



## RHODES UNIVERSITY, GRAHAMSTOWN, SOUTH AFRICA

### STAFF INFORMATION



**PROF PHILANI MASHAZI**  
**DEPUTY DIRECTOR**

#### **CONTACT DETAILS:**

Tel: +27 46 603 8846

Fax: +2746 622 5109

Email: [p.mashazi@ru.ac.za](mailto:p.mashazi@ru.ac.za)

Postal Address: Department of Chemistry, Rhodes University, PO Box 94, Makhanda, 6140. RSA

Courier Address: Room F44, Department of Chemistry, Corner of University and Artillery Roads, Rhodes University, Makhanda, 6140, SOUTH AFRICA.

#### **EDUCATION DETAILS:**

Phd (Chemistry) 2012 - Rhodes University, Grahamstown, South Africa

MSc (Chemistry with distinction) 2007 - Rhodes University, Grahamstown, South Africa

BSch 2004 - Rhodes University, Grahamstown, South Africa

BSc 2003 - Rhodes University, Grahamstown, South Africa

## **EMPLOYMENT HISTORY:**

### **CURRENT:**

#### **Deputy Director**

Rhodes/DST Institute for Nanotechnology Innovation, Rhodes University, Grahamstown

#### **Associate Professor & Lecturer (Analytical and Inorganic Chemistry)**

Chemistry Department, Rhodes University, Grahamstown

Dr Mashazi, spent 7 years at the Council for Minerals Technology (Mintek) as a research scientist from February 2007 to September 2013. During his tenure at Mintek, Dr Mashazi studied his doctoral degree part-time and graduated with the Doctor of Philosophy (PhD) degree at Rhodes University in April 2012. He joined Rhodes University Chemistry Department as a Senior Lecturer of Inorganic Chemistry since October 2013. He is currently involved in many departmental activities whilst pursuing his research interests. He further provides support to the National Facility funded by the Department of Science and Technology, the Institute for Nanotechnology Innovation. He manages two state-of-the-art equipments, that is the X-ray photoelectron spectroscopy (XPS) and the TOF-SIMS (Time-of-flight Secondary Ion Mass Spectrometry). Both these techniques are a very sensitive surface analytical techniques well established for many industrial and research applications.

### **TEACHING 2013 - Present**

- 1st Year – Kinetics and Electrochemistry
- 2nd Year – Kinetics and Electroanalytical Techniques
- 3rd Year – Crystallography (2013 – 2018)
- Honours - Intelligent Nanomaterials and Their Applications, Design and Development of Biosensors

## **RESEARCH INTEREST:**

- Design of nanomaterials with intrinsic peroxidase- or catalase-like properties for biosensor applications.
- Surface chemical characterization of immobilized electrocatalytic N4-macrocycle metal complexes for electrochemical sensing.
- Nanofabrication of electrode surfaces for enhanced electrocatalytic applications and detection of biomedical molecules.
- Design of methods for disease biomarker detection using electrochemical and optical biosensors: biomarkers for communicable and non-communicable diseases.
- Investigation of methods of integrating biological molecules with nanostructured materials for the design of highly sensitive and selective novel sensors and/or biosensors.
- Design of immunochromatographic lateral-flow systems integrating electrochemical signal generation for diagnostic applications.
- Investigating N4-macrocycle metal complexes and their nanomaterials conjugates as potential dyes for the fabrication dye-sensitized solar cells.

## **PUBLICATIONS:**

### **2023 Publications:**

1. Moyo, I., Mwanza, D., Mashazi P.  
pH sensitive thin films of iron phthalocyanines as electrocatalysts for the detection of neurotransmitters  
**Journal of Organometallic Chemistry, 990, 122662**  
DOI: 10.1016/j.jorganchem.2023.122662
2. Moyo, I., Mwanza, D., Mashazi P.  
pH sensitive thin films of iron phthalocyanines as electrocatalysts for the detection of neurotransmitters  
**Journal of Organometallic Chemistry, 990, 122662**  
DOI: 10.1016/j.jorganchem.2023.122662
3. Luhana, C., Mashazi, P.  
Simultaneous Detection of Dopamine and Paracetamol on Electroreduced Graphene Oxide–Cobalt Phthalocyanine Polymer Nanocomposite Electrode  
**Electrocatalysis, 14 (3), (2023) pp. 406-417**  
DOI: 10.1007/s12678-022-00806-7
4. Adesina, A., Adeniyi, O., Mashazi, P.  
Online regeneration of a piezoelectric and impedimetric immunosensor for the detection of C-reactive protein on the oriented antibody gold surface  
**Analytical Methods, 15 (9), (2023) 1157-1167**  
DOI: 10.1039/d2ay01245f
5. Chavalala, R., Mashazi, P.  
Au/Pd Nanocatalysts on Silica Nanoparticle-Coated Indium Tin Oxide for Colorimetric Sensing of Ascorbic Acid  
**ACS Applied Nano Materials, 6 (1), (2023) pp. 190-199**  
DOI: 10.1021/acsnm.2c04234
6. Adesina, A., Adeniyi, O., Mashazi, P.  
Nanomagnet Bioconjugates with anti-CRP Polyclonal Antibodies as Nanobioprobes for Enhanced Impedimetric Detection of CRP  
**Electroanalysis, 35 (1), (2023) e202200059**  
DOI: 10.1002/elan.202200059
7. Sendibitiyosi Gandidzanwa, Natasha Beukes, Sinelizwi V Joseph, Arno Janse Van Vuuren, Philani Mashazi, Jonathan Britton, Gareth Kilian, Saartjie Roux, Tebello Nyokong, Michael E Lee, Carminita L Frost and Zenixole R Tshentu  
The development of folate-functionalised palladium nanoparticles for folate receptor targeting in breast cancer cells  
**Nanotechnology 34 (2023) 465705 (1-15)**  
DOI: 10.1088/1361-6528/accc52  
<https://doi.org/10.1088/1361-6528/accc52>

## 2022 Publications:

8. Daniel Mwanza, Omotayo Adeniyi, Solomon Tesfalidet, Tebello Nyokong, Philani Mashazi  
Capacitive label-free ultrasensitive detection of PSA on a covalently attached monoclonal *anti*-PSA antibody gold surface  
**Journal of Electroanalytical Chemistry** **927 (2022) 116983 (1-9)**  
DOI: 10.1016/j.jelechem.2022.116983  
<https://doi.org/10.1016/j.jelechem.2022.116983>
9. N.C. Gatsi, G.H. Mhlongo, N. Moloto, R.M. Erasmus, **P. Mashazi**, T. Nyokong, O.M. Ntwaeaborwa  
Hierarchically-ordered nanorods of Ga<sub>2</sub>O<sub>3</sub> derived from microwave-assisted hydrothermal approach: Investigation of calcination-induced structural evolution and optical behavior  
**Materials Today Communications** **33 (2022) 104808 (1-8)**  
DOI: 10.1016/j.mtcomm.2022.104808  
<https://doi.org/10.1016/j.mtcomm.2022.104808>
10. Adeniyi, Omotayo; **Mashazi, Philani**  
Kirigami paper-based colorimetric immunosensor integrating smartphone readout for determination of humoral autoantibody immune response  
**Microchemical Journal (2022), 178, 107427**  
DOI: 10.1016/j.microc.2022.107427  
<https://doi.org/10.1016/j.microc.2022.107427>
11. Daniel Mwanza, N Mfamela, O Adeniyi, Tebello Nyokong, **Philani Mashazi**  
Ultrasensitive detection of prostate-specific antigen using glucose-encapsulated nanoliposomes anti-PSA polyclonal antibody as detection nanobioprobes  
**Talanta, 245 (2022) 123483 (1-9)**  
DOI: 10.1016/j.talanta.2022.123483  
<https://doi.org/10.1016/j.talanta.2022.123483>
12. Ené Storm, Emile D Maggott, **Philani Mashazi**, Tebello Nyokong, Rehana Malgas-Enus and Selwyn F Mapolie  
Application of gold and palladium nanoparticles supported on polymelamine microspheres in the oxidation of 1-phenylethanol and some other phenyl substituted alcohols  
**Molecular Catalysis** **528 (2022) 112456 (1-11)**  
DOI: 10.1016/j.mcat.2022.112456  
<https://doi.org/10.1016/j.mcat.2022.112456>
13. Songeziwe Ntsimango, Sendibituyosi Gandidzanwa, Sinelizwi V. Joseph, Eric C. Hosten, Marvin Randall, Adrienne L. Edkins, Samson M. Khene, **Philani Mashazi**, Tebello Nyokong, Abubak'r Abrahams, and Zenixole R. Tshentu  
Reaction of Perrhenate with Phthalocyanine Derivatives in the Presence of Reducing Agents and Rhenium Oxide Nanoparticles in Biomedical Applications  
**ChemistryOpen** **2022, 11, e202200037 (1-13)**  
DOI: 10.1002/open.202200037  
<https://doi.org/10.1002/open.202200037>

14. Adesina Abiola, Omotayo Adeniyi, **Philani Mashazi**  
Nanomagnetic bioconjugates with *anti*-CRP polyclonal antibodies as nanobioprobes or enhanced impedimetric detection of CRP.  
**Electroanalysis 2022 (34) 1–12**  
<https://doi.org/10.1002/elan.202200059>
15. Charles Luhana, Iphithuli Moyo, Keamogeste Tshenkeng, **Philani Mashazi\*** In-sera selectivity detection of catecholamine neurotransmitters using covalent composite of cobalt phthalocyanine and aminated graphene quantum dots.  
**Microchem. J. 2022 (180) 107605**  
<https://doi.org/10.1016/j.microc.2022.107605>
16. Iphithuli Moyo, Daniel Mwanza, **Philani Mashazi\***, Novel covalent immobilization of cobalt (II) octa acyl chloride phthalocyanines onto phenylethylamine pre-grafted gold via spontaneous amidation.  
**Electrochimica Acta 2022 (422) 140550**  
<https://doi.org/10.1016/j.electacta.2022.140550>
17. Nwahara, M. Motaung, G. Abrahams, **P. Mashazi**, J. Mack, E. Prinsloo, T. Nyokong  
Dual singlet oxygen and nitric oxide-releasing silicon phthalocyanine for augmented photodynamic therapy  
**Materials Today Chemistry 26 (2022) 101201 (1-14)**  
DOI: 10.1016/j.mtchem.2022.101201  
<https://doi.org/10.1016/j.mtchem.2022.101201>

#### 2021 Publications:

18. Adeniyi, Omotayo; Sicwetsha, Simbongile; Adesina, Abiola; **Mashazi, Philani**  
Immunoassay detection of tumor-associated autoantibodies using protein G bioconjugated to nanomagnet-silica decorated with Au@Pd nanoparticles  
**Talanta 226 (2021) 122127**  
DOI: 10.1016/j.talanta.2021.122127  
<https://doi.org/10.1016/j.talanta.2021.122127>
9. Nwahara, Nnamdi; Adeniyi, Omotayo; **Mashazi, Philani**; Nyokong, Tebello  
Visible light responsive TiO<sub>2</sub> - graphene oxide nanosheets - Zn phthalocyanine ternary heterojunction assisted photoelectrocatalytic degradation of Orange G  
**Journal of Photochemistry and Photobiology, A: Chemistry (2021), 414, 113291**  
DOI:10.1016/j.jphotochem.2021.113291  
<https://doi.org/10.1016/j.jphotochem.2021.113291>
10. Omotayo Adeniyi; Nnamdi Nwahara; Daniel Mwanza; Tebello Nyokong, **Philani Mashazi**  
Nanohybrid electrocatalyst based on cobalt phthalocyanine-carbon nanotube-reduced graphene oxide for ultrasensitive detection of glucose in human saliva

**Sensors and Actuators B: Chemical (2021) 348, 130723 (1-13)**

DOI: 10.1016/j.snb.2021.130723

<https://doi.org/10.1016/j.snb.2021.130723>

11. Nyemaga Masanje Malima, Malik Dilshad Khan, Jonghyun Choi, Ram K. Gupta, **Philani Mashazi**, Tebello Nyokong and Neerish Revaprasadu  
Solventless synthesis of nanospinel  $\text{Ni}_{1-x}\text{Co}_x\text{Fe}_2\text{O}_4$  ( $0 \leq x \leq 1$ ) solid solutions for efficient electrochemical water splitting and supercapacitance  
**RSC Advances (2021), 11, 31002-31014**  
DOI: 10.1039/D1RA04833C  
<https://doi.org/10.1039/D1RA04833C>
12. Ginena Bildard Shombe, Shumaila Razzaque, Malik Dilshad Khan, Tebello Nyokong, Philani Mashazi, Jonghyun Choi, Sanket Bhoyate, Ram K. Gupta and Neerish Revaprasadu  
Low temperature scalable synthetic approach enabling high bifunctional electrocatalytic performance of  $\text{NiCo}_2\text{S}_4$  and  $\text{CuCo}_2\text{S}_4$  thiospinels  
**RSC Advances, 11 (2021) 31533-31546**  
DOI: 10.1039/d1ra02309h  
<https://doi.org/10.1039/D1RA02309H>
13. Daniel Mwanza, Sereilakhena Phal, Tebello Nyokong, Solomon Tesfalidet, Philani Mashazi  
Electrografting of isophthalic acid monolayer and covalent attachment of antibody onto carbon surfaces: Construction of capacitive biosensor for methotrexate detection.  
**Electrochimica Acta 398 (2021) 139360 (1-9)**  
DOI: 10.1016/j.electacta.2021.139360  
<https://doi.org/10.1016/j.electacta.2021.139360>
14. Abiola Adesina and Philani Mashazi  
Oriented Antibody Covalent Immobilization for Label-Free Impedimetric Detection of C-Reactive Protein via Direct and Sandwich Immunoassays  
**Frontiers in Chemistry, 9 (2021) 587142 (1-12)**  
DOI: 10.3389/fchem.2021.587142  
<https://doi.org/10.3389/fchem.2021.587142>
15. Simbongile Sicwetsha, Sindisiwe Mvango, Tebello Nyokong & Philani Mashazi  
Effective ROS generation and morphological effect of copper oxide nanoparticles as catalysts  
**Journal of Nanoparticle Research (2021) 23: 227 (1-18)**  
DOI: 10.1007/s11051-021-05334-x  
<https://doi.org/10.1007/s11051-021-05334-x>
16. Simbongile Sicwetsha, Omotayo Adeniyi and Philani Mashazi  
Bimetallic gold and palladium nanoparticles supported on copper oxide nanorods for enhanced  $\text{H}_2\text{O}_2$  catalytic reduction and sensing  
**RSC Advances, 11 (2021) 28818–28828**  
DOI: 10.1039/d1ra05247k  
<https://doi.org/10.1039/D1RA05247K>

## 2020 Publications:

17. Francis Chindeka, **Philani Mashazi**, Jonathan Britton, David O. Oluwole, Sivuyisile Mapukata, Tebello Nyokong, **Fabrication of de-sensitized solar cells based on push-pull asymmetrical substituted zinc and copper phthalocyanines and reduced raphene oxide nanosheets**. Journal of Photochemistry & Photobiology A: Chemistry 399 (2020) 112612. <https://doi.org/10.1016/j.jphotochem.2020.112612>
18. Nqobile Njoko, Marcel Louzada, Jonathan Britton, Samson Khene, Tebello Nyokong, **Philani Mashazi\***, **Bioelectrocatalysis and surface analysis of gold coated with nickel oxide/hydroxide and glucose oxidase towards detection of glucose**. Colloids and Surfaces B: Biointerfaces, 2020 (190) 110981. <https://doi.org/10.1016/j.colsurfb.2020.110981>
19. Omotayo Adeniyi, Simbogile Sicwetsha, **Philani Mashazi**, **Nanomagnet-silica nanoparticles decorated with Au@Pd for enhanced peroxidase-like activity and colorimetric glucose sensing**. ACS Applied Materials & Interfaces, 2020 (12) 1973 - 1987. <http://pubs.acs.org/doi/abs/10.1021/acsami.9b15123>
20. Omotayo Adeniyi, **Philani Mashazi**, **Stable thin films of human P53 antigen on gold surface for the detection of tumour associated anti-P53 autoantibodies**, Electrochimica Acta, 2020 (331) 135272 <https://doi.org/10.1016/j.electacta.2019.135272>
21. Keamogetse Tshenkeng, **Philani Mashazi** **Covalent attachment of cobalt (II) tetra-(3-carboxyphenoxy) phthalocyanine onto pre-grafted gold electrode for the determination of catecholamine neurotransmitters** Electrochimica Acta 360 (2020) 137015 <https://doi.org/10.1016/j.electacta.2020.137015>
22. Phal, Sereilakhena; Shimizu, Kenichi; Mwanza, Daniel; **Mashazi, Philani**; Shchukarev, Andrey; Tesfalidet, Solomon **Electrografting of 4-carboxybenzenediazonium on glassy carbon electrode: the effect of concentration on the formation of mono and multilayers** Molecules (2020), 25(19), 4575 DOI: 10.3390/molecules25194575
23. Adeniyi, Omotayo K.; Ngqinambi, Akhona; **Mashazi, Philani N** **Ultrasensitive detection of anti-p53 autoantibodies based on nanomagnetic capture and separation with fluorescent sensing nanobioprobe for signal amplification** Biosensors & Bioelectronics (2020), 170, 112640 DOI:10.1016/j.bios.2020.112640
24. Phal Sereilakhena; Shimizu Kenichi; Shchukarev Andrey; Tesfalidet Solomon; Mwanza Daniel; Mashazi Philani

**Electrografting of 4-Carboxybenzenediazonium on Glassy Carbon Electrode: The Effect of Concentration on the Formation of Mono and Multilayers**

Molecules (Basel, Switzerland) (2020), 25(19)

**Older:**

25. Sixberth Mlowe, Ginena B. Shombe, Matthew P. Akerman, Egid B. Mubofu, Paul O'Brien, **Philani Mashazi**, Tebello Nyokong, Neerish Revaprasadu, **Morphological influence of deposition routes on lead sulphide thin films**, Inorganica Chimica Acta, 2019 (498) 119116. <https://doi.org/10.1016/j.ica.2019.119116>
26. Charles Gervas, Malik Dilshan Khan, Sixberth Mlowe, Chunyang Zhang, Chen Zhao, Ram K. Gupta, Matthew P. Akerman, **Philani Mashazi**, Tebello Nyokong, **Philani Mashazi**, Neerish Revaprasadu, **Synthesis of off-stoichiometry CoS nanoplates from molecular precursor for efficient H<sub>2</sub>/O<sub>2</sub> evolution and super-capacitance**, ChemElectroChem, 2019 (6) 2560 - 2569. <https://doi.org/10.1002/celec.201900413>
27. Zainab O Makinde, **Philani Mashazi**, Samson Khene, **Electrocatalytic behavior of single-walled carbon nanotubes with alkythio-substituted cobalt binuclear phthalocyanines towards oxidation of 4-chlorophenols**, Journal of Porphyrins and Phthalocyanines, 2019 (23) 142 - 153. <https://doi.org/10.1142/S1088424619500172>
28. Sindisiwe Mvango, **Philani Mashazi**, **Synthesis, characterization of copper oxide-gold nanoalloys and their peroxidase-like activity towards colorimetric detection of glucose**, Materials Science and Engineering C, 2019 (96) 814 - 823. <https://doi.org/10.1016/j.msec.2018.12.010>
29. Francis Chindeka, **Philani Mashazi**, Jonathan Britton, Gertrude Fomo, David O. Oluwole, Azole Sindelo, Tebello Nyokong, **Optimizing phthalocyanine based dye-sensitized solar cells: the role of reduced graphene oxide**, Synthetic Metals 2018 (246) 236 - 245. <https://doi.org/10.1016/j.synthmet.2018.10.021>.
30. Daniel Mwanza, Marcel Louzada, Jonathan Britton, Tebello Nyokong, Samson Khene, **Philani Mashazi**, **The effect of the cobalt and manganese central metal ions on the non-linear optical properties of tetra(4-propargyloxyphenoxy) phthalocyanines**, New Journal of Chemistry, 2018 (42) 9857 - 9864. <https://doi.org/10.1039/c8nj00748a>.
31. Daniel Mwanza, Sindisiwe Mvango, Samson Khene, Tebello Nyokong, **Philani Mashazi**, **Exploiting click chemistry for the covalent immobilization of tetra (4-propargyloxyphenoxy) metallophthalocyanines onto prehyalazide grafted gold surfaces**, Electrochimica Acta, 254 (2017) 89 – 100. <https://doi.org/10.1016/j.electacta.2017.09.115>.
32. Zainab O. Makinde, Marcel Louzada, **Philani Mashazi**, Tebello Nyokong, Samson Khene, **Electrocatalytic behaviour surface of confined pentanethio cobalt (II) binuclear phthalocyanines towards the oxidation of 4-chlorophenol**, Applied Surface Science, 425 (2017) 702–712. <http://dx.doi.org/doi:10.1016/j.apsusc.2017.06.271>.
33. Daniel Mwanza, Samson Khene, **Philani Mashazi**, **Tetra (4-propargyloxyphenoxy) phthalocyanines: facile synthesis, fluorescence and thermal properties**, Polyhedron, 134 (2017) 263–274, <http://dx.doi.org/10.1016/j.poly.2017.06.029>.



34. Sandile S. Gwebu, Philiswa N. Nomngongo, **Philani N Mashazi**, Tebello Nyokong, Nobanathi Maxakato, **Platinum Nanoparticles Supported on Carbon Nanodots as Anode Catalysts for Direct Alcohol Fuel Cells**, *Int. J. Electrochem. Sci.*, 12 (2017) 6365 – 6378, <http://dx.doi.org/10.20964/2017.07.09>.
35. Siphesihle Robin Nxele, **Philani Mashazi**, Tebello Nyokong, **Surface functionalization of glassy carbon electrodes via adsorption, electrografting and click chemistry using quantum dots and alkynyl substituted phthalocyanines: a brief review**, *Proceedings SPIE*, V10036 (2017) 100360D, Fourth Conference on Sensors, MEMS, and Electro-Optic Systems. <http://dx.doi.org/10.1117/12.2245687>.
36. Mbuso Mlambo, Richard A. Harris, **Philani Mashazi**, Myalowenkosi Sabela, Suvardhan Kanchi, Lawrence M. Madikizela, Prince N. Shumbula, Nosipho Moloto, Thulani T. Hlatshwayo, Phumlani S. Mdluli, **Computational and experimental evaluation of selective substitution of thiolated coumarin derivatives on gold nanoparticles: surface enhancing Raman scattering and electrochemical studies**, *Applied Surface Science* 396 (2017) 695 - 704. <http://dx.doi.org/10.1016/j.apsusc.2016.11.011>.
37. Donovan M. Mafukidze, **Philani Mashazi**, Tebello Nyokong, **Synthesis and singlet oxygen production by a phthalocyanine when embedded in asymmetric polymer membranes**, *Polymer* 105 (2016) 203 - 213. <http://dx.doi.org/10.1016/j.polymer.2016.10.032>.
38. Olawale L. Osifeko, Imran Uddin, **Philani N. Mashazi**, Tebello Nyokong, **Physicochemical and antimicrobial photodynamic chemotherapy of unsymmetrical indium phthalocyanines alone on in the presence of magnetic nanoparticles**, *New Journal of Chemistry*, 2016 (40) 2710 - 2721. <http://dx.doi.org/10.1039/c5nj01922b>.
39. Stephen Nyoni, **Philani Mashazi**, Tebello Nyokong, **Electrode modification using nanocomposites of electropolymerised cobalt phthalocyanines supported on multi-walled carbon nanotubes**, *Journal of Solid State Electrochemical*, 2016 (20) 1075 – 1086. <http://dx.doi.org/10.1007/s10008-015-2985-6>.
40. Oluwasesan Adegoke, **Philani Mashazi**, Tebello Nyokong, Patricia B.C. Forbes, **Fluorescence properties of alloyed ZnSeS quantum dots overcoated with ZnTe and ZnTe/ZnS shells**, *Optical Materials*, 2016 (54) 104 - 110. <http://dx.doi.org/10.1016/j.optmat.2016.02.024>.
41. Munyaradzi Shumba, **Philani Mashazi**, Tebello Nyokong **“Turn on” fluorescence enhancement of Zn octacarboxy phthalocyanine–Graphene Oxide Conjugates by hydrogen peroxide**. *Journal of Luminescence*, 2016 (170) 317-324. <http://dx.doi.org/10.1016/j.jlumin.2015.11.001>.
42. Sihle Nxele, **Philani Mashazi**, Tebello Nyokong, **Construction of a Hydrazine Sensor using an Alkynyl Tetra-Substituted Fe(II) Phthalocyanine via Electrografting and Click Chemistry**, *Electroanalysis*, 2015 (27) 2468-2478. <http://dx.doi.org/10.1002/elan.201500212>.
43. Sarah D’Souza, **Philani Mashazi**, Jonathan Britton, Tebello Nyokong, **Effects of differently shaped silver nanoparticles on the photophysics of mercaptopyridine-substituted phthalocyanines**, *Polyhedron*, 2015 (99) 112–121. <http://dx.doi.org/10.1016/j.poly.2015.06.038>.

44. David Oluwole, Jonathan Britton, **Philani Mashazi**, Tebello Nyokong, **'Synthesis and photophysical properties of nanocomposites of aluminum tetrasulfonated phthalocyanine covalently linked to glutathione capped CdTe/CdS/ZnS quantum dots**, *Synthetic Metals*, 2015 (205) 212-221. <http://dx.doi.org/10.1016/j.synthmet.2015.04.015>.
45. Racheal Ogbodu, Edith Amuhaya, **Philani Mashazi**, Tebello Nyokong, **Photophysical Properties of Zinc Phthalocyanine-Uridine Single Walled Carbon Nanotube – conjugates**, *Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy*, 2015(149) 231-239. <http://dx.doi.org/10.1016/j.saa.2015.04.040>.
46. Stephen Nyoni, **Philani Mashazi**, Tebello Nyokong, **Iodine-Doped Cobalt Phthalocyanine Supported on Multiwalled Carbon Nanotubes for Electrocatalysis of Oxygen Reduction Reaction**, *Electroanalysis*, 2015 (27) 1176-1187. <http://dx.doi.org/10.1002/elan.201400499>.
47. Audacity Maringa, **Philani Mashazi**, Tebello Nyokong, **Electrocatalytic activity of bimetallic Au-Pd nanoparticles in the presence of cobalt tetra-amino phthalocyanine**, *Journal of Colloidal and Interface Science* 2015 (440) 151–161. <http://dx.doi.org/10.1016/j.jcis.2014.10.056>.
48. Audacity Maringa, **Philani Mashazi**, Tebello Nyokong, **Characterization of electrodes modified by one-pot or step-by-step electro-click reaction and axial ligation of iron tetra-carboxy phthalocyanine**, *Electrochimica Acta*, 2014 (145) 237 - 244. <http://dx.doi.org/10.1016/j.electacta.2014.09.011>.
49. **Philani Mashazi\*\***, Sibulelo Vilakazi, Tebello Nyokong, **Design and evaluation of an electrochemical immunosensor for measles serodiagnosis using measles-specific Immunoglobulin G antibodies**, *Talanta*, 2013 (115) 694 – 701. <http://dx.doi.org/10.1016/j.talanta.2013.06.036>.
50. Mbuso Mlambo, Siyasanga Mpelane, Phumlane Mdluli, **Philani Mashazi**, Lucky Sikhwivhilu, Nosipho Moloto and Makwena Moloto, **Unique flexible silver dendrites thin films fabricated on cellulose dialysis cassettes**, *Journal of Material Science*, 2013 (48) 6418 - 6425. <http://dx.doi.org/10.1007/s10853-013-7442-2>.
51. **Philani Mashazi\*\***, Phumlani Tetyana, Sibulelo Vilakazi and Tebello Nyokong, **Electrochemical impedimetric immunosensor for the detection of measles-specific IgG antibodies after measles infections**, *Biosensors and Bioelectronics*, 2013 (49) 32 - 38. <http://dx.doi.org/10.1016/j.bios.2013.04.028>.
52. **Philani N. Mashazi\*\***, Nolwazi Nombona, Munkombwe Muchindu and Sibulelo Vilakazi, **metallophthalocyanines and metalloporphyrins as electrocatalysts: a case of hydrogen peroxide and glucose detection**, *Journal of Porphyrins and Phthalocyanines*, 2012 (16) 741 - 753. <http://dx.doi.org/10.1142/S1088424612300066>.
53. Ndabenhle M. Sosibo, Phumlani S. Mdluli, **Philani N. Mashazi\*\***, Robert T. Tshikhudo, Amanda Skepu, Sibulelo Vilakazi and Tebello Nyokong, **Facile Deposition of Gold Nanoparticle Thin Films on Semi-Permeable Cellulose Substrate**, *Material Letters*, 2012 (88) 132 - 135. <http://dx.doi.org/10.1016/j.matlet.2012.08.043>.

54. Ndabenhle M. Sosibo, Phumlani S. Mdluli, **Philani N. Mashazi**, Busiswa Dyan, Tebello Nyokong, Robert T. Tshikhudo, Amanda Skepu and Elma van der Lingen, **Synthesis, Density Functional Theory, Molecular Dynamics and Electrochemical Studies of 3-Thiopheneacetic Acid-Capped Gold Nanoparticles**, *Journal of Molecular Structure*, 2011 (**1006**) 494 - 501. <http://dx.doi.org/10.1016/j.molstruc.2011.09.057>.
55. Phumlani S. Mdluli, Ndabenhle M. Sosibo, **Philani N. Mashazi**, Tebello Nyokong, Robert T. Tshikhudo, Amanda Skepu and Elma van der Lingen, **Selective Adsorption of PVP on the Surface of Silver Nanoparticles: A Molecular Dynamics Study**, *Journal of Molecular Structure*, 2011 (**1004**) 131 – 137. <http://dx.doi.org/10.1016/j.molstruc.2011.07.049>
56. **Philani Mashazi**, Tawanda Mugadza, Ndabenhle Sosibo, Phumlani Mdluli, Sibulelo Vilakazi and Tebello Nyokong , **The effects of carbon nanotubes on the electrocatalysis of hydrogen peroxide by metallo-phthalocyanines**. *Talanta*, 2011 (**85**) 2202 - 2211. <http://dx.doi.org/10.1016/j.talanta.2011.07.069>.
57. **Philani Mashazi**; Chamunorwa Togo, Janice Limson, Tebello Nyokong, **Applications of polymerized metal tetra-amino phthalocyanines towards hydrogen peroxide detection**, *Journal of Porphyrins and Phthalocyanines*, 2010 (**14**) 252-263. <http://dx.doi.org/10.1142/S1088424610001994>.
58. **Philani Mashazi**, Tebello Nyokong, **Electrocatalytic studies of covalently immobilized metal tetra-amino phthalocyanines onto derivatized screen-printed gold electrodes**, *Microchimica Acta*, 2010, (171) 321-332. <http://dx.doi.org/10.1007/s00604-010-0438-6>.
59. **Philani Mashazi**, Edith Antunes, Tebello Nyokong, **Probing electrochemical and electrocatalytic properties of cobalt(II) and manganese(III) octakis(hexylthio)phthalocyanine as self-assembled monolayers**, *Journal of Porphyrins and Phthalocyanines*, 2010 (14) 932-947. <http://dx.doi.org/10.1142/S108842461000277X>.
60. Ronen Fogel, **Philani Mashazi**, Tebello Nyokong, Janice Limson, **Critical assessment of the Quartz Crystal Microbalance with Dissipation as an analytical tool for biosensor development and fundamental studies: Metallophthalocyanine-?glucose oxidase biocomposite sensors**, *Biosensors & Bioelectronics* (2007), 23(1), 95-101. <http://dx.doi.org/10.1016/j.bios.2007.03.012>.
61. **Philani N. Mashazi**, Philippe Westbroek, Kenneth I. Ozoemena, Tebello Nyokong, **Surface chemistry and electrocatalytic behavior of tetra-carboxy substituted iron, cobalt and manganese phthalocyanine self-assembled monolayers on gold electrode**, *Electrochimica Acta*, 2007 (53) 1858-1869. <http://dx.doi.org/10.1016/j.electacta.2007.08.044>.
62. **Philani N. Mashazi**, Kenneth I. Ozoemena, Tebello Nyokong, **Tetracarboxylic acid cobalt phthalocyanine SAM on gold: Potential applications as amperometric sensor for H<sub>2</sub>O<sub>2</sub> and fabrication of glucose biosensor**, *Electrochimica Acta*, 2006 (52) 177-186. <http://dx.doi.org/10.1016/j.electacta.2006.04.056>.

63. **Philani N. Mashazi**, Kenneth I. Ozoemena, David M. Maree, Tebello Nyokong, **Self-assembled monolayers (SAMs) of cobalt tetra-carboxylic acid chloride phthalocyanine covalently attached onto a preformed mercaptoethanol SAM: A novel method**, *Electrochimica Acta*, 2006 (51) 3489-3494. <http://dx.doi.org/10.1016/j.electacta.2005.10.004>.