Lucina Márcia Kuusisto, PhD, MS, LCI

Assistant Professor
Department of Biological & Environmental Sciences
Academic Training: Environmental Science, Water Resources Engineering, Chemical Engineering,

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Formal Education

Ph.D., Earth & Environmental Sciences, *University of Texas at Arlington*, May 2013

M.S., Water Resources Engineering Coursework, *Texas Tech University*

B.Sc., Chemical Engineering, *Universidade Federal de Pernambuco*; Recife, Brazil

Research Interests

Water and Valorization of Wastewater

- Invention, optimization, and testing of novel drinking water purification products and processes;
- Invention, optimization, and testing of energy-efficient refuse treatment, and the valorization of biomass, industrial effluent, gaseous emissions, and solid waste;

Air

- Invention of novel air and/or biogas purification products and processes;
- Invention, optimization, and testing of biogas/methane generation rates from corn-ethanol industrial liquid waste (vinasse or stillage);
- Development of mathematical models to predict outcomes of environmental treatment processes;

Energy

- Invention, optimization, and testing of novel energy generation processes;

Food

- ❖ Invention of a novel treatment process for the valorization of corn-ethanol industrial liquid waste to produce food for humans;

Environmental Health

- ❖ Research on epidemiology, and the invention of a novel control method to reduce the proliferation of mosquitoes and/or other disease vectors;
- ❖ Environmental remediation planning and environmental sustainability;

Relevant Professional Experience

Texas A & M University-Commerce, College of Science & Engineering 8/2018-Present

Assistant Professor

Teaching Experience:

- Intro Environmental Toxicology ENVS 312;
- Natural Disasters ENVS 103;
- Water Quality ENVS 307;
- Environmental Remediation ENVS 497 01E
- Biological Literature BSC 301-01E
- Research Methods of Scientific Literature BSC 595

Dallas Baptist University*, Environmental Science Department,* 1/2014-5/2018

Adjunct Professor

Teaching Experience:

- Chemistry of Hazardous Materials ENSC 3306;
- Water Quality ENSC 3301

H. Grady Spruce High School, *Career & Technical Education Department,* 8/2017-6/2018

High School Teacher

Teaching Experience: "Principles of Engineering", *Project Lead the Way [PLTW]*

Cedar Hill High School, *Career & Technology Education Department,* 8/2015-6/2016

High School Teacher

Teaching Experience: Principles of Engineering, Bio-Technology, Robotics

Tarrant County College (TCC)*, Chemistry Department* 8/1998-8/2014

Adjunct Professor:

Teaching Experience:

- Chemistry Lecture CHEM 1406;
- Chemistry Lab CHEM 1406;
- Chemistry Lab: CHEM 1411;
- Chemistry Lab: CHEM 1412

University of Texas at Arlington (UTA)*, Civil Engineering Department* 8/2007-5/2008

Lecturer/ Graduate Teaching Assistant

Teaching Experience:

- Groundwater Hydrology CE 5348, Lecture
- Fluid Mechanics CE 3142, Lab

Independent Inventor 05-9/2008

Inventor (Self-employed, volunteered, temporary)

Kuusisto, LM; Duarte-Coêlho, AC; Barreto, TV. “The DCM Process”

Filed for a patent (09/24/2008), USPTO application number 61/099,608, and in Brazil, with the “*Diretoria de Patentes” (DIRPA).* A ‘Treatment-to-useable-co-products’ Engineering Process: Treatment optimization of vinasse aiming at the production of a valuable fertilizer, while capturing the biogas, and generating methane to be used as biofuel.

Texas Commission for Environmental Quality (former TDH)

Engineer-in-Training (EIT), Full-time

Scientific Publications, Meeting Abstracts, Scientific Presentations

2020

Journal Article:

Kuusisto, Lucina Márcia; “Review of an Integrated Air-Vinasse Treatment-To-Food, Energy, Water, And A Novel Mosquito-Combatant Soil Amendment”. Journal of Biotechnology & Bioresearch-ISSN: 2643-704X, JBB-20-RW-564, Vol. 2 Issue 3; 2020; https://crimsonpublishers.com/jbb/abstract/JBB.000538.php

2019

Journal Article:

Kuusisto, Lucina Márcia, Sattler, Melanie L., Chen, Victoria C.P**; “Predicting Bioenergy Potential from Vinasse Digestion: The VUMP Model (Vinasse Utilization for Methane Production)”.** J. Civil Eng. Urban., 9(4): 36-42, 2019; pii:5225204301800005-9[.] DOI http://www.ojceu.ir/main/index.php?option=com_content&view=article&id=71&Itemid=75

Conference Proceeding:

Kuusisto, Lucina Márcia, Sattler, Melanie, Chen, Victoria Chen. **“Predicting Bioenergy Potential from Vinasse Digestion: The VUMP Model (Vinasse Utilization for Methane Production)”** Proceedings of the Air & Waste Management Association 112th Annual Conference. Québec, Canada" (June, 2019).

2018

Journal Articles:

Rahman, Shammi; **Kuusisto, Lucina Márcia**; Sattler, Melanie; Sabnis, Madhu; Chen, Victoria. “**Models for Organics Removal from Vinasse from Ethanol Production”.** Clean Technologies & Environmental Policy (2018), DOI 10.1007/s10098-018-1496-4, ISSN 1618-954X Volume 20 Number 4, file:///C:/Users/Family/Downloads/10.1007_s10098-018-1496-4.pdf

Rahman, Shammi; **Kuusisto, Lucina Márcia**; Sattler, Melanie; Rodrigues, Jorge. "**Anaerobic digestion of vinasse from ethanol production: Impact of waste composition and treatment temperature on microbial community**". Applied to the following Journal: Microbiology and Biotechnology.

2014

Conference Proceeding

Kuusisto, Lucina Márcia, Sattler, Melanie L., Chen, Victoria C.P; **“Development of a Linear Regression Mathematical Model to Predict Bioenergy Potential from Vinasse**

Digestion". Approved Abstract, AWMA [Air & Waste Management] 107th Annual Conference, Los Angeles, California, June 2014.

2013

Presentation

Kuusisto, Lucina Márcia, Sattler, Melanie L., Chen, Victoria C.P**; "Development of a Mathematical Model, VUMP (Vinasse Utilization for Methane Production)"**. Defended the PhD research results at the University of Texas at Arlington, March 2013

2012

Presentation

Kuusisto, Lucina Márcia, Sattler, Melanie L. **"Bio-fuel Production from Ethanol Distillery Wastewater"**. Presented at the ACES [Annual Celebration of Excellence by Students] competition, University of Texas at Arlington, March 2012

2008

Presentation

Kuusisto, LM; Duarte-Coelho, AC. **"Optimization of Fertilizer Production from the Chemical and Biochemical Treatment of Vinasse"**. Presented during the Chemists & Chemical Engineers' scientific meeting at the Federal University of Pernambuco, Brazil, December 2008

Patents filed

- "TAOS (**T**hree **a**nd **O**ne **S**ignificant products: an Air-Vinasse Treatment Process)". Texas A&M University System, 2019

- "The DCM Process". US PTO, # 61/099,608. 2008

Academic Advisor of the following Students (2020):

- Pouncil, Malayshia. "Testing a Novel Water Filtration Media to Eliminate Arsenic from the Drinking Water Supply". MsNair Scholar's Technical Report. College of Science and Engineering, Environmental Science Department, Texas A&M University-Commerce. Projections for December of 2020

- Tate, Andrew. "Optimization of 3 Combined Water Treatment Processes, Comparison, and Calculation of a Novel Filtration Media Fouling Time". Technical Report. College of Science and Engineering, Environmental Science Department, Texas A&M University-Commerce. Projections for December 2020

Funding applications and grants

NSF (applied)
EREF (applied)
Texas A&M University-Commerce: $10,000
McNair Scholar: $1,500