



RHODES UNIVERSITY, GRAHAMSTOWN, SOUTH AFRICA

STUDENT INFORMATION



DR SIXOLILE CENTANE (POSTDOCTORAL FELLOW)
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CONTACT DETAILS:

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EDUCATION DETAILS:

PhD (Chemistry) 2024 - Rhodes University, Grahamstown, South Africa
MSc (Chemistry) 2018 - Rhodes University, Grahamstown, South Africa
BScH (Chemistry) 2015 - Rhodes University, Grahamstown, South Africa
BSc (Chemistry and Environmental Geographic Sciences) 2014 – University of Cape Town, Cape Town, South Africa

RESEARCH TITLE/PROJECT:

Electrochemical sensing using phthalocyanines and graphene quantum dots

PUBLICATIONS:

1. Shumba, Munyaradzi; Centane, Sixolile; Chindeka, Francis; Nyokong, Tebello
Nanocomposites of sulphur-nitrogen co-doped graphene oxide nanosheets and cobalt mono carboxyphenoxy phthalocyanines for facile electrocatalysis

Journal of Electroanalytical Chemistry (2017), 791, 36-48

DOI:10.1016/j.jelechem.2017.03.006

<http://dx.doi.org/10.1016/j.jelechem.2017.03.006>

2. Sixolile Centane, Ojodomo J. Achadu and Tebello Nyokong

Effects of Substituents on the Electrocatalytic Activity of Cobalt Phthalocyanines when Conjugated to Graphene Quantum Dots

Electroanalysis (2017) 29, 2470–2482

DOI: 10.1002/elan.201700252

<http://onlinelibrary.wiley.com/doi/10.1002/elan.201700252/full>

3. Centane, Sixolile; Sekhosana, Edward Kutloano; Matshitse, Refilwe; Nyokong, Tebello

Electrocatalytic activity of a push-pull phthalocyanine in the presence of reduced and amino functionalized graphene quantum dots towards the electrooxidation of hydrazine

Journal of Electroanalytical Chemistry (2018), 820, 146-160

DOI:10.1016/j.jelechem.2018.05.005

<https://doi.org/10.1016/j.jelechem.2018.05.005>

4. Nkhahle, Reitumetse; Sekhosana, Kutloano Edward; Centane, Sixolile; Nyokong, Tebello

Electrocatalytic Activity of Asymmetrical Cobalt Phthalocyanines in the Presence of N Doped Graphene Quantum Dots: The Push-pull Effects of Substituents

Electroanalysis (2019), 31(5), 891-904

DOI:10.1002/elan.201800837

<https://doi.org/10.1002/elan.201800837>

5. Sixolile Centane, Tebello Nyokong

The antibody assisted detection of HER2 on a cobalt porphyrin binuclear framework and gold functionalized graphene quantum dots modified electrode

Journal of Electroanalytical Chemistry 880 (2021) 114908 (1-12)

DOI: 10.1016/j.jelechem.2020.114908

<http://dx.doi.org/10.1016/j.jelechem.2020.114908>

6. Sixolile Centane and Tebello Nyokong

Impedimetric aptasensor for HER2 biomarker using graphene quantum dots, polypyrrole and cobalt phthalocyanine modified electrodes

Sensing and Bio-Sensing Research 34 (2021) 100467 (1-10)

DOI: 10.1016/j.sbsr.2021.100467

<https://doi.org/10.1016/j.sbsr.2021.100467>

7. Sixolile Centane and Tebello Nyokong

Aptamer versus antibody as probes for the impedimetric biosensor for human epidermal growth factor receptor

Journal of Inorganic Biochemistry 230 (2022) 111764 (1-12)

DOI: 10.1016/j.jinorgbio.2022.111764

<https://doi.org/10.1016/j.jinorgbio.2022.111764>

8. Sixolile Centane, Sithi Mgidlana, Yolande Openda, Tebello Nyokong

Electrochemical detection of human epidermal growth factor receptor 2 using an aptamer on cobalt phthalocyanines – Cerium oxide nanoparticle conjugate

Bioelectrochemistry 146 (2022) 108146 (1-10)

DOI: 10.1016/j.bioelechem.2022.108146

<https://doi.org/10.1016/j.bioelechem.2022.108146>

9. S. Centane, T. Nyokong

Co phthalocyanine mediated electrochemical detection of the HER2 in the presence of Au and CeO₂ nanoparticles and graphene quantum dots

Bioelectrochemistry 149 (2023) 108301 (1-12)

DOI: 10.1016/j.bioelechem.2022.108301

<https://doi.org/10.1016/j.bioelechem.2022.108301>

10. Sixolile Centane, Sithi Mgidlana, Yolande Openda, Nobuhle Ndebele, Tebello Nyokong

Effect of symmetry and substituents of cobalt based phthalocyanines in aptasensor design for the electrochemical impedimetric detection of the human epidermal growth factor receptor 2

Journal of Electroanalytical Chemistry 941 (2023) 117524 (1-11)

DOI: 10.1016/j.jelechem.2023.117524

<https://doi.org/10.1016/j.jelechem.2023.117524>

11. Sixolile Centane, Sithi Mgidlana, Yolande Openda, Tebello Nyokong

Single vs sandwich aptamers: Towards the detection of human epidermal growth factor receptor 2 using composites of phthalocyanine and nanoparticles

Bioelectrochemistry 153 (2023) 108496 (1-14)

DOI: 10.1016/j.bioelechem.2023.108496

<https://doi.org/10.1016/j.bioelechem.2023.108496>

CONFERENCES/WORKSHOPS:

Atlantic Basin Conference on Chemistry

IBEROSTAR Cancún, Cancún, Mexico, 23-26 January 2018

Oral Presentation:

S Centane and T Nyokong

Electrocatalytic behaviour of cobalt phthalocyanines in the presence of graphene quantum dots.

70th Annual Meeting of the International Society of Electrochemistry

4-9 August, Durban International Convention Centre, Durban, South Africa

Oral Presentation

Sixolile Centane and Tebello Nyokong

The antibody assisted detection of human epidermal growth factor receptor on a cobalt porphyrin organic framework and gold functionalized graphene quantum dots modified electrode

**South African Chemical Institute (SACI), Eastern Cape Postgraduate Seminars
Nelson Mandela University, Port Elizabeth, South Africa - 25th October 2019**

Oral Presentation:

Sixolile Centane and Tebello Nyokong

The electrochemical detection of a cancer biomarker on a cobalt porphyrin binuclear framework and graphene quantum dot modified electrode (Awarded 1st Prize for Senior Section Presentations)

**11th International Conference on Porphyrins & Phthalocyanines (ICPP-11)
28th June to 3rd July 2021 (Virtual Meeting)**

Oral Presentation:

The Antibody Assisted Detection of Human Epidermal Growth Factor Receptor on a Cobalt Porphyrin Organic Framework and Gold - Graphene Quantum Dots Modified Electrode

AWARDS:

Awarded 1st Prize for Senior Section Presentations at the South African Chemical Institute (SACI), Eastern Cape Postgraduate Seminars held at Nelson Mandela University, Port Elizabeth 25th Oct 2019

OVERSEAS TRAVEL:

Ecole Nationale Supérieure de Chimie de Paris

Paris, France

Date: 1 Sept to 13 Oct 2016

Reason for visit: Research Collaboration (SA/France): MSc Exchange Student