

CURRICULUM VITAE

1. Personal Information

Name : Mantoa Makoena Clementina SEKOTA

Nationality : Mosotho

Sex : Female

Marital Status : Married (two children)

Address : Department of Chemistry and Chemical Technology
National University of Lesotho
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2. Educational Qualifications

PhD (Chemistry) at Rhodes University, Grahamstown, South Africa.

Title of Thesis: Catalytic Reactions of Platinum Group Metal Phthalocyanines.

Dates attended: 1994 – 1999

Date of graduation: April 1999

BSc (Honours) in Chemistry at Rhodes University, Grahamstown, South Africa.

Date attended: 1993 – 1994

Date of graduation: April 1994

BSc (Chemistry) at National University of Lesotho.

Date attended: 1983 – 1988

Date of graduation: August 1988

3. Work Experience

January, 1999 – Present: Department of Chemistry – National University of Lesotho.

Current title of position: Senior Lecturer (Inorganic & Organometallic Chemistry)

Duties: Offering course lectures to undergraduate and MSc. students.

Supervision of projects at undergraduate and MSc level I have one MSc student that I am supervising at present.

Supervised Undergraduate Projects:

Project Title	Students Name	Year
Synthesis and Characterization of Phthalocaynines and their application in Electrocatalysis ,	Mphu E. Liphapang	2006/2007
Potentiometric determination of Fluoride in drinking water	Seliee Thabane	2006/2007
Potentiometric determination of Fluoride in drinking water	Tanki Mochochoko	2007/2008
Electrooxidation of Phenolic compounds on glassy carbon electrode modified with metal phthalocyanines	Tsoenyana Moshesha	2007/2008
Porphyrin doped polyaniline and its application in chemical sensors	Hlabathe Thaane	2008/2009
Determination of Nitrates and Phosphates in textile effluent (Mmabolou) spectrophotometry	Hlabaki Khalala	2008/009
Determination of some heavy metals (cadmium, lead, and zinc) in industrial effluent (Mmabolou)	Teboho Moeketse	2008/2009
Synthesis and Characterization porphyrin nanostructures	Ntsopha Mosili	2008/2009
Synthesis and Characterization porphyrin nanostructures (ongoing)	Mannyalleng Makhetha	2009/2010

4. Administrative Experience

2000 – 2004 : First Year Tutor

Duties: Responsible for all Administrative issues, concerning common First Year students in the Faculty of Science and Technology (FOST).

2008 – Present : Pre-Entry Science Programme (PESP) Coordinator.

Duties : Responsible for all Administrative issues concerning students in Pre-Entry Science Programme in the Faculty of Science and Technology

2009 – Present : Deputy Dean, FOST

Duties : Assisting the Dean of the faculty in the running of Deans office and responsible to administrative issues which fall directly under the office of Deputy Dean.

5. Refereed Publication

Published Papers

- i. Cyclic Voltammetry and Spectroelectrochemistry of Osmium Phthalocyanines in aqueous and non-aqueous solvents. **Mantoa Sekota** and Tebello Nyokong, *Polyhedron*, 1996, 15, 2901-2908.
- ii. The study of the interactions of cobalt (II) tetrasulfophthalocyanine with cysteine and histidine. **Mantoa Sekota** and Tebello Nyokong, *Polyhedron*, 1997, 16(19), 3279 – 3284
- iii. Catalytic behaviour of Osmium (II), Rhodium and Ruthenium (II) Phthalocyanines, Towards the Electro – oxidation of Cysteine on Glassy Carbon Electrodes. **Mantoa Sekota** and Tebello Nyokong, *Electroanalysis*, 1997, **9(16)**, 1257 – 1261.
- iv. Palladium (II) and Platinum (II), Tetramethyltetrapyridinoporphyrazine complexes: Redox properties and interactions with cysteine and histidine. **Mantoa Sekota** and Tebello Nyokong, *J. Porphyrins and phthalocyanines* 1999, 3 477 – 489.

- v. Chemical synthesis and morphology of beta – naphthalene sulphonic acid-doped polypyrrole micro/nanotubes. Richard Akinyeye, **Mantoa Sekota**, Priscilla Baker and Emmanuel Iwuoha, *Fullerenes, Nanotubes and Carbon nanostructures*, 2006, **14(9)**, 49 – 55.
- vi. Polyaniline-Mercaptobenzothiozole Biosensors for Organo-Phosphate and carbamate pesticides. Vernon S. Somerset, Michael K. Klink, **Mantoa M.C. Sekota**, Priscilla G. Baker and Emmanuel E. Iwuoha, *Analytical Letters*, 2006, **39(8)**, 1683 – 1698.
- vii. Electrochemical Interrogation and Sensor Applications of Nano-Structured Polypyrroles. Richard Akinyeye, Immaculate Michira, **Mantoa Sekota**, Priscilla Baker and Emmanuel Iwuoha. *Electroanalysis*, 2006, **18(24)**, 2441 – 2450.
- viii. Electrochemical and Spectroscopic Properties of Fly Ash-Polyaniline Matrix Nanorod Composites. Emmanuel I. Iwuoha, Siphon E. Mavundla, Vernon S. Somerset, Leslie Patrick, Michael J. Klink, **Mantoa M.C. Sekota**, and Priscilla G. Baker. *Microchimica Acta*, 2006, **155(3-4)**, 453-458.
- ix. Electrochemical Synthesis and Characterisation of 1, 2-Naph-Quinine-4-Sulphonic acid Doped Polypyrrole. Richard O. Akinyeye, Immaculate Michira, **Mantoa Sekota**, Amir Al-ahmed, Duarte Tito, Priscilla G.L. Baker, Christopher M.A. Brett, Maher Kalaji, and Emmanuel I. Iwuoha. *Electroanalysis*, 2006, **19(2-3)**, 303 – 309.
- x. The role of particle size in visible light photocatalyst of Congo red using $\text{TiO}_2[\text{ZnFeO}_4]_x$ nanocomposite. Himanshu Narayan, Haelemichael Alemu, Lebohang Macheli, **Mantoa Sekota**, Thakurdesai and T.K Gundurao, *Bull. Mater. Sci.* 2009, **32(5)**, 499-506
- xi. Electrochemical and spectroscopic dynamics of nanostructured polynuclear sulphonic acid-doped poly(2,5-dimethoxyaniline). Michael Klink, Richard Akinyeye, Vernon Somerset, **Mantoa Sekota**, Priscilla Baker and Emmanuel Iwuoha, *Materials Science Forum* Vol. 657 (2010) pp231-248.

Published Chapters:

1. Amperometric Sensors, Emmanuel Iheanyichuku Iwuoha, Amir Al-Ahamed, **Mantoa Sekota**, Tesfaye Waryo and Priscilla Baker. *Encyclopedia of Supramolecular Chemistry*, December 20, 2007.

2. Anthracene sulphonic acid-doped polyaniline: Electrodynamics and applications as amperometric peroxide biosensor, Immaculate N. Michira, M. Klink, R.O. Akinyeye, V. Somerset, **M. Sekota**, A Al-ahmed, P.G.L. Baker and Emmanuel I. Iwuoha. *Recent Advances in Analytical Electrochemistry*, 2007.

Published Proceedings:

1. Acetylcholinesterase-poly (2,5 – dimethoxyaniline) pesticide (nano) Biosensor for organophosphate pesticide detection, Somerset, V.S., Klink, M.J., **Sekota, M.M.C.**, Baker, P.G.L., and Iwuoha, E.I., *Proceedings of the East and Southern Africa Environmental Chemistry Workshop (ESAECW) and the 6th Theoretical Chemistry Workshop in Africa (TCWA)* Windhoek Namibia 5th to 9th December, 2005.

6. Conferences

- 2009 : Potentiometric Determination of Fluoride in Drinking Water from Boreholes and Taps in Maseru District: Presented at the Southern and Eastern African Network of Analytical Chemists, Swaziland Chapter, 6th -8th July, 2009. **2nd Prize winning poster**
- 2008 : Electro-Oxidation of Phenolic Compounds on Glassy Carbon Electrode Modified with Metal Phthalocyanines: Presented at the 1st *International Symposium of Electrochemistry*, University of the Western Cape, Bellville, South Africa, 9 – 11 June, 2008.
- 2007 : Catalytic Behaviour of Carbon Electrode Modified with Osmium Phthalocyanines towards detection of Phenol: presented at the 6th *Edward Bouchet-Abdus Salam Institute (EBASI) International Conference* at iThemba Labs, Cape-Town, on the 25th January, 2007. Oral Presentation.
- 2006 : Application of Novel Sodium Sulphonates as Dopants in Sensors for determination of Phenols and hydrogen peroxide: presented at the 38th *National Convention of the South African Chemical Institute*, at the University of KwaZulu-Natal, Durban, on 5th December, 2006. Poster Presentation.
- 2005 : Electrochemical and Spectrochemical Behaviour of poly(O-Methoxyaniline) doped with Novel Sulphonic Acids: presented at *The East and Southern African Environmental Chemistry Workshop (ESAECW) and the Sixth Theoretical Chemistry*

Workshop in Africa (TCWA) 5-9 December, 2005 Windhoek, Namibia. Oral Presentation.

- 2000 : Palladium (II) and platinum (II) Tetramethyltetrapyrridinoporphyrazine Complexes: Redox Properties and Interactions with Cysteine and Histidine: Presented at *South African Chemical Institute (SACI 2000)*, University of Potchefstroom. Poster Presentation.
- 1997 : Kinetics of the Interactions of Metallophthalocyanines with Amino Acids: Presented at the *4th International Symposium on Applied Bioinorganic Chemistry*, in Cape-Town, in April 1997. Poster Presentation.
- 1996 : Metallophthalocyanines as Photosensitizer of Photodynamic Tumor Therapy: presented at the *33rd convention of the South African Chemical Institute (SACI)* on 29th January 1996. Oral Presentation.
- 1995 : Photocatalytic Reactions of Metallophthalocyanines: presented at the *Inorganic 1995* at the University of Natal Pietermaritzburg on the 24th January. Poster Presentation.

7. Attended Workshops

- i. The 7th Annual UNESCO/IUPAC Conference on Macromolecules focusing on polymers in Medical, Nanotechnology, Degradation & Stabilization, and NANO AFRICA 1 at Stellenbosch, 5-8 April, 2004.
- ii. African Regional College on Science at Nanoscale, 19-30 November, 2007. iThemba Labs, Cape-Town.
- iii. Science and Technology Policy Implementation Workshop Report 31st October – 02nd November, 2007
- iv. Stakeholder Roundtable on Science, Technology and Innovation Policy Implementation Strategy, Maseru Lesotho 14th July, 2009 (**Chairperson of the discussion**)

8. Ongoing Projects

- i. Catalytic Behaviour of metal phthalocyanines, for electro-oxidation of phenolic compounds.
- ii. Fluoride, Nitrates and Iodine determination in drinking water.

- iii. Synthesis and characterization of self-assembled nanostructures.

9. Scientific Visits

- July – August 2004 Department of Chemistry, University of Pennsylvania, in Professor Donald H. Berry's Laboratory. Project, entitled *New Polymerization catalysts for control of helical domains in opt-electronic polymer*. This project dealt with the synthesis and characterization of chiral derivatives of bis (oxazolonyl) pyridine ligand complexes of ruthenium and determination of their catalytic activity towards polymerization reaction.
- Jan 2005 – Jul-2006 Sensor Laboratory, Department of Chemistry, University of the Western Cape. Project: Synthesis and Characterization *anthracene sulfonic Acid-doped polyaniline Nanostructures and their application as amperometric biosensors*.
- July, 2007 Department of Chemistry, University of Pennsylvania, USA in Professor Michael Therien's Laboratory, Project, *synthesis of porphyrins nanostructures using water soluble meso-tetra(4-sulfonatophenyl)porphyrin ($H_4TPPS_4^{2-}$) and meso-tetra(4-pyridyl)porphyrin ($H_2TPyP_2^+$)*
- July, 2008 iThemba Labs, Material Science Group (MRG), I did some work *on the synthesis and characterization of porphyrin nanostructure*

10. References:

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2. Professor Emmanuel Iwuoha
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