

WATER SECTOR PERSONALITY

Prof Bhekie Mamba: Dedicated to refining water treatment technologies that can save lives

The Water Research Commission (WRC) has joined forces with the National Science and Technology Forum (NSTF) to recognise excellence, leadership and impact in the field of sustainable water management, knowledge generation and solutions. To celebrate the excellent work being done in water research and innovation in South Africa, the inaugural NSTF-WRC Award 2016/17 was bestowed upon Prof Bhekie Mamba, the Executive Dean of the College of Science, Engineering and Technology and at the University of South Africa (UNISA). Kim Trollip find out more about his achievements.



Courtesy NSTF

Prof Bhekie Mamba receiving the NSTF-WRC Award from Science and Technology Minister, Naledi Pandor, and WRC CEO, Dhesigen Naidoo.

Prof Mamba, who is also the Director of UNISA's Nanotechnology and Water Sustainability Unit, researches nanotechnology-based systems for sustainably providing safe and clean water to disadvantaged communities. He is responsible for significant scientific and technological contributions and achievements in the fabrication of advanced nanostructured materials and systems for water treatment. Innovations include the Silver Impregnated Porous Pot filter for treating wastewater at household level.

Early on in his illustrious career, Prof Mamba identified the uncertainty around water quality as a critical research question of our time – one that affects the country and humankind as a whole. "In addition, the challenges around the contamination

of water, cause untold ill health and in some unfortunate cases, mortality. Hence I began my pursuit of research funding to provide solutions in this important field."

As the Dean of the College of Science, Engineering and Technology of the largest university on the African continent, Prof Mamba is particularly passionate about providing water treatment solutions that can be applied in both urban and rural areas.

Another of Prof Mamba's passions is the responsiveness of the postgraduate students who have worked on various projects under his supervision and are researchers either at universities or in industry. "Working with postgraduate students keeps me

motivated, because one realises how much one has invested extensively in future research offspring in the field of water quality."

Drawn to research and a career in sustainable water provision

Prof Mamba was drawn to a career in science and technology early on. "I was intrigued during my PhD that contrary to what many think, there is still lots to discover in science, engineering and technology (SET)." He says the challenge of innovation and making a contribution to enhance knowledge that already exists were driving forces that motivated him. "What made SET research very attractive is that it is based on universally accepted principles and whatever outcomes or finding of the research, it immediately draws the attention of peers internationally and the benefits of such innovations are not just for local consumption but they can equally apply elsewhere in many other parts of the world.

"In order to attract funding for research and to remain relevant, I had to identify a problem that exists which affects mankind and the country as a whole," explains Prof Mamba. "In my reading and consultations it became apparent that the uncertainty with respect to water quality and its contamination was a major challenge and it accounted for untold ill health occurrences and in some unfortunate cases, fatalities. The main research question that one had to grapple with pertained to the quest for drinking water technologies that would remove organic pollutants in water even at very low concentration levels of parts-per-billion."

A message to young scientists

Prof Mamba says young scientists must not underestimate themselves. They should be proud of their achievements. "You have so much creativity and many untested ideas within you that can blow your mind, let alone make this world a better place. Do not underestimate the potential that resides within you. Unleash your God-given talent, intelligence and remain resilient with your self-belief while shutting out the voices of negativity."

Prof Mamba is well qualified to inspire young scientists. He has supervised to completion over 80 Masters and doctoral students and has published at least 220 papers in peer-reviewed journals. Besides his established international collaborative research network with other esteemed universities locally and abroad, he has presented his research work in several local and international conferences. Prof Mamba's passion is a creating sustainable solutions that would ensure that the water resources are maintained and preserved for future generations.

Previously the Head of the University of Johannesburg's Department of Applied Chemistry, Prof Mamba was subsequently appointed Dean of the Faculty of Science at the University of Johannesburg before moving to UNISA to establish the Nanotechnology and Water Sustainability Research Unit. In 2010 he was awarded the status of Chartered Chemist (CChem) and Chartered Scientist (CSci) by the British Royal Society of Chemistry (RSC) and the British Science Council, respectively. Professor Mamba is now the Fellow of the Royal Society of Chemistry of the UK and is rated C1 by the NRF. He is a member of the Academy of Science of South Africa.

The NSTF-WRC Award can be bestowed upon either an individual, team, partnership or an organisation in recognition of demonstrated leadership, innovation and impact. This new award seeks to give recognition to contributions considered either together or separately. Additional criteria include:

- Leadership in water research, development and knowledge generation that considers transformation and growth of the human capital pipeline for sustainable water management in South Africa;
- Exceptional contributions towards informing and shaping the national water landscape through policy, decision-making and legislative enhancements. The work recognised could include knowledge-based advocacy.
- Innovations that demonstrate sustainable solutions to water challenges in South Africa. These could include technology, service, process, or social innovations with impact within, between and beyond organisational boundaries;
- Outstanding work in trans-disciplinary approaches and water projects towards the empowerment of communities; and
- Improved models for integrating water opportunities into entrepreneurship and new product developments that will have a positive impact on water management in South Africa.

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More about the genesis of the NSTF-WRC award

The WRC and the NSTF have over the years collaborated on water management solutions and towards enhancing strategic dialogues on water security.

"The Commission plays a strategic leadership role in water research, development and innovation, and the partnership with the NSTF demonstrates the need to move research to impact," explains WRC CEO, Dhesigen Naidoo. "The NSTF-WRC award will undeniably create a platform to honour and recognise outstanding achievements in water management that often go unseen and encourage the sector to be more pioneering."

The NSTF is in agreement. "Improved access to water and environmentally-sensitive management of water resources feature prominently in the Sustainable Development Goals and – from this year – at the NSTF-South32 Awards. The NSTF and Water Research Commission are collaborating on this new award for research in water management, knowledge generation and solutions." adds NSTF Executive Director Jansie Niehaus.