



University of Fort Hare  
*Together in Excellence*

# POSTDOCTORAL RESEARCH FELLOWSHIP

Physics Department

## Renewable Energy: Biogas Technology

The successful candidate will be able to design and construct automated biogas digesters and optimize biogas to be used as a source of electricity and as a vehicle fuel. The candidate should have knowledge of internal combustion engines (Diesel and Petrol engines), techno-economic analysis of Renewable energy systems, and Energy Storage Components. hybridization of renewable energy technologies and hydronic air source heat pumps.

### The key performance areas include:

- Development of Novel Automated Biogas digester systems for producing biogas for electricity production, vehicle fuel, and irrigation systems.
- Design a biogas power hydronic air source heat pump water heater.
- CFD Contextual Modelling of Biogas combustion in Internal Combustion Engines (Diesel and Petrol).
- Techno-economic evaluation of Renewable Energy systems.

### Minimum requirements

- Doctoral degree in Renewable Energy, Mechanical Engineering, Agricultural Engineering, Applied Physics, Electrical Engineering, or related field, completed within the last four years.
- Expertise in computational fluid dynamics including programming experience in MATLAB, Python, and machine learning applications.
- A track record of publications in DHET-accredited journals.

**Preference is given to Women, South African Citizens, and SA Permanent Residents.**

### Value of fellowship

- The annual stipend for this position is R200 000-00 per year.
- The duration of the fellowship is 24 months.

### Expected outcomes.

- Development of novel products.
- A minimum of 4 publications in DHET-accredited journals.
- Contribute to the research productivity of the Department of Physics.

Enquiries and further details regarding this post may be directed to Dr P Mukumba via Email: [pmukumba@ufh.ac.za](mailto:pmukumba@ufh.ac.za). The applications must be send to Email: [postdocs@ufh.ac.za](mailto:postdocs@ufh.ac.za) and cc [pmukumba@ufh.ac.za](mailto:pmukumba@ufh.ac.za) and [JFortuin@ufh.ac.za](mailto:JFortuin@ufh.ac.za) on or before 24 December 2023. Please consider your application unsuccessful if you have not received feedback within 4 weeks of the closing date.



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