
#ChooseUL
UNIVERSITY OF LIMPOPO
11 April 2026
09h00
Onkgopotse Tiro Hall,
University of Limpopo
FACULTY OF SCIENCE AND AGRICULTURE
DOCTOR OF PHILOSOPHY
Sekgothe Nkhoreng Hazel
Finding solutions for Africa

CITATION

Sekgothe Nkhoreng Hazel developed a robust bulk–surface finite element framework for nonlinear semi parabolic reaction–diffusion systems, addressing challenges arising from nonlinear boundary coupling and geometric effects. The study formulated and nondimensionalised three models, derived their weak variational forms, and implemented a first-order IMEX time-stepping scheme with consistent finite element discretisation. Numerical experiments confirmed convergence, stability, and efficiency across various scenarios, including complex three-dimensional geometries. This work provides a rigorous and versatile computational platform, offering valuable insights into bulk–surface interactions and supporting future applications in biological, chemical, and materials-science modelling. Ms Sekgothe received the SA-UK USDP funding.