focused on study of formation reason of the increasing suspended solid in aeration-settling tank.

***Research Assistant***. Prof. Yifang Li's research Group. Harbin Institute of Technology, China. 2010.

Focused on the study of persistent organic pollutants (POPs) in Zhalong wetland in Heilongjiang. Responsible for the sampling and the samples pretreatment.

***Engineering Intern***. Harbin ADVENT Environment Solution Co. Ltd, China. 2009 –2010.

Investigated the feasibility of ADVENT Integral System (AIS) in wastewater treatment. Design improvement and data analysis.

***Research Assistant***. Prof. Guangmin Liu's research Group. Harbin Engineering Univ., China. 2007–2009.

1) Undergraduate research project: investigated the application of some magnetic material (TiO2) in pollutants removal from wastewater;

2) Studied the feasibility of using denitrification process to inhibit the sulfate reducing bacteria;

## HONORS & AWARDS

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| Arizona Association of Environmental Professionals (AZAEP)_honorary award, USA | May 2015 |
| AZ Water Scholarship_1st place, USA | Jun 2015 |
| 2015-2016 Nancy Turner Honorary Scholarship (From SAEMS), USA | Jul 2015 |
| Freshmen Tuition Scholarship, University of Arizona, USA | Aug 2012 |

## TEACHING EXPERIENCE

***Lecturer*** University of Maryland, College Park Spring, 2019

Introduction to Environmental Engineering, (ENCE_310)

***Guest Lecturer*** University of Arizona Fall, 2017 and 2018

Advanced Water and Wastewater Treatment Design, (CHEE_676)

***Guest Lecturer*** University of Arizona Fall, 2016 and 2018

Microbiology for Engineers, (CHEE_577R), Molecular Logic of Life

***Grader*** University of Arizona Spring 2016

Wastewater Treatment System Design (ChEE_576B)

***Supervision of Undergraduate and Graduate Students:***

1) Training and supervision of undergraduate (5) and graduate (3) students involved in research work within the program of the Environmental Engineering group, Fall 2012 to present;

2) Mentoring of an undergraduate student, within the Latin American Summer Research Program, Summer 2013.

## PROFESSIONAL SERVICE

***Member of Editorial Board***, Journal of Microbial & Biochemical Technology, Journal Impact Factor 3.15*; 4.09* (5 Year Impact Factor)

***Member of Steering Committee and Programming Committee***. Water Environment Federation (WEF) Nutrient Symposium 2017, Fort Lauderdale, Florida, USA, June 12$^{th}$-15$^{th}$, 2017

***Member of Technical Program Committee***. The 2nd International Conference on Environmental Research and Public Health (ICERP-2017), Shenzhen, China, Oct. 20$^{th}$-22$^{nd}$, 2017

***Journal Reviewer***. (41 times in 2017 for more than 17 journals) Environmental Science & Technology, Water Research, Chemosphere, Chemical Engineering Journal, Separation and Purification Technology, Biodegradation, PLOS ONE, Applied Water Science, Journal of Biotechnology, Environmental Chemistry Letters, Water Science and Technology, Water Environmental Research, among others.

***Conference Reviewer***. More than 60 abstracts, workshop, and technique proposals review for Water Environment Federation (WEF) Nutrient Symposium 2017 and The 2nd International Conference on Environmental Research and Public Health (ICERP-2017).

***Judge*** 2016 Graduate & Professional Student Council (GPSC) travel grant, University of Arizona, USA.

***Judge*** 2017 Southern Arizona Research, Science & Engineering Foundation (SARSEF) Fair, Tucson, USA.

## MEDIA REPORT

http://news.engr.arizona.edu/news/engineering-grad-students-champion-water-sustainability May 2015

## PROFESSIONAL AFFILIATIONS

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| Association of Environmental Engineering and Science Professors (AEESP) | 2019 – present |
| Water Environmental Federation (WEF) | May 2016 – present |
| The International Water Association (IWA) | May 2016 – present |
| American Academy of Environmental Engineers and Scientists (AAEES) | Sep 2015 – present |
| American Water Works Association (AWWA) | Aug 2012 – present |
| Southern Arizona Environmental Management Society Inc. (SAEMS) | May 2015 – present |
| Arizona Association of Environmental Professionals (AZAEP) | May 2015 – present |
| Engineers Without Borders (EWB) | Sep 2015 – present |

## FUNDING

1. **Anammox Pilot Testing, USA** **Jul. 2017 – Dec. 2018**

   Funding agency: Pima County Regional Wastewater Reclamation Department (RWRD)

   *Title: Anaerobic ammonium oxidation (Anammox) Pilot Testing*

   PI: Dr. James A Field

   CoPIs: ***Dr. Guangbin Li*** and Dr. Reyes Sierra-Alvarez

   Award: **$142,000**

2. **Water Sustainability Program Fellowship, USA** **Sep. 2015-May 2016**

   Funding agency: University of Arizona Water Sustainability Program

   *Title: Improving the Reliability of Novel Nutrient Nitrogen Removal Technology: Attenuation of Nitrite Inhibition to Anaerobic ammonium oxidation (Anammox)*

   Awardee: ***Dr. Guangbin Li***

   Award: **$10,000**

# PEER-REVIEWED PUBLICATIONS

1. **Li G**, Sierra-Alvarez R, Vilcherrez D, Weiss S, Gill C, Krzmarzick MJ, Abrell L, Field JA. Nitrate reverses severe nitrite inhibition of anaerobic ammonium oxidation (anammox) activity in continuously-fed bioreactors. Environ. Sci. Technol., 2016: 50 (19): 10518–10526. **[IF=6.396]**

2. **Li G**, Vilcherrez D, Carvajal-Arroyo JM, Sierra-Alvarez R, Field JA. Exogenous nitrate attenuate nitrite toxicity to anaerobic ammonium oxidizing (anammox) bacteria. Chemosphere. 2015: 144:2360-2367. **[IF=4.068]**

3. **Li G**, Puyol D, Carvajal-Arroyo JM, Sierra-Alvarez R, Field JA. Inhibition of anaerobic ammonium oxidation by heavy metals. J Chem Technol Biotechnol. 2014: 90(5):830-837. **[IF=2.744]**

4. **Li G**, Carvajal-Arroyo JM, Sierra-Álvarez R, Field JA. Mechanisms and control of nitrite inhibition of anaerobic ammonium oxidation (ANAMMOX). Water Environ. Res., 2017: 4 (89): 330-336. **[IF=0.842]**

5. Camila L. Madeira, Warren M. Kadoya, **Li G**, Stanley Wong, Reyes SierraAlvarez, Jim A. Field. Reductive biotransformation as a pretreatment to enhance In Situ chemical oxidation of nitroaromatic and nitroheterocyclic explosives. Chemosphere. 2019: https://doi.org/10.1016/j.chemosphere.2019.01.178 **[IF=4.068]**

6. Raju Khatiwada, Leif Abrell, **Li G**, Robert A Root, Reyes Sierra-Alvarez, James A Field, Jon Chorover. Adsorption and oxidation of 3-nitro-1, 2, 4-triazole-5-one (NTO) and its transformation product (3-amino-1, 2, 4-triazole-5-one, ATO) at ferrihydrite and birnessite surfaces. Environmental Pollution 2018 ;240:200-208.**[IF=5.291]**

7. Gonzalez-Estrella Jorge, **Li G**, Neely Sarah E., Puyol D, Sierra-Alvarez R, Field JA. Elemental copper nanoparticle toxicity to anaerobic ammonium oxidation and the influence of ethylene diamine-tetra acetic acid (EDTA) on the controlling copper toxicity. Chemosphere, 2017: 184: 730-737. **[IF=4.068]**

8. Carvajal-Arroyo JM, Puyol D, **Li G**, Swartwout A, Sierra-Álvarez R, Field JA. Starved anammox cells are less resistant to inhibition. Water Res. 2014 ;65(0):170-176. **[IF=6.796]**

9. Carvajal-Arroyo JM, Puyol D, **Li G**, Sierra-Álvarez R, Field JA. The intracellular proton gradient enables anaerobic ammonia oxidizing (anammox) bacteria to tolerate $NO2^-$ inhibition. J Biotechnol. 2014;192:265-267. **[IF=2.446]**

10. Carvajal-Arroyo JM, Puyol D, **Li G**, Lucero-Acuña A, Sierra-Álvarez R, Field JA. Pre-exposure to nitrite in the absence of ammonium strongly inhibits anammox. Water Res. 2014 48(0):52-60. **[IF=6.796]**

11 Carvajal-Arroyo JM, Puyol D, **Li G**, Sierra-Alvarez R, Field JA. The role of pH on the resistance of resting- and active anammox bacteria to NO inhibition. Biotechnol Bioeng. 111(10):1949-56. **[IF=4.393]**

12. Puyol D, Carvajal-Arroyo JM, **Li G**, Dougless A, Fuentes-Velasco M, Sierra-Alvarez R, et al. High pH (and not free ammonia) is responsible for Anammox inhibition in mildly alkaline solutions with excess of ammonium. Biotechnol Lett. 2014 36(10):1981-1986. **[IF=1.809]**

13. Wang A, Liu G, Huang J, Wang L, **Li G**, Su X, et al. Styrene process condensate treatment with a combination process of UF and NF for reuse. J Hazard Mater. 2013 244–245(0):457-462. **[IF=5.641]**

## REFEREED MANUSCRIPTS UNDER REVIEW & IN PREPARATION

1. Khatiwada, R; Abrell, L; **Li, G**; Root, R; Sierra-Alvarez, R; Field, J; Chorover, J. Reaction of 3-nitro-1,2,4-triazole-5-one (NTO) and its transformation product, 3-amino-1,2,4-triazole-5-one (ATO), at birnessite and ferrihydrite surfaces, Environ. Sci. Technol., (*Under review*). **[IF=6.396]**
2. **Li, G**; Lakhey, N.H.; Sierra-Alvarez, R; Field, J. Effects of azole compounds to anaerobic ammonium oxidation (anammox) bacteria activity in granular sludge, (*In preparation*).
3. **Li, G**; Zeng, C; Nguyen, C.H.; Madeira, C.L.; Jog, K.V.; Sierra-Alvarez, R; Field, J. Toxicity of azole compounds in wastewater of semiconductor industry to the nitrification process in wastewater reclamation facility (WRF), Chemosphere (*Submitted*).

## PRESENTATIONS

1. **Li G**, Carvajal-Arroyo JM, Neely S, Vilcherrez D, Sierra-Álvarez R, Field JA. (Oct. 17th, 2017) How to recover a failing anaerobic ammonium oxidation (anammox) reactor with nitrate. The 15th IWA Int. Conference on Anaerobic Digestion, Beijing, China. [Poster]
2. **Li G**, Carvajal-Arroyo JM, Sierra-Álvarez R, Field JA. (Jul. 12th, 2016) Mechanisms and Control of Nitrite Inhibition of Anaerobic Ammonium Oxidation (ANAMMOX). WEF/IWA Nutrient Removal and Recovery, Denver, USA. [Oral]
3. **Li G** (Apr, 2016) The role of nutrient in water. Earth Week, Tucson, Arizona, USA. [Oral]
4. **Li G** and Vilcherrez D. (Jan. 14th, 2016) A novel strategy to attenuate the inhibitory effects of nitrite on the anaerobic ammonium oxidation (anammox) process. AZ Water Research Workshop, Tempe, Arizona, USA. [Poster]
5. **Li G**. (Sep. 2015) Attenuation of nitrite inhibition to anaerobic ammonium oxidation (anammox) by nitrate. Seminar, Department of Chemical and Environmental Engineering, University of Arizona, Tucson, Arizona, USA. [Oral]
6. Vilcherrez D and **Li G**. (Apr. 2015) Anaerobic Ammonium Oxidation (ANAMMOX) for nutrient nitrogen removal using high rate expanded granular sludge bed (EGSB) bioreactor. AZ Water Conference, Phoenix, Arizona, USA. [Oral]
7. **Li G** and Vilcherrez D. (May 7th, 2014) Inhibitory effect of heavy metals on the activity of anaerobic ammonium oxidation. AZ Water Conference, Phoenix, Arizona, USA. [Poster]
8. **Li G**. (Apr. 10th, 2014) Inhibition of Anaerobic Ammonium Oxidation by Heavy Metals. SWESx (Soil, Water and Environmental Science). University of Arizona, Tucson, Arizona, USA. [Oral]
9. **Li G** and Vilcherrez D. (Sep. 25th, 2014) Inhibitory effect of heavy metals on the activity of anaerobic ammonium oxidation. Graduate Research Symposium, University of Arizona, Tucson, Arizona, USA. [Poster]
10. **Li G** and Vilcherrez D. (Nov. 7th, 2014) A novel strategy to attenuate the inhibitory effects of nitrite on the anaerobic ammonium oxidation (anammox) process. Showcase, University of Arizona, Tucson, Arizona, USA. [Poster]
11. **Li G**. (Oct. 2013) Heavy metal inhibition of anaerobic ammonium oxidation: Cu, Zn, Cd, Pb, Ni, and Mo. Seminar, Department of Chemical and Environmental Engineering, University of Arizona, Tucson, Arizona, USA. [Oral]