

2022 Publications

1. Brian Musikavanhu, Selvaraj Muthusamy, Dongwei Zhu, Zhaoli Xue, Qian Yu, Choonzo N. Chiyumba, John Mack, Tebello Nyokong, Shengjun Wang, Long Zhao
A simple quinoline-thiophene Schiff base turn-off chemosensor for Hg²⁺ detection: spectroscopy, sensing properties and applications
Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy **264 (2022) 120338 (1-9)**

DOI: 10.1016/j.saa.2021.120338

<https://doi.org/10.1016/j.saa.2021.120338>

2. Nnaemeka Nnaji, Pinar Sen, and Tebello Nyokong
Symmetry effect of cobalt phthalocyanines on the aluminium corrosion inhibition in hydrochloric acid

Materials Letters **306 (2022) 130892 (1-5)**

DOI: 10.1016/j.matlet.2021.130892

<https://doi.org/10.1016/j.matlet.2021.130892>

3. Siphesihle Robin Nxele, Reitumetse Nkhahle and Tebello Nyokong
The synergistic effects of coupling Au nanoparticles with an alkynyl Co(II) phthalocyanine on the detection of prostate specific antigen

Talanta **237 (2022) 122948 (1-13)**

DOI: 10.1016/j.talanta.2021.122948

<https://doi.org/10.1016/j.talanta.2021.122948>

4. Sivuyisiwe Mapukata, Jonathan Britton, Nnamdi Nwahara and Tebello Nyokong
The photocatalytic properties of zinc phthalocyanines supported on hematite nanofibers for use against methyl orange and *Staphylococcus aureus*

Journal of Photochemistry and Photobiology A: Chemistry, **424 (2022) 113637 (1-12)**

DOI: 10.1016/j.jphotochem.2021.113637

<https://doi.org/10.1016/j.jphotochem.2021.113637>

5. Siphesihle Robin Nxele, Tebello Nyokong
Time-dependent characterization of graphene quantum dots and graphitic carbon nitride quantum dots synthesized by hydrothermal methods

Diamonds and related Materials **121 (2022) 108751 (1-13)**

DOI: 10.1016/j.diamond.2021.108751

<https://doi.org/10.1016/j.diamond.2021.108751>

6. Zhu, Weihua; Li, Lihua; Wang, Yu; Mack, John; Dingiswayo, Somila; Nyokong, Tebello; Liang, Xu

Structural modification of Rh^{III}triarylcorroles for enhanced electrocatalyzed hydrogen evolution reactions

Dyes and Pigments, **199 (2022) 110046 (1-8)**

DOI: 10.1016/j.dyepig.2021.110046

<https://doi.org/10.1016/j.dyepig.2021.110046>

7. Bridged Magaela, Refilwe Matshitse, Balaji Babu, Muthumuni Managa, Earl Prinsloo and Tebello Nyokong

Sn(IV) porphyrin-biotin decorated nitrogen doped graphene quantum dots nanohybrids for photodynamic therapy

Polyhedron, **213 (2022) 115624 (1-10)**

DOI: 10.1016/j.poly.2021.115624

<https://doi.org/10.1016/j.poly.2021.115624>

8. Refilwe Matshitse, Njemuwa Nwaji, Muthumuni Managa, Zhi-Long Chen and Tebello Nyokong

Photodynamic therapy characteristics of phthalocyanines in the presence of boron doped detonation nanodiamonds: Effect of symmetry and charge

Photodiagnosis and Photodynamic Therapy, **37** (2022) 102705 (1-11)

DOI: 10.1016/j.pdpdt.2021.102705

<https://doi.org/10.1016/j.pdpdt.2021.102705>

9. Dmitry A. Bunin, Nobuhle Ndebele, Alexander G. Martynov, John Mack, Yulia G. Gorbunova and Tebello Nyokong

Low-Symmetry Phthalocyanines Bearing Carboxy-Groups: Synthesis, Spectroscopic and Quantum-Chemical Characterization

Molecules, **27**, 524 (2022) (1-17)

DOI: 10.3390/molecules27020524

<https://doi.org/10.3390/molecules27020524>

10. Pinar Sen, John Mack, Tebello Nyokong

Indium phthalocyanines: comparative photophysicochemical properties and photodynamic antimicrobial activities against *Staphylococcus aureus* and *Escherichia coli*

Journal of Molecular Structure **1250** (2022) 131850 (1-9)

DOI: 10.1016/j.molstruc.2021.131850

<https://doi.org/10.1016/j.molstruc.2021.131850>

11. Emmanuel O. Balogun, Tebello Nyokong, Aziz Amine, Shivani Mishra and Eno Ebenso
Editorial: Rising Stars: Africa

Frontiers in Chemistry **10** (2022) 851125 (1-5)

DOI: 10.3389/fchem.2022.851125

<https://www.frontiersin.org/articles/10.3389/fchem.2022.851125/full>

12. Reitumetse Nkhahle and Tebello Nyokong

Assessing the electrocatalytic activity of a localized push-pull system in cobalt phthalocyanine/graphene quantum dot hybrids

Materials Chemistry and Physics **280** (2022) 125842 (1-13)

DOI: 10.1016/j.matchemphys.2022.125842

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13. 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>

14. Azole Sindelo, Donovan M Mafukidze and Tebello Nyokong

Fabrication of asymmetrical morpholine phthalocyanines conjugated chitosan-polyacrylonitrile nanofibers for improved photodynamic antimicrobial chemotherapy activity

Photodiagnosis and Photodynamic Therapy **38** (2022) 102760 (1-14)

DOI: 10.1016/j.pdpdt.2022.102760

<https://doi.org/10.1016/j.pdpdt.2022.102760>

15. Balaji Babu, John Mack and Tebello Nyokong

A Sn(IV) porphyrin with mitochondria targeting properties for enhanced photodynamic activity

against MCF-7 cells†

New Journal Chemistry 46 (2022), 5288–5295

DOI: 10.1039/D2NJ00350C

<https://doi.org/10.1039/D2NJ00350C>

16. Yolande Ikala Openda, Sithi Mgidlana and Tebello Nyokong

In vitro photoinactivation of *S. aureus* and photocatalytic degradation of tetracycline by novel phthalocyanine-graphene quantum dots nano-assemblies

Journal of Luminescence, 246 (2022) 118863 (1-13)

DOI: <https://doi.org/10.1016/j.jlumin.2022.118863>

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17. Daniel Mwanza, Nololo Mfamela, Omotayo 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>

1. Pinar Sen, Rodah Soy, Sithi Mgidlana, John Mack and Tebello Nyokong

Light-driven antimicrobial therapy of palladium porphyrins and their chitosan immobilization derivatives and their photophysical-chemical properties

Dyes and Pigments 203 (2022) 110313 (1-11)

DOI: 10.1016/j.dyepig.2022.110313

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19. 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

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20. Yolande Ikala Openda, Balaji Babu, Tebello Nyokong

Novel cationic-chalcone phthalocyanines for photodynamic therapy eradication of *S. aureus* and *E. coli* bacterial biofilms and MCF-7 breast cancer

Photodiagnosis and Photodynamic Therapy 38 (2022) 102863 (1-14)

DOI: 10.1016/j.pdpdt.2022.102863

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21. Mgidlana, Sithi; Sen, Pinar; Nyokong, Tebello

Photodegradation of tetracycline by asymmetrical zinc(II)phthalocyanines conjugated to cobalt tungstate nanoparticles

Journal of Molecular Structure (2022), 1261, 132938 (1-15)

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22. Regasa, Melkamu Biyana; Nyokong, Tebello

Design and fabrication of electrochemical sensor based on molecularly imprinted polymer loaded onto silver nanoparticles for the detection of 17- β -Estradiol.

Journal of Molecular Recognition (2022), e2978 (1-11)

DOI: 10.1002/jmr.2978

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23. Nyembe, Sanele; Chindeka, Francis; Ndlovu, Gebhu; Mkhohlakali, Andile; Nyokong, Tebello; Sikhwivhilu, Lucky
Enhanced Solar Efficiency via Incorporation of Plasmonic Gold Nanostructures in a Titanium Oxide/Eosin Y Dye-Sensitized Solar Cell
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24. Dingiswayo, Somila; Burgess, Kristen; Babu, Balaji; Mack, John; Nyokong, Tebello
Photodynamic Antitumor and Antimicrobial Activities of Free-Base Tetra(4-methylthiolphenyl)chlorin and Its Tin(IV) Complex.
ChemPlusChem (2022), 87, e202200115 (1-7)
DOI: 10.1002/cplu.202200115
<https://doi.org/10.1002/cplu.202200115>
25. Magaela, N Bridged; Matshitse, Refilwe; Nyokong, Tebello
The effect of charge on Zn tetra morpholine porphyrin conjugated to folic acid-nitrogen doped graphene quantum dots for photodynamic therapy studies
Photodiagnosis and Photodynamic Therapy (2022), 39, 102898 (1-15)
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26. N. Bridged Magaela, Lekgowa C. Makola, Muthumuni Managa and Tebello Nyokong
Photodynamic activity of novel cationic porphyrins conjugated to graphene quantum dots against *Staphylococcus aureus*
Journal of Porphyrins and Phthalocyanines 26 (2022) 392-402
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27. 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)
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28. Lekhetho S Mpeta and Tebello Nyokong
Phthalocyanine based fabricated exfoliated graphite photoanode for electrodegradation of 4-acetamidophenol under visible light irradiation
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29. Azole Sindelo, Jonathan Britton, Anabel E. Lanterna, Juan C. Scaiano and Tebello Nyokong
Decoration of glass wool with zinc (II) phthalocyanine for the photocatalytic transformation of methyl orange
Journal of Photochemistry and Photobiology A: Chemistry 432 (2022) 114127 (1-12)
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30. Lindokuhle Cindy Nene, Khanyisile Buthelezi, Earl Prinsloo and Tebello Nyokong
The *in vitro* photo-sonodynamic combinatorial therapy activity of cationic and zwitterionic phthalocyanines on MCF-7 and HeLa cancer cell lines

Journal of Photochemistry and Photobiology A: Chemistry 432 (2022) 114116 (1-14)

DOI: 10.1016/j.jphotochem.2022.114116

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31. James Oyim, Edith Amuhaya, Refilwe Matshitse, John Mack and Tebello Nyokong
Integrated photocatalyst adsorbents based on porphyrin anchored to activated carbon granules for water treatment

Carbon Trends 8 (2022) 100191 (1-11)

DOI: 10.1016/j.cartre.2022.100191

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32. Yingjie Niu, Lin Wang, Yingxin Guo, Weihua Zhu, Rodah C. Soy, Balaji Babu, John Mack, Tebello Nyokong, Haijun Xu and Xu Liang
Ga^{III} triarylcorroles with push–pull substitutions: synthesis, electronic structure and biomedical applications

Dalton Transactions 51 (2022) 10543–10551

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33. Songeziwe Ntsimango, Sendibitiyosi 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 11 (2022) e202200037 (1-13)

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34. Nobuhle Ndebele, Sithi Mgidlana, Tebello Nyokong
Electrochemical Detection of Nitrite Using an Asymmetrically Substituted Cobalt Phthalocyanine Conjugated to Metal Tungstate Nanoparticles

Electroanalysis 34 (2022) 1348–1362

DOI: 10.1002/elan.202100396

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35. Aviwe Magadla, Yolande Ikala Openda, Tebello Nyokong
The implications of ortho-, meta- and para- directors on the *in-vitro* photodynamic antimicrobial chemotherapy activity of cationic pyridyl-dihydrothiazole phthalocyanines

Photodiagnosis and Photodynamic Therapy, 39 (2022) 103029 (1-8)

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36. Nobuhle Ndebele and Tebello Nyokong
The Electrocatalytic Detection of Nitrite Using Manganese Schiff Base Phthalocyanine Complexes

Electrocatalysis 13 (2022), 663–674

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37. Lunathi Ncwane, Lekhetho S. Mpetla and Tebello Nyokong
Electrocatalytic activity of benzothiazole substituted cobalt phthalocyanine in the presence of detonation nanodiamonds

Diamond and Related Materials 129 (2022), 109319 (1-10)

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38. Lindokuhle Cindy Nene, Aviwe Magadla and Tebello Nyokong
Enhanced mitochondria destruction on MCF-7 and HeLa cell lines *in vitro* using triphenyl-phosphonium-labelled phthalocyanines in ultrasound-assisted photodynamic therapy activity
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39. Sithi Mgidlana, Muthumuni Managa, Tebello Nyokong
Asymmetrical zinc(II) phthalocyanines conjugated to metal tungstate nanoparticles for photoinactivation of *Staphylococcus aureus*
Journal Of Coordination Chemistry **75: 7–8 (2022) 1097–1111**
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40. Lekgowa Collen Makola, Nnamdi Nwahara, Muthumuni Managa, Tebello Nyokong
Photodynamic therapy activity of 5,10,15-tris(5-bromo-2-thienyl),20(phenylcarboxy)porphyrin conjugated to graphene quantum dot against MCF-7 breast cancer cells
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41. Yuqin Wei, Long Zhao, Rui Yuan, Zhaoli Xue, John Mack, Choonzo Chiyumba, Tebello Nyokong, Jianming Zhang
Promotion of Catalytic Oxygen Reduction Reactions: The Utility of Proton Management Substituents on Cobalt Porphyrins
Inorganic Chemistry **61 (2022) 13085–13095**
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42. 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
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43. Mahlatse Mokgaetjie Ledwaba, Ngwanabjala Bridged Magaela, Knowledge Siyabonga Ndlovu, John Mack, Tebello Nyokong, Muthumuni Managa
Photophysical and *in vitro* photoinactivation of *Escherichia coli* using cationic 5,10,15,20-tetra(pyridin-3-yl) porphyrin and Zn(II) derivative conjugated to graphene quantum dots
Photodiagnosis and Photodynamic Therapy **40 (2022) 103127 (1-12)**
DOI: 10.1016/j.pdpdt.2022.103127
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44. Azole Sindelo, Lindokuhle Nene, Tebello Nyokong
Photodynamic antimicrobial chemotherapy with asymmetrical cationic or neutral metallophthalocyanines conjugated to amino-functionalized zinc oxide nanoparticles (spherical or pyramidal) against planktonic and biofilm microbial cultures
Photodiagnosis and Photodynamic Therapy **40 (2022) 103160 (1-13)**
DOI: 10.1016/j.pdpdt.2022.103160
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45. Bridged N. Magaela, Knowledge S. Ndlovu, Charmaine S. Tshangana, Adolph A. Muleja,

Bhekie B. Mamba, Tebello Nyokong, Muthumuni Managa
Photodegradation of ibuprofen using 5-10-15-20-tetrakis(4-bromophenyl) porphyrin conjugated to graphene quantum dots

Optical Materials 134 (2022) 113147 (1-10)

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46. N.C. Gatsi, G.H. Mhlongo, N. Moloto, R.M. Erasmus, P. Mashazi, T. Nyokong, O.M. Ntwaeaborwa

Hierarchically-ordered nanorods of Ga₂O₃ derived from microwave-assisted hydrothermal approach: Investigation of calcination-induced structural evolution and optical behavior

Materials Today Communications 33 (2022) 104808 (1-8)

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47. Melkamu Biyana Regasa, Tebello Nyokong

Synergistic recognition and electrochemical sensing of 17β-Estradiol using ordered molecularly imprinted polymer-graphene oxide-silver nanoparticles composite films

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Electrocatalytic behaviour of chalcone substituted Co, Cu, Mn and Ni phthalocyanines towards the detection of nitrite

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Porphyrin-graphitic carbon nitride quantum dots decorated on titanium dioxide electrospun nanofibers for photocatalytic degradation of organic pollutants

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50. 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

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51. Aviwe Khanya May, Choonzo Chiyumba, Jessica Harris, John Mack and Tebello Nyokong
Photodynamic antimicrobial activities of halogenated 3,5-dimethyl- and 1,3,5,7-tetramethyl-*meso*-pentafluorophenyl BODIPY dyes

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The effect of asymmetry and conjugation of biotin decorated nitrogen doped graphene quantum dots on morpholine porphyrin for photodynamic therapy

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Regulating the Single-Molecule Conductance of Corroles by the Substituents on the B-Site

Journal of Physical Chemistry C 126 (2022) 21476–21481

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