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## EDUCATION

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THE UNIVERSITY OF TEXAS AT AUSTIN Ph.D. in Civil Engineering M.S. in Environmental Engineering <i>Advisor: Mary Jo Kirisits</i> Areas of focus: <i>Microbiology</i> <i>Systems biology</i> <i>Bioinformatics</i> <i>Statistical modeling</i> <i>Nanoparticle fate and</i> <i>toxicology</i>	Spring 2018 Fall 2013 Spring 2007
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THE UNIVERSITY OF TEXAS AT AUSTIN B.S. in Biochemistry
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## PUBLICATIONS

\*denotes undergraduate mentee

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## PREPARATION

**Chambers, B. A.**, Hofmann, H., Kirisits, M. J., Silver and silver nanoparticles cause and select for antibiotic resistance in *Pseudomonas aeruginosa*. *Manuscript in preparation for Proceedings of the National Academy of Science*

**Chambers, B. A.**, D'Alton, S., \*Smith, S. K., Kirisits, M. J., A molecular biological model for the surface attachment action of silver nanoparticles. *Manuscript in preparation for American Chemical Society Nano*

**Chambers, B. A.**, Sabaraya, I. V., Saleh, N.B., Kirisits, M. J. Cohort adoption: The effect of a four-year pre-college STEM outreach program. *Manuscript in preparation for the Journal of Science Education and Technology*

## CIRCULATION

**Chambers, B. A.** A molecular biological model describing silver nanoparticle mechanisms of toxicity and associated antibiotic resistance. *Dissertation Published by The University of Texas at Austin. 2018*

Saleh, N. B., **Chambers, B. A.**, Aich N. Kirisits, M. J. Mechanistic lessons learned from studies of planktonic bacteria with metallic nanomaterials: implications for interactions between nanomaterials and biofilm bacteria, *Frontiers in Microbiology. 2015*

**Chambers, B. A.**, Afrooz A. R. M. N., Bae S., Aich N., Katz, L. E., Saleh N. B., Kirisits, M. J. Effects of Chloride and Ionic Strength on Physical Morphology, Dissolution, and Bacterial Toxicity of Silver Nanoparticles. *Environmental Science and Technology. 2014 48 (1) 761-769. DOI: 10.1021/es403969x.*

Saleh, N. B., Aich, N., **Chambers, B. A.**, Afrooz, A. R. M., Kirisits, M. J. Influence of tin doping on environmental interactions of nano indium oxides in aqueous systems. *Abstracts of Papers of the American Chemical Society. 2014*

C.B. Mendez, S. Bae, **B. A. Chambers**, S. Fakhreddine, T. Gloyna, S. Keithley, L. Untung, M.E. Barrett, K. Kinney, and M. J. Kirisits, Effect of Roof Material on Water Quality for Rainwater Harvesting Systems Additional Physical, Chemical, and Microbiological Data. *Texas Water Development Board 2010*

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## PRESENTATIONS

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Landsman M. R., **Chambers B.A.**, Kirisits M. J., Contaminant transport in an Austin Urban Watershed: approaches to isolate human influence. Waller Creek Consortium. Austin Texas, May 2019

**Chambers B. A.**, Smith, S. K., Kirisits M. J., Silver nanoparticles induce antibiotic resistance in *Pseudomonas aeruginosa*. American Chemical Society National Meeting, New Orleans March 18-22, 2018

**Chambers B. A.**, Smith S. K., Kirisits M. J., Resistance is not futile: Metals generate antibiotic resistance in engineered systems. Sustainability Conference. University of Texas, November 8-11, 2016

**Chambers B. A.**, Kirisits M. J., Antibiotic resistance consequences of silver nanoparticle use. Gordon Microbial Stress Response. Mount Holyoke, July 17-26, 2016

**Chambers B. A.**, Kirisits, M, Chloride drive low fractal dimension silver nanoparticle formation, controlling toxicity and stress response. University of Texas, March 20, 2014

**Chambers B. A.**, Katz L. E., Kirisits M. J., Chloride concentrations and ionic strength impact the toxicity and stability of silver nanoparticles in bacterial exposure media. 87th American Chemical Society Colloid and Surface Science Symposium. University of California Riverside, June 23-June 26, 2013

**Chambers B.**, Nguyen H. Kirisits, M.J. Microarray Analysis of Nanosilver Tolerance Strategies in *Pseudomonas aeruginosa* and *Escherichia coli*. Environmental Nanotechnology Gordon Conference, 2011, Waterville Valley, NH. Poster Presentation.

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## PROFESSIONAL EXPERIENCE

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POSTDOCTORAL RESEARCH	2019-2018
FELLOW, AUSTIN TEXAS	2009-2008
- bioinformatics and	2007
modeling training	2006-2004
program a	
- modeled urban	
watershed contaminant	
flux	
- characterized long-term	
evolution to metal stress	

PHARMAFORM L.L.C., AUSTIN  
TEXAS

Research and  
Development Scientist II

- designed new drug  
formulations
- modeled chemical  
interaction during  
processing

Analytical Chemist II

- created methods to analyze new  
drug products

HUNG-WEN (BEN) LIU  
ANTIBIOTIC RESEARCH LAB,  
AUSTIN TEXAS

- characterized novel antibiotic  
biosynthesis
- protein isolation
- clonal engineering

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## PROFESSIONAL SKILLS

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Lab: bioinformatics, transcriptomics, metagenomics, proteomics, RNA and DNA, mutational analysis, microbiology, network analysis, nanosynthesis, biofilm formation, various microscopy including phase contrast and SEM, various analytical chemistry techniques including HPLC, GC, NFIR Spectroscopy, AA-ICP Spectroscopy

Various informatics tools including: InParanoid, BioConductor, BowTie, Qiime and Qiime2, DESeq2

Programing: R, Matlab, Fortran, some Python, MinTeq/MinEQ

Languages: English – native, Spanish – conversational, Danish – intermediate

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## OUTREACH LEADERSHIP ROLES

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ENGINEERS WITHOUT	2015-2014
BORDERS, UNIVERSITY OF	2014-2011
TEXAS CHAPTER	2014-2011
Professional mentor	2014-2011
Filter design team leader	2017, 2016
ENVIRONMENTAL	
ENGINEERING OUTREACH	
PROGRAM AT SAN JUAN DIEGO	
HIGH SCHOOL	
Program coordinator	
OFF ROAD SCIENCE WITH THE	
ENVIRONMENTAL SCIENCE	
INSTITUTE	
Hot Science Cool Talks	
pre-lecture demo	
coordinator	
INTRODUCE A GIRL TO	
ENGINEERING DAY	
Exhibit operator	

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## TEACHING EXPERIENCE

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CLUBES DE CIENCIAS,	January 2015
UNIVERSITY OF GUANAJUATO,	2016, 2017
MEXICO	2017
From trash to treasure:	2016
Using bacteria to power	2015
the future	2015
<i>Self-written course</i>	2014
THE UNIVERSITY OF TEXAS AT	2011, 2013
AUSTIN	2015
Scientific Inquiry Across	2014
the Disciplines	2011
<i>Stuart Reichler and</i>	2010
<i>Self-written</i>	2006
Cell Biology	2005
<i>Arturo De Lozanne and</i>	
<i>Self-written</i>	
Introduction to	
Environmental	
Engineering	
<i>Mary Jo Kirisits</i>	
Hydraulic Engineering	
John Burgin	
Microbiology	
<i>Pratibha Saxena</i>	
<i>Marvin Whiteley</i>	
<i>Mary Jo Kirisits</i>	
Molecular Biology	
<i>Scott Stevens</i>	
<i>Ellen Gottlieb</i>	
<i>Mary Jo Kirisits</i>	
General Engineering	
Chemistry	
<i>Self-written course</i>	
Organic Chemistry and	
Biochemistry for Nursing	
Students	
<i>Fatima Fahkreddine</i>	
General Chemistry	
<i>Sarah Sutcliffe</i>	
<i>Average rating: 4.57 out of 5</i>	

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## WORKSHOPS AND CERTIFICATES

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TRANSLATING GRADUATE	October 2016
NANO-EXPERIENCE TO AN	Fall 2016
ACADEMIC CAREER:	
INTEGRATING SOCIAL ASPECTS	
IN ENGINEERING EDUCATION	
THROUGH ACTIVE LEARNING	
Active learning	
certification program	
INTERDISCIPLINARY	
EDUCATION CERTIFICATE	
School of Undergraduate	
Education, University of	
Texas at Austin	

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## AWARDS

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Ben D. Geeslin Endowed Presidential	2017-2015, 2013
Scholarship	2017, 2016
Kolodzey Travel Grant	2016
American Water Works Association	2015
Scholarship	2015-2014
University of Texas at Austin Legacy	2014
Fellowship	2012-2011
Earnest Gloyna Presidential	
Scholarship	
Texas American Water Works	
Association Fellowship	
Gus Fruh Memorial Fellowship	

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## GRADUATE MENTEES

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<i>Sierra Jensen</i>	M.S. Environmental Engineering Expected 2019
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## UNDERGRADUATE MENTEES

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<i>Eddalee Hochwalt Naumann</i>	B.S. Chemical Engineering Expected
<i>Alison Zamsky</i>	2020
<i>Savanna K. Smith</i>	B.S. Environmental Engineering
<i>Able Ingle</i>	Expected 2020
<i>Anvita Jain</i>	B.S. Civil Engineering Expected 2019
<i>Kathleen L. Speights</i>	B.S. Civil Engineering 2017
	B.S. Civil Engineering 2015
	B.S. Chemical Engineering 2014

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## PROFESSIONAL AFFILIATIONS

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American Water Works Association  
American Chemical Society

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## PERSONAL

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Bicycle touring, hiking/camping, Language and history enthusiast, swing dancing

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