

MARISANA A. MASHA  
Doctor of Engineering Candidate  
Cape Town, South Africa  
Last Updated: February 26, 2026

## Links

- LinkedIn: <https://linkedin.com/in/marisanamasha>
- ORCID: <https://orcid.org/0000-0001-5121-2861>
- GitHub: <https://github.com/code-marisana>
- Website: <https://marisanamasha.com>

## PROFILE

I am a chemical engineering researcher focused on hydrogen production, biomass valorization, and thermochemical process optimization using computational modeling and pilot-scale validation.

## RESEARCH INTERESTS

- Hydrogen Production
- Biofuels
- Computational Modeling and CFD
- Thermochemical Processes
- Energy Systems

## EDUCATION

Doctor of Engineering in Chemical Engineering, Cape Peninsula University of Technology (2025 - Present)

Thesis: Computational Fluid Dynamics Modeling of an Intensified Biomass Pyrolysis Reactor for Hydrogen Production

Master of Engineering in Chemical Engineering, Stellenbosch University (2021 - 2024)

Thesis: Quality improvement of liquid fuels derived from waste tire pyrolysis

Bachelor of Laws, University of the Witwatersrand (2018 - 2020)

Bachelor of Science in Engineering (Chemical), University of the Witwatersrand (2013 - 2016)

## PROFESSIONAL EXPERIENCE

Research Engineer, Stellenbosch University (2024 - Present)

- Provide research and technical support for industry-linked pyrolysis projects using a pilot-scale plant.
- Prepare feedstock and sampling plans using coning and quartering protocols.
- Develop project timelines and manage full pyrolysis plant operations.
- Troubleshoot technical issues, document findings, and submit weekly stakeholder reports.

## TECHNICAL SKILLS

Engineering: ANSYS, Aspen Plus, AutoCAD, Fusion 360

Programming: Matlab, Python, Ruby, Bash, C, SQL, JavaScript, CSS, HTML

Analytics and Reporting: Power BI, sample collection, data cleaning and analysis, design of experiments, reporting

Productivity and Graphics: Microsoft Office, Google Workspace, macOS tools, LibreOffice, Adobe Illustrator, Inkscape

## LANGUAGES

- English (read, write, speak)
- Sepedi (read, write, native)
- Zulu (read, speak)
- Sotho (read, speak)
- Tswana (read, speak)

#### PUBLICATIONS

- Upgrading of pyrolysis tire-derived oil through fractional condensation and subsequent oxidative desulphurisation (2026)
- CFD-Based Design of an Intensified Biomass Pyrolysis Reactor for Hydrogen Production (2026)

#### CONFERENCE CONTRIBUTIONS

- SANEDI Annual Energy Conference 2026 - Conference Poster

#### GRANTS AND SCHOLARSHIPS

- NRF Full Scholarship for Masters (2022 and 2023)
- SANEDI Full Scholarship for DEng (2025 - Present)