



MARIS @ Department of Chemical Engineering

Dr Tokoloho Rampai

Senior Lecturer | Postgraduate Programme Convenor

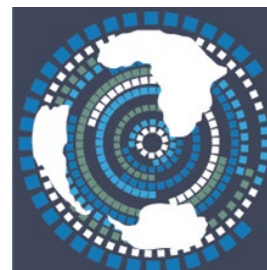
Innovation in Chemical, Materials and Observational Engineering portfolio

Marine and Antarctic Research for Innovation and Sustainability

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Website: <https://maris.uct.ac.za/current-maris-participants> (Tokoloho Rampai)



Marine and Antarctic Research for Innovation and Sustainability (MARIS), Department of Chemical Engineering Division (CHE)

Post-doctoral research Fellowship in Failure Mechanics and Mechanical Properties Evaluation in Antarctic Sea Ice

Call for Applications

In MARIS@CHE there is a vacancy for a post-doctoral fellow in Failure Mechanics and Mechanical properties evaluation in Antarctic sea ice. The post-doctoral fellow will operate under the supervision of the director of MARIS@CHE, Dr Tokoloho Rampai. MARIS is an interdisciplinary, multi-department, and multi-faculty research Centre at the University of Cape Town. It is an aggregator of competence and expertise with the overarching aim of producing knowledge and human capacity in marine and polar research. MARIS@CHE is an inter-, multi- and transdisciplinary research group in the chemical engineering department focused on field and lab-based research of Antarctic Sea Ice along the Marginal Ice Zone of the Southern Ocean.

Scope of Research

The research to be conducted is intended to supplement the work undertaken to investigate the sea ice mechanical properties and failure mechanics. In current climate models, sea ice is assumed to be a Visco-plastic material, therefore the investigation of this assumption will be the focus. In addition to this, MARIS@CHE group has developed a novel compression machine to enable the investigation of sea ice failure under uniaxial compressive stress. A good balance between compression machines functioning and materials engineering is needed.

Research Fellow will be needed to:

- ✓ Test standard samples of different materials to evaluate the performance of the new compression machine
- ✓ Test artificial sea ice samples to investigate the mechanical properties and determine the failure mechanics of samples with varying porosity and crystal sizes and shapes
- ✓ Test Antarctic Sea Ice sample's mechanical properties and determine the failure mechanics
- ✓ As part of the successful incumbent's professional development, assistance with the supervision of relevant undergraduate and post-graduate research projects may be required.
- ✓ Consult with research partners and sponsors, with a view to promoting collaborative research in this field

In addition, the successful candidate will be encouraged to conduct his/her own self-initiated research during the tenure of the fellowship under the supervision of Dr Tokoloho Rampai and will be expected to register as a PDRF by no later than 30th July 2025.

Tenure and Value:

The fellowship is for 1.5 years, July 2025 to December 2026. The Fellowship is valued between R200,000 to R320,000 per annum and does not include any fringe benefits. The Fellowship is renewable for two further years, contingent on satisfactory academic progress and on the availability of funds. Application to the SARS for tax-exemption is made by the University on behalf of the successful candidate.

Conditions of Award:

- Eligible applicants must hold a PhD degree in chemistry, chemical, electrical, or mechanical engineering, materials science, or related field



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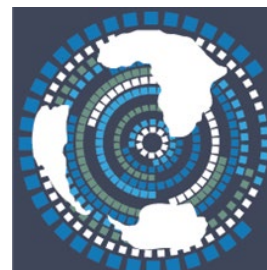
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- The PhD must have been granted within the past 5 years or satisfactory evidence that the PhD thesis has been submitted for examination must be provided.
- The successful candidate will be required to register as a postdoctoral research fellow at the University of Cape Town and to comply with the University's approved policies, procedures and practices of the postdoctoral sector.
- Applicants may not previously have held any Comprehensive full-time permanent professional or academic positions.

Application Procedure:

Suitable candidates must supply the following:

- ✓ a letter of application expressing research experience and interests.
- ✓ certified copies of all academic transcripts.
- ✓ a full CV, including details of publications; and names and addresses of at least two academic referees, with whom the applicant has worked.

Eligible and complete applications will be considered by a selection committee. Complete applications must be submitted via email to Tokoloho.rampai@uct.ac.za.

The University of Cape Town reserves the right to:

- disqualify ineligible, incomplete, and/or inappropriate applications,
- change the conditions of award or to make no awards at all

