

## BIOGRAPHICAL SKETCH FOR PROF EDWARD NXUMALO

<b>Name</b> Edward Ndumiso Nxumalo	<b>Position</b> Associate Professor in Nanotechnology and Water Sustainability		
<b>Institution</b> University of South Africa			
<b>Education/Training</b>			
<i>Institution and Location</i>	<i>Degree</i>	<i>Year(s)</i>	<i>Field of Study</i>
University of the Witwatersrand (Wits), Johannesburg, South Africa.	PhD	2007 - 2010	Chemistry
University of Johannesburg (UJ), Johannesburg, South Africa.	MTech	2004 - 2006	Chemistry
University of Swaziland (UNISWA), Manzini, Swaziland.	BSc	1997 - 2002	Biology & Chemistry

### A. Personal Statement

Prof Edward Nxumalo is currently an Associate Professor in the Nanotechnology and Water Sustainability (NanoWS) Research Unit, College of Science, Engineering and Technology, University of South Africa. He is one of the competitive and growing researchers in the broader area of Nanotechnology and Water Science. He previously worked as a Senior Lecturer in the University of Johannesburg (UJ) focusing on lecturing courses such as Materials and Processing Science and General Chemistry (undergraduate level) and Advanced Nanochemistry (Master's level). He received his PhD degree in Chemistry in the University of the Witwatersrand (Wits) in 2011.

Prof Nxumalo is a member of several scientific organizations such as the South African Chemical Institute, Royal Society of Chemistry, International Water Association and the South African Nanotechnology Initiative (SANI). He was a co-editor of the monthly Nano newsletter (South Africa) published by the SANI and SAASTA and has also written several Nanotechnology-related articles for the SAASTA through the NPEP, in 2011 and 2012. He is currently an executive committee member and a board member of the SANI. His research focuses on carbon-based membranes, mainly fabrication, analysis and application (in desalination, nanofiltration, etc.) and also specializes on the synthesis and advanced characterization of heteroatomic and doped carbons and the catalytic application of organometallic complexes in the production of nanomaterials e.g. using substituted ferrocenes. He has authored and co-authored a total of 30 peer-reviewed scientific papers including book chapters and conference proceedings and currently mentors and supervises M and D students as well as postdoctoral researchers. Most of his work has been published in high-impact journals and cited many times. His work has been presented in several local and international platforms.

### B. Positions and Honors

#### B1. Professional Experience

01/01/2015	<b>Associate Professor:</b> UNISA, Nanotechnology and Water Sustainability, College of Science Engineering and Technology, Roodepoort, South Africa
01/11/2013	<b>Senior Lecturer:</b> University of Johannesburg, Department of Applied Chemistry, Johannesburg, South Africa
01/08/2012	<b>Research Fellow:</b> University of Johannesburg, Department of Applied Chemistry, Johannesburg, South Africa

#### B2. Past Professional Experience

2006	Research Assistant: University of Johannesburg, Department of Applied Chemistry, Johannesburg, South Africa MD
2006	Research Assistant: Government of Swaziland (Ministry of Agriculture; Research Station) Swaziland.

### B3. Selected Honors, Awards and Committees

- 2013 1<sup>st</sup> Prize Award at the Advances and Applications in Carbon Related Nanomaterials: From pure to doping including heteroatom layers in September 2013, Castelldefels (Barcelona), Spain
- 2011 Best Paper Award: Best paper award in the International Conference in Nanoscience, Engineering and Technology, December 2011, Chennai, India.
- 2012 Claude Leon Foundation award, 2012.
- 2010 Sasol Postgraduate Medal for SACI – 2010.
- 2009 Best PhD student presenter at Nanotechnology Young Researcher Symposium (NYRS) CSIR (Pretoria) – 2009.
- 2009 Mellon Foundation Award for 2009.
- 2014/15 Executive Committee member and board member of the South African Nanotechnology Initiative (SANi)
- 2015 Executive Committee member of the Gauteng South African Chemical Institute (SACI)

### **C. Selected peer-reviewed publications**

1. K Yokwana, N Gumbi, F Adams, S Mhlanga, E Nxumalo, B Mamba, Development of functionalized doped carbon nanotube/polysulfone nanofiltration membranes for fouling control *Journal of Applied Polymer Science* 2015, 132 (21).
2. SP Masinga, EN Nxumalo, BB Mamba, SD Mhlanga, Microwave-induced synthesis of  $\beta$ -cyclodextrin/N-doped carbon nanotube polyurethane nanocomposites for water purification, *Physics and Chemistry of the Earth, Parts A/B/C* 2014, 67, 105-110.
3. N Phao, EN Nxumalo, BB Mamba, SD Mhlanga, A nitrogen-doped carbon nanotube enhanced polyethersulfone membrane system for water treatment, *Physics and Chemistry of the Earth, Parts A/B/C* 2013, 66, 148-156.
4. SD Mhlanga, SP Masinga, MF Bambo, BB Mamba, EN Nxumalo, A Facile Procedure to Synthesize a Three-Component  $\beta$ -Cyclodextrin Polyurethane Nanocomposite Matrix Containing Ag Decorated N-CNTs for Water Treatment, *Nanoscience and Nanotechnology Letters* 2013, 5 (3), 341-348.
5. FV Adams, DS Dlamini, EN Nxumalo, RWM Krause, EMV Hoek, et al, Solute transport and structural properties of polysulfone/ $\beta$ -cyclodextrin polyurethane mixed-matrix membranes, *Journal of Membrane Science* 2013, 429, 58-65.
6. BS Mbuli, DS Dlamini, EN Nxumalo, RW Krause, VL Pillay, Y Oren, et al, Preparation and characterization of thin film composite membranes modified with amine-functionalized  $\beta$ -cyclodextrins, *Journal of Applied Polymer Science* 2013, 129 (2), 549-558.
7. MS Maubane, MA Mamo, EN Nxumalo, WAL van Otterlo, NJ Coville, Tubular shaped composites made from polythiophene covalently linked to Prato functionalized N-doped carbon nanotubes  
*Synthetic Metals* 2012, 162 (24), 2307-2315.
8. FV Adams, EN Nxumalo, RWM Krause, EMV Hoek, BB Mamba, Preparation and characterization of polysulfone/ $\beta$ -cyclodextrin polyurethane composite nanofiltration membranes, *Journal of Membrane Science* 2012, 405, 291-299.
9. SD Mhlanga, EN Nxumalo, NJ Coville, VV Srinivasu, Nitrogen doping of CVD multiwalled carbon nanotubes: observation of a large g-factor shift, *Materials Chemistry and Physics* 2011, 130 (3), 1182-1186.
10. NJ Coville, SD Mhlanga, EN Nxumalo, A Shaikjee, A review of shaped carbon nanomaterials  
*South African Journal of Science* 2011, 107 (3-4), 01-15.
11. EN Nxumalo, VP Chabalala, VO Nyamori, MJ Witcomb, NJ Coville, Influence of methylimidazole isomers on ferrocene-catalysed nitrogen doped carbon nanotube synthesis. *Journal of Organometallic Chemistry* 2010, 695 (10), 1451-1457.
12. EN Nxumalo, NJ Coville, Nitrogen doped carbon nanotubes from organometallic compounds: a review, *Materials* 2010, 3 (3), 2141-2171.

13. EN Nxumalo, VO Nyamori, NJ Coville, CVD synthesis of nitrogen doped carbon nanotubes using ferrocene/aniline mixtures, *Journal of Organometallic Chemistry* 2008, 693 (17), 2942-2948.

14. BB Mamba, RW Krause, TJ Malefetse, EN Nxumalo, Monofunctionalized cyclodextrin polymers for the removal of organic pollutants from water, *Environmental Chemistry Letters* 2007, 5 (2), 79-84.

15. BB Mamba, RW Krause, TJ Malefetse, SD Mhlanga, SP Sithole, EN Nxumalo, et al, Removal of geosmin and 2-methylisoborneol (2-MIB) in water from Zuikerbosch Treatment Plant (Rand Water) using a -cyclodextrin polyurethanes, *Water SA* 2007, 33 (2).

#### Selected International Conference Presentations

- Presented a paper at the Advances and Applications in Carbon Related Nanomaterials: From pure to doping including heteroatom layers in September 2013, Castelldefels (Barcelona), Spain
- Euromembrane Conference in London (August 2012)
- Presentation in the ICONSET 2011 in India, Chennai (December 2011).
- Presentation in the NanoTech Insight Conference in Barcelona (Spain) in March 2009.
- 14th Waternet/WARFSA/GWP-SA Symposium - Transboundary Water Cooperation: Building Partnerships" from October 30, 2013 until November 1, 2013.
- International Conference in membrane and membrane processes (ICOM) 2014: China.
- Euromembrane Conference in Germany (August 2015)

#### **D. Affiliations**

1. South African Chemical Institute (SACI).
2. Water Institute of South Africa (WISA).
3. International Water Institute (IWA).
4. South African Nanotechnology Initiative (SANi).
5. American Chemical Society (ACS).
6. African Membrane Society (AMS).