

# 2023 Publications

1. L.C. Nene, T. Nyokong

Enhancement of the *in vitro* anticancer photo-sonodynamic combination therapy activity of cationic thiazole-phthalocyanines using gold and silver nanoparticles

**Journal of Photochemistry & Photobiology, A: Chemistry** 435 (2023) 114339 (1-14)

DOI: 10.1016/j.jphotochem.2022.114339

<https://doi.org/10.1016/j.jphotochem.2022.114339>

2. O. Adeniyi, N. Nwahara; D. Mwanza; T. Nyokong, P.N. Mashazi

High-performance non-enzymatic glucose sensing on nanocomposite electrocatalysts of nickel phthalocyanine nanorods and nitrogen doped-reduced graphene oxide nanosheets

**Applied Surface Science** 609 (2023) 155234 (1-13)

DOI: 10.1016/j.apsusc.2022.155234

<https://doi.org/10.1016/j.apsusc.2022.155234>

3. S. Centane, T. Nyokong

Co phthalocyanine mediated electrochemical detection of the HER2 in the presence of Au and CeO<sub>2</sub> 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>

4. Nnamdi Nwahara, Garth Abrahams, John Mack, Earl Prinsloo, Tebello Nyokong

A hypoxia responsive silicon phthalocyanine containing naphthquinone axial ligands for photodynamic therapy activity

**Journal of Inorganic Biochemistry** 239 (2023) 112078 (1-11)

DOI: 10.1016/j.jinorgbio.2022.112078

<https://doi.org/10.1016/j.jinorgbio.2022.112078>

5. Lindokuhle Cindy Nene, Tebello Nyokong

Phthalocyanines and graphene quantum dots nano-systems as dual anti-cancer sensitizers for photo-sonodynamic combinatorial therapy

**Diamond & Related Materials** 131 (2023) 109549 (1-13)

DOI: 10.1016/j.diamond.2022.109549

<https://doi.org/10.1016/j.diamond.2022.109549>

6. Sithi Mgidlana, Pinar Sen, Tebello Nyokong

Dual action of asymmetrical zinc(II) phthalocyanines conjugated to silvertungstate nanoparticles towards photodegradation of tetracycline and inactivation of *Staphylococcus aureus* bacteria

**Journal of Photochemistry & Photobiology, A: Chemistry** 437 (2023) 114444 (1-14)

DOI: 10.1016/j.jphotochem.2022.114444

<https://doi.org/10.1016/j.jphotochem.2022.114444>

7. Lindokuhle Cindy Nene , Tebello Nyokong

The *in-vitro* proliferation-suppression of MCF-7 and HeLa cell lines mediated by differently substituted ionic phthalocyanines in sonodynamic therapy supplemented-photodynamic therapy

**Journal of Inorganic Biochemistry 239 (2023) 112084 (1-11)**

DOI: 10.1016/j.jinorgbio.2022.112084

<https://doi.org/10.1016/j.jinorgbio.2022.112084>

8. Sithi Mgidlana, Yolande Ikala Openda, Tebello Nyokong

Asymmetrical zinc phthalocyanine conjugated to various nanomaterials for applications in phototransformation of organic pollutants and photoinactivation of bacteria

**Journal of Molecular Structure 1277 (2023) 134850 (1-13)**

DOI: 10.1016/j.molstruc.2022.134850

<https://doi.org/10.1016/j.molstruc.2022.134850>

9. Azole Sindelo , Pinar Sen , Tebello Nyokong

Photodynamic inactivation of methicillin-resistant *Staphylococcus aureus* using pyrrolidinium containing Schiff base phthalocyanines

**Journal of Photochemistry & Photobiology, A: Chemistry 438 (2023) 114535 (1-9)**

DOI: 10.1016/j.jphotochem.2022.114535

<https://doi.org/10.1016/j.jphotochem.2022.114535>

10. Nobuhle Ndebele, Tebello Nyokong

The use of carbon-based nanomaterials conjugated to cobalt phthalocyanine complex in the electrochemical detection of nitrite

**Diamond & Related Materials 132 (2023) 109672 (1-12)**

DOI: 10.1016/j.diamond.2022.109672

<https://doi.org/10.1016/j.diamond.2022.109672>

11. Chenming Chan, Jia Li, Jianwei Wu, Youchun Zi, Zhaoli Xue, Mahlatse Ledwaba, John Mack, Tebello Nyokong

An imidazole-based fluorescent probe for the Mercury(II) Ion with rapid response *in vitro*

**Dyes and Pigments 213 (2023) 111172 (1-8)**

DOI: 10.1016/j.dyepig.2023.111172

<https://doi.org/10.1016/j.dyepig.2023.111172>

12. Yolande Ikala Openda , Tebello Nyokong

Combination of photodynamic antimicrobial chemotherapy and ciprofloxacin to combat *S. aureus* and *E. coli* resistant biofilms

**Photodiagnosis and Photodynamic Therapy 42 (2023) 103142 (1-10)**

DOI: 10.1016/j.pdpdt.2022.103142

<https://doi.org/10.1016/j.pdpdt.2022.103142>

13. Mbulelo Jokazi, Lekhetho S. Mpetla, Tebello Nyokong

Electrocatalytic behavior of manganese and cobalt porphyrins attached to graphene quantum dots: applied in the oxidation of hydrazine

**Electroanalysis 35 (2023) 1– 15**

DOI: 10.1002/elan.202200222

<https://doi.org/10.1002/elan.202200222>

14. James Oyim, Edith Amuhaya & Tebello Nyokong

Activated carbon-decorated polyacrylonitrile fibers and their porphyrin-immobilized composites for removal of methylene blue dye and Ciprofloxacin in water

**Journal of Macromolecular Science, Part A: Pure And Applied Chemistry 60(3)  
(2023) 192–206**

DOI: 10.1080/10601325.2023.2183868

<https://www.tandfonline.com/doi/full/10.1080/10601325.2023.2183868>

15. Azole Sindelo, Pinar Sen, Tebello Nyokong

Photoantimicrobial activity of Schiff-base morpholino phthalocyanines against drug resistant micro-organisms in their planktonic and biofilm forms

**Photodiagnosis and Photodynamic Therapy 42 (2023) 103519 (1-10)**

DOI: 10.1016/j.pdpdt.2023.103519

<https://doi.org/10.1016/j.pdpdt.2023.103519>

16. Aviwe Magadla, Yolande Ikala Openda, Lekhetho S. Mpetla, Tebello Nyokong

Evaluation of the antibacterial activity of gallic acid anchored phthalocyanine-doped silica nanoparticles towards *Escherichia coli* and *Staphylococcus aureus* biofilms and planktonic cells

**Photodiagnosis and Photodynamic Therapy 42 (2023) 103520 (1-11)**

DOI: 10.1016/j.pdpdt.2023.103520

<https://doi.org/10.1016/j.pdpdt.2023.103520>

17. Zhiheng Qu, Yu Wang, Minzhi Li, Weihua Zhu, John Mack, Nthabeleng Molupe, Tebello Nyokong and Xu Liang

Methylthiophenyl- and methylthiobiphenyl-substituted A<sub>2</sub>B co<sup>III</sup>corroles: modulating electrocatalyzed hydrogen evolution reactions on surface-Modified gold electrodes

**Inorganic Chemistry 62 (2023) 4786–4798**

DOI: 10.1021/acs.inorgchem.2c03750

<https://doi.org/10.1021/acs.inorgchem.2c03750>

18. Lunathi Ncwane, Lekhetho S. Mpetla, Tebello Nyokong

Effect of detonation nanodiamonds on the electrocatalytic activity of asymmetric cobalt phthalocyanine: Covalent versus non-covalent linking

**Electroanalysis 35 (2023), e202200541 (1-16)**

DOI: 10.1002/elan.202200541

<https://doi.org/10.1002/elan.202200541>

19. Gugu Kubheka, Nthabeleng Molupe, John Mack, and Tebello Nyokong

NIR emitting BODIPY dyes for pH sensing

**Journal of Porphyrins and Phthalocyanines 27 (2023) 321–330**

DOI: 10.1142/S108842462250095X

<https://doi.org/10.1142/S108842462250095X>

20. Aviwe K. May, John Mack, and Tebello Nyokong

Effect of pyrrole substitution on the optical limiting properties of 3,5-distyrylBODIPYdyes

**Journal of Porphyrins and Phthalocyanines 27 (2023) 591–599**

DOI: 10.1142/S108842462350044X

<https://doi.org/10.1142/S108842462350044X>

21. James Oyim, Refilwe Matshitse, Nonkululeko Malomane, Yolande Ikala Openda, Tebello Nyokong, and Muthumuni Managa

In *vitro* photoinactivation of *S. aureus* and *E. coli* using 5,10,15,20-tetrakis[4-(benzyloxy) phenyl] porphyrin and its metal derivatives conjugated to pristine graphene quantum dots  
**Journal of Porphyrins and Phthalocyanines** 27 (2023) 634–644

DOI: 10.1142/S1088424623500529

<https://doi.org/10.1142/S1088424623500529>

22. Rodah Soy, Balaji Babu, John Mack, and Tebello Nyokong  
The Photodynamic Anticancer and Antibacterial Activity Properties of a Series of meso-Tetraarylchlorin Dyes and Their Sn(IV) Complexes

**Molecules** 28 (2023) 4030 (1-20)

DOI: 10.3390/molecules28104030

<https://doi.org/10.3390/molecules28104030>

23. Reitumetse Nkhalhe , Nthabeleng Molupe , John Mack , Tebello Nyokong  
Correlating theory with experimental data on the effect of symmetry on the electrocatalytic behaviour of Co phthalocyanines

**Inorganica Chimica Acta** 554 (2023) 121548 (1-8)

DOI: 10.1016/j.ica.2023.121548

<https://doi.org/10.1016/j.ica.2023.121548>

24. 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>

25. Pinar Sen, Azole Sindelo, Nnaemeka Nnaji, John Mack and Tebello Nyokong  
Diiodinated Mono- and Dipyritylvinyl BODIPY Dyes: Photophysical Properties, *in vitro* Antibacterial Studies, Molecular

**Photochemistry and Photobiology**, 2023, 99: 947–956

DOI: 10.1111/php.13698

<https://doi.org/10.1111/php.13698>

26. Balaji Babu, John Mack and Tebello Nyokong  
Sn(IV)-porphyrinoids for photodynamic anticancer and antimicrobial chemotherapy

**Dalton Transactions** 52 (2023) 5000–5018

DOI: 10.1039/d3dt00603d

<https://doi.org/10.1039/D3DT00603D>

27. Gugu Kubheka, Estela Climent, Charlie Tobias, Knut Rurack, John Mack and Tebello Nyokong

Multiplexed Detection of Human Papillomavirus Based on AzaBODIPY-Doped Silica-Coated Polystyrene Microparticles

**Chemosensors** 11, 1 (2023) 1-22

DOI: 10.3390/chemosensors11010001

<https://doi.org/10.3390/chemosensors11010001>

28. Daliane R. C. da Silva, Sivuyisiwe Mapukata, Sara Currie, Alexandros A. Kitos, Anabel E. Lanterna, Tebello Nyokong, and Juan C. Scaiano  
Fibrous TiO<sub>2</sub> Alternatives for Semiconductor-Based Catalysts for Photocatalytic Water Remediation Involving Organic Contaminants  
**ACS Omega 8 (2023) 21585–21593**  
DOI: 10.1021/acsomega.3c00781  
<https://doi.org/10.1021/acsomega.3c00781>
29. Somila Dingiswayo, Balaji Babu, Kristen Burgess, John Mack and Tebello Nyokong  
Photodynamic Anticancer and Antibacterial Activities of Sn(IV) N-Confused *Meso*-tetra(methylthiophenyl)porphyrin  
**Photochem 3, (2023) 313–326**  
DOI: 10.3390/photochem3030019  
<https://doi.org/10.3390/photochem3030019>
30. 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>
31. Sendibituyosi 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/acec52  
<https://doi.org/10.1088/1361-6528/acec52>
32. Kamogelo Hlabangwane, Refilwe Matshitse, Muthumuni Managa, Tebello Nyokong  
The application of Sn(IV)Cl<sub>2</sub> and In(III)Cl porphyrin-dyed TiO<sub>2</sub> nanofibers in photodynamic antimicrobial chemotherapy for bacterial inactivation in water  
**Photodiagnosis and Photodynamic Therapy 44 (2023) 103795 (1-9)**  
DOI: 10.1016/j.pdpdt.2023.103795  
<https://doi.org/10.1016/j.pdpdt.2023.103795>
33. Lekhetho S. Mpeti, Pinar Sen, Refilwe Matshitse, Tebello Nyokong  
Nanocomposite of nickel phthalocyanine nanoparticles and detonation nanodiamonds for enhanced electrocatalysis  
**Diamond & Related Materials 140 (2023) 110424 (1-15)**  
DOI: 10.1016/j.diamond.2023.110424  
<https://doi.org/10.1016/j.diamond.2023.110424>
34. Emihle Benise, Tebello Nyokong  
Electrochemical detection of prostate specific antigen in the presence of an aptamer and composites of cobalt phthalocyanine-exfoliated graphite  
**Polyhedron, 246 (2023) 116674 (1-10)**

DOI: 10.1016/j.poly.2023.116674  
<https://doi.org/10.1016/j.poly.2023.116674>

35. Nnaemeka Nnaji, Pinar Sen, Yolande Ikala Openda, Avni Berisha, O. Dagdag, Eno E. Ebenso, Tebello Nyokong

Assessing the potentials of free base and gallium metalated tertbutylphthalocyanines as aluminium corrosion inhibitors

**International Journal of Electrochemical Science 18 (2023) 100345 (1-15)**

DOI: 10.1016/j.ijoes.2023.100345  
<https://doi.org/10.1016/j.ijoes.2023.100345>

36. Siphumelele Thandokwazi Mkhondwane, Sithi Mgidlana, Yolande Ikala Openda, Lindokuhle Nene, Tebello Nyokong

Photosono catalytic behaviour of phthalocyanine when supported on electrospun nanofibers: The effect of radical initiators

**Synthetic Metals 299 (2023) 117484 (1-12)**

DOI: 10.1016/j.synthmet.2023.117484  
<https://doi.org/10.1016/j.synthmet.2023.117484>

37. Rodah Soy, Balaji Babu, John Mack and Tebello Nyokong

The photodynamic activity properties of a series of structurally analogous tetraarylporphyrin, chlorin and N-confused porphyrin dyes and their Sn (IV) complexes

**Photodiagnosis and Photodynamic Therapy 44 (2023) 103815 (1-12)**

DOI: 10.1016/j.pdpdt.2023.103815  
<https://doi.org/10.1016/j.pdpdt.2023.103815>

38. Aviwe Magadla, Lekhetho S. Mpetla, Jonathan Britton, Tebello Nyokong

Photodynamic antimicrobial chemotherapy activities of phthalocyanine-antibiotic conjugates against bacterial biofilms and interactions with extracellular polymeric substances

**Photodiagnosis and Photodynamic Therapy 44 (2023) 103878 (1-11)**

DOI: 10.1016/j.pdpdt.2023.103878  
<https://doi.org/10.1016/j.pdpdt.2023.103878>