

KEEMIA ABAD

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EDUCATION

Rutgers, the State University of New Jersey

Bachelors of Arts in Genetics 2015

RELEVANT EXPERIENCE

University of Kentucky Center for Applied Energy Research

Research Scientist Associate 2017-Present

Research Scientist Assistant 2016-2017

Lab Technician 2015-2016

- Performed gas phase sample collection and analysis tests following EPA methods and in house procedures from a bench and pilot scale amine based CO₂ capture plant to monitor chemical emissions as part of a Department of Energy funded project
- Investigated the accumulation of environmental contaminants from lab, bench and pilot CO₂ capture systems. Contaminants include trace heavy metals, nitrosamines, oxidative and thermal degradation products
- Determined Henry's coefficient of nitrosamines and aldehydes to predict gas-phase partitioning and emissions of CO₂ capture systems
- Developed sample preparation and analysis methods of the ICP-MS analysis of Se, As and Fe from FGD waters to characterize and develop removal strategies
- Analysis of samples included sample preparation, calibration, data integration, instrument QA/QC, and reporting the data.
- Maintenance and operation of Instrumentation used including ICP-MS, IC, LC/MS-TOF, and GC-MS.

The Waksman Institute of Microbiology – Dr. Gallavotti Lab

Student Research Assistant 2013-2015

- Assisted in numerous lab techniques including DNA isolation, genotyping, PCR and gel electrophoresis
- Conducted independent research project building two constructs for maize transformation in which both proteins are expressed fused to a fluorescent protein. The constructs will help to visualize the expression patterns of the encoded proteins. Techniques used included PCR, cloning and transformation of E. coli and Agrobacterium. Once introduced in Agrobacterium, the constructs transformed into maize plants

PUBLICATIONS AND PAPERS

Naser Matin, Jesse Thompson, **Keemia Abad**, Saloni Bhatnagar, Kunlei Liu. Thermal degradation rate and kinetic modeling of CO₂ loaded amine solvent blends of 2-amino-2-methyl-1-propanol and 1-amino 2-propanol. *Industrial & Engineering Chemistry Research*. Submitted, 2019.

Jesse G. Thompson, Xin Gao, Shino Toma, **Keemia Abad**, Saloni Bhatnagar, James Landon, Kunlei Liu; "Decomposition of N-nitrosamines formed in CO₂ Capture systems through electrochemically-mediated reduction on carbon xerogel electrode" *International Journal of Greenhouse Gas Control* 2019, Volume 83, 83-90. doi:10.1016/j.ijggc.2019.02.003

Jesse G. Thompson, Naser Matin, Saloni Bhatnagar, **Keemia Abad**, Kunlei Liu; "Determining the Henry's volatility coefficient of nitrosamines in CO₂ capture solvents" *International Journal of Greenhouse Gas Control*, 2018, Volume 73, 104-110. doi: 10.1016/j.ijggc.2018.04.004

Jesse G. Thompson, Saloni Bhatnagar, Megan Combs, **Keemia Abad**, Femke Onneweer, Jonathan Pelgen, David Link, Jose Figueroa, Heather Nikolic, Kunlei Liu; "Pilot testing of a heat integrated 0.7 MWe CO₂ capture system with two stage air-stripping: Amine degradation and metal accumulation" *International Journal of Greenhouse Gas Control* 2017, Volume 64, 23-33. doi:10.1016/j.ijggc.2017.07.0042.

Jesse G. Thompson, Megan Combs, **Keemia Abad**, Saloni Bhatnagar, Matthew Beaudry, Gary Rochelle, Scott Hume, David Link, Jose Figueroa, Heather Nikolic, Kunlei Liu; "Pilot testing of a heat integrated 0.7 MWe CO₂ capture system with two stage air-stripping: Emission" *International Journal of Greenhouse Gas Control* 2017, Volume 64, 267-275. doi:10.1016/j.ijggc.2017.08.003

Jesse G. Thompson, Heather Nikolic, Megan Combs, Saloni Bhatnagar, Jonathan Pelgen, **Keemia Abad**, Kunlei Liu. "Solvent Degradation and Emissions from a 0.7MWe Pilot CO₂ Capture System with Two-Stage Stripping." *Energy Procedia*, 2017, 114, 1297-1306.
<http://dx.doi.org/10.1016/j.egypro.2017.03.1242>

ORAL PRESENTATIONS

"Impact of Small Pilot Carbon Capture System Conditions on Emissions" Fourth University of Texas Conference on Carbon Capture and Storage (UTCCS-4) Austin, TX, 30-31 January, 2018.

FUNDING SECURED

Co-I, "Targeted Pb Removal for Drinking Water Purification using INCION[®]", PHS 2018-02 Omnibus Solicitation of the NIH, CDC, and FDA for Small Business Innovation Research Grant Applications (Parent SBIR [R43/R44] to the National Institutes of Health, 24 months (2019-2021), Total \$60,042.

Co-I, "Anode Modification to Target Pb Removal for Drinking Water Purification using Inverted Capacitive Deionization", PHS 2016-02 Omnibus Solicitation of the NIH, CDC, FDA, and ACF for Small Business Innovation Research Grant Applications (Parent SBIR [R43/R44]) to the National Institutes of Health, 18 months (2016-2018), Total \$15,165.

MEMBERSHIPS

The National Society of Leadership and Success

SKILLS AND TRAINING

Instrumentation– Agilent TOF-MS, Dionex IC, Agilent ICP-MS, Agilent GC/MS, PCR, Gel electrophoresis, microwave digestion

Software – Masshunter, MSD Chemstation, Chromeleon, JMP

LANGUAGES

English– native language

Spanish speak fluently and read/write with high proficiency