

Geoffrey MWENDWA

University of the Witwatersrand, South Africa



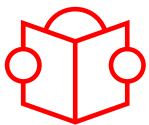
UNIVERSITY OF THE
WITWATERSRAND,
JOHANNESBURG

Research field

Physics

PhD title

**Correlation of Ferrioc Orders in
Multiferroic Rare-earth Composite
Thin Films**



Keywords

- ferrioc orders
- multiferroics
- rare-earth composites
- thin film growth
- next-generation technology

Summary

Strong correlations of ferrioc orders (ferromagnetism, ferroelectricity, ferroelasticity, and ferrotoroidicity) at room temperature exhibit the potential to realize the next-generation technology, for example, for solid-state refrigeration, spintronics, and high-efficiency solar cells. These correlations lead to multifunctional materials that host multiple coupled ferrioc orders (so-called multiferroics). These are predicted

to have high switching efficiency, low power dissipation, and high storage density among other high-end features.

This project seeks to induce multiple ferrioc orders in rare-earth composites grown in thin-film format. We will fabricate terbium-based manganite thin films and study their basic physical properties and investigate them for the abovementioned technological applications.



Supervisor
**Prof. Daniel
WAMWANGI**

University of the
Witwatersrand



Co-supervisor
Prof. Hugo DIL
EPFL