Sarah Simoneaux

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Education

Doctor of Philosophy in Systems Engineering *Chemical Engineering Concentration*
Expected May 2026 | University of Louisiana at Lafayette | Lafayette, LA

Bachelor of Science in Chemical Engineering
August 2018 | University of Louisiana at Lafayette | Lafayette, LA

Bachelor of Science in Chemical Engineering
Attended September 2014 – August 2016 | Louisiana Tech University | Ruston, LA

Work Experience

Graduate Research Assistant
Chemical Engineering **|** University of Louisiana at Lafayette | Lafayette, LA

Research Tasks
- Designed, constructed, and operated a lab-scale microalgae-based photobioreactor system to study *Chlorella vulgaris'* ability to capture and utilize CO_2 under different operating parameters
- Collected and analyzed biomass and water samples for monitoring process operations
- Produced and presented analyzed data in easy-to-understand formats for various audiences
- Met frequently with superiors and project team to give progress updates and obtain feedback

Undergraduate Student Mentorship
- Mentored an undergraduate research apprentice for two years who learned to operate the photobioreactor system independently including independent sampling and data reporting

Student Worker
Vincent A. Forte River & Coastal Hydraulics Lab | Civil Engineering | Louisiana State University | Baton Rouge, LA
Summer 2015

- Assisted in the calibration of flows and sediment transport in the physical model of the Mississippi River including delivery systems for water and sediment, in-stream measurement, and data

Research Experience

Effects of Harvesting Rate and CO_2 Concentration on the Growth of the Microalgae *Chlorella vulgaris*
- Operated a lab scale photobioreactor system for one year; routinely harvested and processed microalgae from reactors
- Worked in tandem with undergraduate research apprentice to ensure continuous operation and sampling

Cultivated *Chlorella vulgaris* Using a CO_2-laden Gas Stream Bubbled Through Activated Sludge
- Retrofitted existing photobioreactor system to accommodate an activated sludge reactor
- Collected activated sludge from local wastewater treatment plant and periodically analyzed activated sludge for dissolved oxygen

Notable Highlights

Research Experiences for Undergraduates - Mentor
University of Louisiana at Lafayette | Lafayette, LA

Chlorella vulgaris growth from Sodium Bicarbonate produced via Carbon Dioxide absorption using Sodium Hydroxide | Andrew Schofield, University of Kentucky

Comparing growth of Chlorella vulgaris in $NaHCO_3$ and $CaCO_3$ | Taskina Jui, University of Florida

Engineering and Technology Expo Participation
University of Louisiana at Lafayette | Lafayette, LA

Varying harvesting rates to achieve maximum carbon dioxide utilization via Chlorella vulgaris | 1st place Graduate Student Poster