

Celebrating Women Sunday Times



Batswana Kumalo **taps into femme finesse**

He says, she says –
who wins in business?

WOMEN LEADERS

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A passion for light drove Professor Tebello Nyokong of Rhodes University into her photodynamic therapy research, harnessing light for cancer therapy and environmental clean-up using special dyes. And with this groundbreaking work she won the Africa-Arab State 2009 L'Oréal-UNESCO Award for Women in Science.

Yet despite many awards over the years and two further doctorates from UNISA and Walter Sisulu University this year, Tebello remains true to her philosophy of humility. Laughing about herself as a crazy scientist, she says her love for scientific challenges hasn't waned over the years.

Photodynamic therapy (PDT) is intended as an alternative to chemotherapy. It's claimed that the therapy doesn't cause nausea or destroy hair and healthy cells. Specially developed dyes are used to direct light onto cancer cells. The dye is injected into the bloodstream or applied to the skin and PDT is combined with quantum dots – nano-particles that absorb and then re-emit light – enabling scientists to target and kill the cancer cells with red light. These dyes have been developed overseas and Tebello says more research was needed to establish which dyes were most efficient in the harsh African sunlight.

Pollution control is another side of Tebello's research. One of the water purification methods is photochemical destruction of pollutants using ultraviolet light. However, photo degradation products for some of the pollutants are more toxic than the parent compounds. Photosensitised oxidation has been suggested as a possible solution to this problem. Thus Tebello is investigating the use of phthalocyanines as photosensitisers, including bio-mimetic and electrochemical degradation of the pollutants in transforming chlorinated phenols and other pollutants into less harmful products.

Professor of Medicinal Chemistry and Nanotechnology, Tebello holds a DST/NRF South African Research Chair as well as a directorship of the DST-Mintek Nanotechnology Innovation Centre for Sensors. This is one of three Nanotechnology Innovation Centres in South Africa. She

Words: Mariette Greyling

Shining a light

also was recognised as one of the top three publishing scientists in South Africa in 2007. Her distinguished scientific career has earned the 2004 Shoprite/Checkers Woman of the Year Award in Science and Technology; the Rhodes University's Vice-Chancellor's Distinguished Research Award in 2003; then the Order of Mapungubwe (bronze) in 2005; and the 2008 *City Press/Rapport* Prestige Award for Inspirational Women Achievers, among many other accolades. She's an elected Fellow of the Royal Society of South Africa (FRSSA) and the Third World Academy of Science.

Born to a South African father and Sotho mother on 20 October 1951, Tebello spent her first eight years in Sharpeville. This was followed by a move to the Free State and finally to Lesotho where she lived with her maternal grandparents until her parents returned to Lesotho. During primary school, she spent alternate days as a shepherd. Because of a lack of role modelling and listening to friends who maintained that science was 'too difficult', she chose arts subjects in high school. But in what was then standard eight, she changed to science subjects. 'I was bored with long sentences,' she says. 'Absolute madness', is how she described the switch. But she found her niche and subsequently obtained her first degree in chemistry and biology at the University of Lesotho in 1977. It was while studying for her BSc that Tebello's focus on science truly sharpened 'thanks to an excellent lecturer who taught me to prove myself'.

After marrying statistician Kelebone Tebello (now deceased) in 1974, two children were born, her daughter Makhali, an HR consultant, and her computer scientist son Moabi. Tebello graduated with a PhD in chemistry from the University of Western Ontario, Canada in 1987. That same year she returned to Lesotho as

FAST FACTS

Age: 59

People you most admire:

Young township children who walk on foot come rain or shine to attend our free Saturday science classes.

Exercise: Walking

Sport: International soccer

Favourite food: Cheese cake and apple pie

Favourite TV programme: Reality programmes

Married: To Kelebone Nyokong (passed away in 1997)

Children: Two – Makhali (35) and Moabi (32)

lecturer and then senior lecturer in chemistry. Three years later she received a Fulbright fellowship for post-doctoral study at the University of Notre Dame in the US.

'It's not just about me. So many people have helped me. Team effort has been at the heart of my career.'

Back in South Africa, Tebello joined Rhodes University in 1992 as a lecturer. Climbing rapidly through the ranks, she became professor in 2001. Apart from her multi-disciplinary as well as her multi-institutional research with various scientists throughout the world, she has extensive experience in PhD and MSc supervision. So far, 35 students have completed their PhD and/or MSc degrees under her supervision. Says Tebello, 'Although I regret not being able to teach the young students, my aim is nurturing mainly female students to become future role models. Women researchers have the ability to become the best of the best because as women, we're masters at multi-

tasking and we know when to move on.'

To this end she has also been promoting research to female academics, organising symposia to link southern African women researchers. In addition, since 1994 she has been involved in the African Academy of Sciences project promoting science to girls and women.

And mindful of ensuring future scientific skills, Tebello's encouragement of science education to high school learners continues unabated.

Over the years, Tebello has published more than 280 papers in international journals and is on the editorial board of three international journals. She and her students have presented their work at more than 300 international conferences.

Tebello – ever humble – dismisses admiration for her illustrious achievements. 'It's not just about me. So many people have helped me. Team effort has been at the heart of my career.' Nevertheless, her dogged determination over the years is certainly the stuff of legends.

To stay grounded, Tebello hikes and loves gardening. Hobbies? 'My work is my hobby.' And with such an all-consuming hobby, Professor Tebello will shine a light on South Africa's progress in science for years to come. ■

