

---

## Joseph JJAGWE

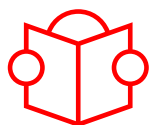
Makerere University, Uganda



MAKERERE UNIVERSITY

Research field  
**Nanotechnology**

PhD title  
**Iron oxide nanocomposite for  
pollutant detection and removal  
from water**



### Keywords

- nanocomposite
- bionanosensors
- microorganisms
- water treatment

### Summary

Presence of pathogenic microorganisms in water poses a threat to human health. Unfortunately, the approaches used to detect and remove them are very challenging. Iron oxide nanoparticles exhibit high contaminant adsorption power and antimicrobial function. They also display properties that enhance performance of electrochemical biosensors. In their pure forms, iron oxide nanoparticles easily disintegrate in aquatic environments.

In this study, we then propose to overcome this challenge by developing a novel nanocomposite that will enhance the antimicrobial properties of water-cleaning agents and sensing performance of well-established electrochemical biosensors for monitoring the efficacy of such new antimicrobial agents.



**Supervisor**  
**Dr Peter  
Wilberforce  
OLUPOT**  
Makerere University



**Co-supervisor**  
**Prof. Sandro  
CARRARA**  
EPFL