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Effecting change in STEM must start at school level

Dr Zina Ndabeni made history when she joined the University of Cape Town's (UCT) [Department of Physics](#) in 2020. As the first black South African woman to take up an academic role in the department, Dr Ndabeni said there's serious work to be done to nurture young black students in the fields of science, technology, engineering and mathematics (STEM).

Ndabeni was appointed into a joint position between the Department of Physics and the iThemba LABS – the largest multidisciplinary national research facility in South Africa and the largest accelerator research facility in the southern hemisphere.

A large part of her role is to strengthen the research relationship between iThemba LABS' Fast Neutron Beams Facility, and the [Metrological and Applied Sciences University Research Unit](#) located in the Department of Physics. "I am also involved in teaching first-year physics students, and I've really learned to love that," she shared.

She currently forms part of a large international collaboration to upgrade and redevelop iThemba LABS' Fast Neutron Beams Facility to meet International Organization for Standardization reference standards.

"To reach this objective we (iThemba LABS and UCT) have partnered with the Institut de Radioprotection et de Sûreté Nucléaire in France; the National Physical Laboratory in the United Kingdom; the Die Physikalisch-Technische Bundesanstalt, Braunschweig und Berlin, in Germany; and the National Metrology Institute of South Africa (NMISA)," she shared.

The facility is one of very few in the world that provides quasi-monoenergetic neutron beams from 30 MeV to 200 MeV. It was also nominated as the "designated metrology institute for medium and high-energy neutron measurements" in South Africa by the NMISA and the International Bureau of Weights and Measures.

"I'm also leading a project that aims to design and construct a remote sample handling system for the iThemba LABS' Fast Neutron Beam Facility. This project will enable sample irradiation near the neutron production area where neutron fluxes are enhanced. I am very excited about both these projects."

As the first black South African woman academic in her department, she wants to effect change.

“Sadly, South Africa produces very few black and black women scientists, and even fewer in maths and physics. That has affected diversity and transformation at university level in the country.

“Effecting change is going to take work, but we need to start at school level – that’s where we receive our foundations in science and maths. We need to focus more of our attention on schools in rural areas. There’s a huge knowledge gap between someone like me (who entered a laboratory and used a computer for the first time in university), and someone who attended a private school. It’s also said to be one of the leading causes for high drop-out rates among black learners. This is the reason we’re sitting with this problem, and we need corrective measures to change things,” Ndabeni shared.

She believes that this is possible by producing more role models for young black learners in the field in schools. Having someone that they can look up to and relate to will increase their awareness and “we’ll reap the rewards in the end”.

According to Ndabeni with the right approach, anything is possible. As a changemaker herself, she said she has big plans to be part of leading change in the department she has come to love, among colleagues who she holds in high regard.

On joining UCT she shared: “Optimism and resilience is so important. I am fortunate to be part of an optimistic and resilient university, where adversity is considered an opportunity to learn and develop new skills, and not to despair despite the challenges.”

Written by Niémah Davids, UCT News



Dr Zina Ndabeni

Photo: Supplied

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