Lucille Verster Rivera

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PROFESSIONAL SUMMARY

A bilingual (English and Afrikaans) Ph.D. candidate with hands-on production experience and a passion for sustainability. I am motivated and adaptable, maintaining a positive outlook for my projects and responsibilities. My academic studies and field experience lay a strong foundation for mentorship, collaboration, and process research & development.

EDUCATION

North Carolina State University, Raleigh, NC

Ph.D., Chemical Engineering and Forest Biomaterials — **May. 2025**

M.S., Chemical Engineering | GPA: 3.79 — **Dec. 2021**

Louisiana State University, Baton Rouge, LA — **Dec. 2019**

B.S. (Cum Laude), Chemical Engineering; Minor in Chemistry | GPA: 3.73

WORK EXPERIENCE

Ph.D. & M.S. Graduate Thesis – North Carolina State University, Drs. O.D. Velev & L. Pal **Jan. 2022 – Current**

M.S. and Ph.D. work done in Dept. of Chemical Engineering and Forest Biomaterials and Nonwovens Institute

- Developed millifluidic flow device to simulate accelerated environmental degradation.
- Developed a framework to investigate fiber degradation and microplastic release in various environmental conditions and analyze the sustainability factor.
- Studied colloidal interactions in microplastic capture using soft dendritic colloidal particles for M.S. thesis.

Sustainability Research Engineer, RGU/NA – BASF (Houston, TX) **May 2024 – Aug. 2024**

Leadership Developmental Program Intern

- Led a safety review and completed feedstock evaluation to potentially reduce capital cost up to $5M. The work supported $75M DoE funded project to replace incineration with gasification and reduce 90% of CO2 emissions.
- Procured biomass feedstock and successfully completed pilot trials with external technology provider to evaluate introduction of biogenic carbon into our existing product portfolio. Collaborated with external vendors to identify promising biomass feedstock with volumes >25K tons/year and <$50/ton, resulting in positive business case.

Field Engineer Intern – Halliburton (Bossier City, LA) **June 2019 – Aug. 2019**

Field Engineer internship for Halliburton scholarship

- Conducted a research-based project to investigate the influence of fracking gel on process conditions.
- Determined the breaking point of varying fracking gel loadings as a function of temperature and correlated it to fracking depth to ensure borate gels would uphold at different fracking sites.

LEADERSHIP SKILLS

Lab safety officer:

- Implemented strict guidelines on maintenance and cleanliness of workspace and maintained EH&S safety regulations.
- In charge of safety training of new researchers, ensuring preventative measures and safety culture were upheld.
- Led quarterly lab clean-up and maintenance, involving updating chemical inventory.

Lab waste manager:

- Inspected waste containers weekly for cracks and damages and ensured waste was picked up in a timely manner.
- Implemented a new waste container that reduced waste overflow and promoted proper disposal of waste in the lab.

Research mentor:

- Provided research support and guidance to 1 MS and 1 Undergrad. Student.
- Departmental peer mentor to 2 first-year Ph.D. students aiding in navigating adapting to graduate school environment.

TECHNICAL SKILLS

Computer Literacy: MATLAB, ImageJ, OriginLab, SolidWorks, Microsoft Office, Aspen Plus

Laboratory Techniques: UV-Vis Spectroscopy, Scanning Electron (SEM) and Optical Microscopy, Fourier Transform Infrared Spectroscopy (FTIR) with Attenuated Total Reflection (ATR), Goniometer, UV/IR Light Safety, X-ray Diffraction (XRD) Crystallinity Analysis, Tensile Testing, Keyence Surface Roughness Analysis, Gel Permeation Chromatography (GPC), Dynamic Light Scattering (DLS) Particle Size and Zeta Potential Analysis