



RHODES UNIVERSITY, GRAHAMSTOWN, SOUTH AFRICA



STAFF INFORMATION

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About:

Educating young people and seeing them become the best scientists (and people) they can be is my passion. I am a chemist by training and am now involved in research in drug development (mainly organic synthesis) and in lecturing at several levels within the University structure.

Education:

- PGDHE (Rhodes University, 2007)
 - Elective: Supervisory practice
- PhD (University of Miami, 2004)
- MSc (Rhodes University, 2000)
- BSc (HONS, University of Cape Town, 1994)

My group's current research is focussed on the development and application of green synthetic methods for the synthesis of heterocyclic compounds with potential as therapeutic agents. The diseases we particularly focus on are HIV, trypanosomiasis, and malaria. This involves extensive collaboration within the Department of Chemistry, especially with Professor Perry Kaye and Prof Kevin Lobb.

Research:

Since 2005 I have been an active participant and leader in the Organic Synthesis Research Group at Rhodes University. The overall focus of my research is the development of green synthetic methods toward the synthesis of biologically active compounds. Within this area we are concentrating on catalysis and the Baylis Hillman reaction, particularly the development of supported catalysts.

2018 Publications:

1. **Achadu, O.J. and Nyokong, T.** (2018) Fluorescence "turn-ON" nanosensor for cyanide ion using supramolecular hybrid of graphene quantum dots and cobalt pyrene-derivatized phthalocyanine. *Dyes and Pigments*. 2018. p.1-8.
2. **Ayeni, A.O., Watkins, G.M.** and Hosten, E.C. (2018) Polymorphism of a new Mannich base-[4-methyl-2-((4-(4-nitrophenyl) piperazin-1-yl) methyl) phenol]. *Journal of Molecular Structure*. 1160 (2018). p.38-45.
3. **Ayeni, A.O. and Watkins, G.M.** (2018) Synthesis and evaluation of catecholase activities of metal complexes of 1, 4-substituted piperazine Mannich Base of 4-acetamidophenol. *Turkish Journal of Chemistry*. 42 (2018). p.1275-1284.
4. **Ayeni, A.O. and Watkins, G.M.** (2018) Biomimetics of mononuclear and dinuclear Cu(II) and Fe(III) complexes of a newly synthesized piperazyl Mannich base with or without thiocyanate towards catechol. *Monatshefte Fur Chemie*. 149 (2018). p.2175-2182.
5. **Ayeni, A.O., Watkins, G.M.** and Hosten, E.C. (2018) Molecular and Crystal structure of a novel Mannich quaternary salt: 3-(dimethylamino)-1-*p*-tolylpropan-1-one hydrochloride. *Journal of Structural Chemistry*. 59 (7). p.1688-1690.
6. **Beteck, R.M., Isaacs, M., Hoppe, H.C. and Khanye, S.D.** (2018) Synthesis, *in vitro* Cytotoxicity and Trypanosomal Evaluation of Novel 1,3,6-Substituted Non-fluoroquinolones. *South African Journal of Chemistry – Suid-Afrikaanse Tydskrif Vir Chemie*. 71 (2018). p.188-195.
7. **Centane, S., Sekhosana, K.E., Matshitse, R. and Nyokong, T.** (2018) 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*. 820 (2018). p.146-160.
8. **Chani, F.M., Ngcoza, K.M., Chikunda, C. and Sewry, J.D.** (2018) Exploring the Mediation of Learning of Chemical Equilibrium to High-achieving Students in a Selected Senior Secondary School in Namibia. *African Journal of Research in Mathematics, Science and Technology Education*. 22 (3). p.287-296.
9. **Chindeka, F., Mashazi, P., Britton, J., Fomo, G., Oluwole, D.O., Sindelo, A. and Nyokong, T.** (2018) Optimizing phthalocyanine based dye-sensitized solar cells: The role of reduced graphene oxide. *Synthetic Metals*. 246 (2018). p.236-245.
10. **Darrell, O.T., Hulushe, S.T., Mtshare, T.E., Beteck, R.M., Isaacs, M., Laming, D., Hoppe, H.C., Krause, R.W.M. and Khanye, S.D.** (2018) Synthesis, Antiplasmodial and Antitrypanosomal Evaluation of a Series of Novel 2-Oxoquinoline-based Thiosemicarbazone Derivatives. *South African Journal of Chemistry – Suid-Afrikaanse Tydskrif Vir Chemie*. 71 (2018). p.174-181.
11. **Milanowski, D.J., Oku, N., Cartner, L.K., Bokesch, H.R., Williamson, R.T., Sauri, J., Liu, Y., Blinov, K.A., Ding, Y., Li, X.C., Ferreira, D., Walker, L.A., Khan, S., Davies-Coleman, M.T., Kelley, J.A., McMahan, J.B., Martin, G.E., and Gustafson, K.R.** (2018) Unequivocal determination of caulamidines A and B: application and validation of new tools in the structure elucidation tool box. *Chemical Science*. 9 (2018). p.307-314.

12. **Dube, E. and Nyokong, T.** (2018) Effect of gold nanoparticles shape and size on the photophysicochemical behaviour of symmetric and asymmetric zinc phthalocyanines. *Journal of Luminescence*. 2018. p.1-8.
13. **Dube, E., Nwaji, N., Mack, J. and Nyokong, T.** (2018) The photophysicochemical behavior of symmetric and asymmetric zinc phthalocyanines, surface assembled onto gold nanotriangles. *New Journal of Chemistry*. 42 (2018). p.14290-14299.
14. **Dube, E., Oluwole, D.O. and Nyokong, T.** (2018) Improved Photophysical and Photochemical Properties of Thiopheneethoxy Substituted Metallophthalocyanines on Immobilization onto Gold-speckled Silica Nanoparticles. *Photochemistry and Photobiology*. 94 (2018). p.521-531.
15. **Dube, E., Oluwole, D.O., Prinsloo, E. and Nyokong, T.** (2018) A gold-chitosan composite with low symmetry zinc phthalocyanine for enhanced singlet oxygen generation and improved photodynamic therapy activity. *New Journal of Chemistry*. 42 (2018). p.10214-10225.
16. **Dube, E., Oluwole, D.O., Nwaji, N. and Nyokong, T.** (2018) Glycosylated zinc phthalocyanine-gold nanoparticle conjugates for photodynamic therapy: Effect of nanoparticle shape. *Spectrochimica Acta Part A – Molecular and Biomolecular Spectroscopy*. 203 (2018). p.85-95.
17. **Faridoon, H., Mnkandhla, D., Isaacs, M., Hoppe, H.C. and Kaye, P.T.** (2018) Synthesis and evaluation of substituted 4-arylimino-3-hydroxybutanoic acids as potential HIV-1 integrase inhibitors. *BIOORGANIC & Medicinal Chemistry Letters*. 28 (2018). p.1067-1070.
18. **Fomo, G., Achadu, O.J. and Nyokong, T.** (2018) One-pot synthesis of graphene quantum dots phthalocyanines supramolecular hybrid and the investigation of their photophysical properties. *Journal of Materials Science*. 53 (2018). p.538-548.
19. **Fomo, G., Nwaji, N. and Nyokong, T.** (2018) Low symmetric metallophthalocyanine modified electrode via click chemistry for simultaneous detection of heavy metals. *Journal of Electroanalytical Chemistry*. 813 (2018). p.58-66.
20. **Gumbo, M., Beteck, R.M., Mandizvo, T., Seldon, R., Warner, D.T., Hoppe, H.C., Isaacs, M., Laming, D., Tam, C.C., Cheng, L.W., Liu, N., Land, K.M. and Khanye, S.D.** (2018) Cinnamoyl-Oxaborole Amides: Synthesis and Their in Vitro Biological Activity. *Molecules*. 23 (2018). p.1-13.
21. **Idowu, M.A., Xego, S., Arslanoglu, Y., Mack, J., Antunes, E. and Nyokong, T.** (2018) Photophysicochemical behaviour and antimicrobial properties of monocarboxy Mg (II) and Al (III) phthalocyanine-magnetite conjugates. *Spectrochimica Acta Part A – Molecular and Biomolecular Spectroscopy*. 193 (2018). p.407-414.
22. **Isalomboto Nkanga, C. and Krause, R.W.M.** (2018) Abstract: Formulation and characterization of pH-/light-responsive liposomes for macrophage targeted delivery of isoniazid. *Chemical Papers*. 10 (2018). p.24-25.
23. **Isalomboto Nkanga, C. and Krause, R.W.M.** (2018) Conjugation of isoniazid to a zinc phthalocyanine via hydrazone linkage for pH-dependent liposomal controlled release. *Applied Nanoscience*. 8 (2018). p.1313-1323.
24. **Isalomboto Nkanga, C., Walker, R.B. and Krause, R.W.M.** (2018) pH-Dependent release of isoniazid from isonicotinic acid (4-hydroxy-benzylidene)-hydrazide loaded liposomes. *Journal of Drug Delivery Science and Technology*. 45 (2018). p.264-271.

25. **Olawode, E.O., Tandlich, R., Prinsloo, E., Isaacs, M., Hoppe, H.C.,** Sheldon, R., Warner, D.T., Steenkamp, V. and **Kaye, P.T.** (2018) Synthesis and biological screening of diethyl [N-(thiazol-2-yl)carbamoyl]methylphosphonates. *Arkivoc.* 7 (2018). p.110-118..
26. Kumar, A., **Khan, F.I.** and Olaniran, A.O. (2018) Chloroacetaldehyde dehydrogenase from *Ancylobacter aquaticus* UV5: Cloning, expression, characterization and molecular modeling. *International Journal of Biological Macromolecules.* 114 (2018). p.1117-1126.
27. Ali, S., **Khan, F.I.**, Chen, W., Rahaman, A. and Wang, Y. (2018) Open and closed states of MrIip1 DAG lipase revealed by molecular dynamics simulation. *Molecular Simulation.* 44 (18). p.1520-1528.
28. Gulzar, M., Syed, S.B., **Khan, F.I.**, Khan, P., Ali, S., Hasan, G.M., Taneja, P. and Hassan, M.I. (2018) Elucidation of interaction mechanism of ellagic acid to the integrin linked kinase. *International Journal of Biological Macromolecules.* 2018. p.1-8.
29. Beg, A., **Khan, F.I., Lobb, K.A.**, Islam, A., Ahmad, F. and Hassan, M.I. (2018) High throughput screening, docking, and molecular dynamics studies to identify potential inhibitors of human calcium/calmodulin-dependent protein kinase IV. *Journal of Biomolecular Structure & Dynamic.* 2018. p.1-14.
30. Husain, F.M., Ahmad, I., **Khan, F.I.**, Al-Shabib, N.A., Baig, M.H., Hussain, A., Rehman, M.T., Alajmi, M.F. and **Lobb, K.A.** (2018) Seed Extract of *Psoralea corylifolia* and Its Constituent Bakuchiol Impairs AHL-Based Quorum Sensing and Biofilm Formation in Food- and Human-Related Pathogens. *Frontiers in Cellular and Infection Microbiology.* 8 (351). p.1-16.
31. Syed, S.B., **Khan, F.I.**, Khan, S.H., Srivastava, S., Hasan, G.M., **Lobb, K.A.**, Islam, A., Hassan, M.I. and Ahmad, F. (2018) Unravelling the unfolding mechanism of human intergrin linked kinase by GdmCl-induced denaturation. *International Journal of Biological Macromolecules.* 117 (2018). p.1252-1263.
32. Mohammad, T., **Khan, F.I., Lobb, K.A.**, Islam, A., Ahmad, F. and Hassan, M.I. (2018) Identification and evaluation of bioactive natural products as potential inhibitors of human microtubule affinity-regulating kinase 4 (MARK4). *Journal of Biomolecular Structure & Dynamics.* 2018. p.1-17.
33. Syed, S.B., **Khan, F.I.**, Khan, S.H., Srivastava, S., Hasan, G.M., **Lobb, K.A.**, Islam, A., Hassan, M.I. and Ahmad, F. (2018) Unravelling the unfolding mechanism of human intergrin linked kinase by GdmCl-induced denaturation. *International Journal of Biological Macromolecules.* 117 (2018). p.1252-1263.
34. Khan, S., **Khan, F.I.**, Mohammad, T., Khan, P., Hasan, G.M., **Lobb, K.A.**, Islam, A., Ahmad, F. and Hassan, M.I. (2018) Exploring molecular insights into the interaction mechanism of cholesterol derivatives with the Mce4A: A combined spectroscopic and molecular dynamic simulation studies. *International Journal of Biological Macromolecules.* 111 (2018). p.548-560.
35. Odame, F., Betz, R., Hosten, E.C., Krause, J., **Isaacs, M., Hoppe, H.C., Khanye, S.D.,** Sayed, Y., Frost, C.L., **Lobb, K.A.** and Tshentu, Z.R. (2018) A New Synthetic Method for Tetraazatricyclic Derivatives and Evaluation of Their Biological Properties. *ChemistrySelect.* 3 (2018). p.13613-13618.
36. Gounden, D., **Khene, S.** and Nombona, N. (2018) Electroanalytical detection of heavy metals using metallophthalocyanine and silica-coated iron oxide composites. *Chemical Papers.* 72 (2018). p.3043-3056.
37. Namondo, B.V., Foba-Tendo, J., Etape, E.P. and **Krause, R.W.M.** (2018) Potential of blended biomass feedstock from some species of raffia palm (*Raffia farinifera*, *Raffia hookeri* and *Raffia vinifera*) and Oil Palm Empty Fruit Bunch (OPEFB) from Cameroon. *African Journal of Pure and Applied Chemistry.* 12 (4). p.25-33.

38. **Kubheka, G., Sanusi, K., Mack, J. and Nyokong, T.** (2018) Optical limiting properties of 3,5-dipyrenylvinylene BODIPY dyes at 532 nm. *Spectrochimica Acta Part A – Molecular and Biomolecular Spectroscopy*. 191 (2018). p.357-364.
39. **Lebechi, A.K., Gai, L., Shen, Z., Nyokong, T. and Mack, J.** (2018) Electrospun 3,5-dithienylvinyleneBODIPY embedded polystyrene nanofibers for the photocatalytic degradation of azo dyes in industrial wastewaters. *Journal of Porphyrins and Phthalocyanines*. 22 (2018). p.501-508.
40. **Musyoka, T.M., Tastan Bishop, O., Lobb, K.A. and Moses, V.** (2018) The determination of CHARMM force field parameters for the Mg²⁺ containing HIV-1 integrase. *Chemical Physics Letters*. 711 (2018). p.1-7.
41. Odame, F., Krause, J., Hosten, E.C., Betz, R., **Lobb, K.A.**, Tshentu, Z.R. and Frost, C.L. (2018) Synthesis, Characterization and DPPH Scavenging Activity of some Benzimidazole Derivatives. *Bulletin of the Chemical Society of Ethiopia*. 32 (2). p.271-284.
42. Odame, F., Hosten, E.C., Betz, R., **Lobb, K.A.** and Tshentu, Z.R. (2018) Characterization and Computational Studies of a Co-Crystal of 2-Aminobenzimidazole and 2-[(Benzolycarbamothioyl) Amino]Propanoic Acid. *Journal of Structural Chemistry*. 59 (5). p.1200-1204.
43. Liang, X., Li, M., **Mack, J., Lobb, K.A.** and Zhu, W. (2018) Iron(III)porphyrin electrocatalyzed enantioselective carbon-chloride bond cleavage of hexachlorocyclohexanes (HCHs): combined experimental investigation and theoretical calculations. *Dalton Transactions*. 47 (2018). p.11470-11476.
44. Bomanda, B.T., Waudo, W., Ngoy, B.P., Muya, J.T., Mpiana, P.T., Mbala, M., Openda, I., **Mack, J. and Nyokong, T.** (2018) Photophysical and *in vitro* Antibacterial Studies of 2,6-Dibromo-BODIPY Dye Substituted with Dithienylenevinylene at 3,5-Positions. *Macroheterocycles*. 11 (4). p.429-437.
45. Abdurrahmanoglu, S., Canlica, M., **Mack, J. and Nyokong, T.** (2018) Pyridone substituted phthalocyanines: Photophysico-chemical properties and TD-DFT calculations. *Journal of Porphyrins and Phthalocyanines*. 22 (2018). p.25-31.
46. Liang, X., Luo, H., Lan, Y., Zhu, W., **Mack, J., Hlatshwayo, Z., Nyokong, T.** and Chen, Q. (2018) n - Extended BODIPY Analogues: Synthesis, Electronic Structure, Potential Utility for *in vivo* Imaging Applications and Cytotoxicity. *Macroheterocycles*. 11 (4). p.421-428.
47. Liang, X., Qin, M., Zhou, L., Liu, T., Li, M., **Mack, J., Ndebele, N., Nyokong, T.** and Zhu, W. (2018) Porphyrin dimers with a bridging chiral amide-bonded benzo-moiety: Influence of positional isomerism on the molecular chirality. *Dyes and Pigments*. 154 (2018). p.229-233.
48. Yuan, X., Li, M., Meng, T., **Mack, J., Soy, R., Nyokong, T.,** Zhu, W., Xu, H. and Liang, X. (2018) Core-modified rubeans with phenanthrene-fused pyrrole rings: Highly selective and tunable response to Hg²⁺ ions. *Dyes and Pigments*. 158 (2018). p.188-194.
49. **Mafukidze, D.M. and Nyokong, T.** (2018) A comparative study of the singlet oxygen generation capability of a zinc phthalocyanine linked to graphene quantum dots through π-π stacking and covalent conjugation when embedded in asymmetric polymer members. *Journal of Molecular Structure*. 1180 (2018). p.307-317.
50. **Magadla, A., Oluwole, D.O., Britton, J. and Nyokong, T. Magadla, A., Oluwole, D.O., Britton, J. and Nyokong, T.** (2018) Effect of nature of nanoparticles on the photophysicochemical properties of asymmetrically substituted Zn phthalocyanines. *Inorganica Chimica Acta*. 482 (2018). p.438-446.

51. **Makinde, Z.O., Louzada, M.S., Britton, J., Nyokong, T. and Khene, S.** (2018) Spectroscopic and nonlinear optical properties of alkyl thio substituted binuclear phthalocyanines. *Dye and Pigments*. 2018. p.1-8.
52. **Managa, M., Achadu, O.J. and Nyokong, T.** (2018) Photophysical studies of graphene quantum dots - Pyrene-derivatized porphyrins conjugates when encapsulated within Pluronic F127 micelles. *Dyes and Pigments*. 148 (2018). p.405-416.
53. **Managa, M., Britton, J., Prinsloo, E. and Nyokong, T.** (2018) Effects of Pluronic F127 micelles as delivering agents on the *vitro* dark toxicity and photodynamic therapy activity of carboxy and pyrene substituted porphyrins. *Polyhedron*. 152 (2018). p.102-107
53. **Managa, M., Khene, S., Britton, J., Martynov, A.G., Gorbunova, Y.G., Tsivadze, A.Y. and Nyokong, T.** (2018) Photophysics and NLO properties of Ga(III) and In(III) phthalocyaninates bearing diethyleneglycol chains. *Journal of Porphyrins and Phthalocyanines*. 22 (2018). p.137-148.
56. **Managa, M., Ngoy, B.P., Mafukidze, D.M. and Nyokong, T.** (2018) Incorporation of metal free and Ga 5,10,15,20-tetrakis(4-bromophenyl) porphyrin into Pluronic F127-folic acid micelles. *Journal of Luminescence*. 194 (2018). p.739-746.
57. **Matlou, G.G., Kobayashi, N., Kimura, M. and Nyokong, T.** (2018) Physicochemical properties of water-soluble unsymmetrical phthalocyanine-folic acid conjugates. *Dyes and Pigments*. 149 (2018). p.393-398.
58. **Matlou, G.G., Oluwole, D.O., Prinsloo, E. and Nyokong, T.** (2018) Photodynamic therapy activity of zinc phthalocyanine linked to folic acid and magnetic nanoparticles. *Journal of Photochemistry and Photobiology B – Biology*. 186 (2018). p.216-224.
59. **Matlou, G.G., Oluwole, D.O. and Nyokong, T.** (2018) Evaluation of the photosensitizing properties of zinc and indium tetra cinnamic acid phthalocyanines linked to magnetic nanoparticles on human breast adenocarcinoma cells. *Journal of Luminescence*. 2018. p.1-8.
60. **Matshitse, R. and Nyokong, T.** (2018) Singlet Oxygen Generating Properties of Different Sizes of Charged Graphene Quantum Dot Nanoconjugates with a Positively Charged Phthalocyanine. *Journal of Fluorescence*. 28 (2018). p.827-838.
61. **Matshitse, R., Nwaji, N., Managa, M., Prinsloo, E. and Nyokong, T.** (2018) Effect of number of positive charges on the photophysical and photodynamic therapy activities of quaternary benzothiazole substituted zinc phthalocyanine. *Journal of Photochemistry and Photobiology A – Chemistry* 367 (2018). p.253-260.
62. **Mbaba, M., De La Mare, J.A., Sterrenberg, J.N., Kajewole, D.I., Maharaj, S., Edkins, A.L., Isaacs, M., Hoppe, H.C. and Khanye, S.D.** (2018) Novobiocin-ferrocene conjugates possessing anticancer and antiplasmodial activity independent of HSP90 inhibition. *Journal of Biological Inorganic Chemistry*. 2018. p.1-11.
63. **Mgidlana, S., Oluwole, D.O. and Nyokong, T.** (2018) Effects of the carboxylic acid substituents on the photophysical and nonlinear optical properties of asymmetrical Zn(II) phthalocyanines-quantum dots conjugates. *Inorganic and Nano-Metal Chemistry*. 48 (6). p.296-307.
64. **Mgidlana, S., Oluwole, D.O. and Nyokong, T.** (2018) Fabrication of efficient nonlinear optical absorber using Zn phthalocyanine-semiconductor quantum dots conjugates. *Polyhedron*. 2018. p.1-14.

65. **Molupe, N., Babu, B., Oluwole, D.O., Prinsloo, E., Mack, J. and Nyokong, T.** (2018) The investigation of *in vitro* dark cytotoxicity and photodynamic therapy effect of a 2,6-dibromo-3,5- distyryl BODIPY dye encapsulated in Pluronic® F-127 micelles. *Journal of Coordination Chemistry*. 71 (21). p.3444-3457.
66. Ejeromedoghene, O., Adewuyi, S., Amolegbe, S.A., Akinremi, C.A., **Moronkola, B.A.** and Salaudeen, T. (2018) Electrovalent chitosan functionalized methyl-orange/metal nanocomposites as chemosensors for toxic aqueous anions. *Nano-Structures and Nano-Objects*. 16 (2018). p.174-179.
67. **Mpeta, L.S., Fomo, G. and Nyokong, T.** (2018) Click chemistry electrode modification using 4-ethynylbenzyl substituted cobalt phthalocyanine for applications in electrocatalysis. *Journal of Coordination Chemistry*. 71 (10). p.1623-1638.
68. **Mvango, S. and Mashazi, P.** (2018) Synthesis, characterization of copper oxide-gold nanoalloys and their peroxidase-like activity towards colorimetric detection of hydrogen peroxide and glucose. *Materials Science & Engineering C-Materials for Biological Applications*. 2018. p.1-10.
69. **Mwanza, D., Louzada, M.S., Britton, J., Sekhosana, K.E., Khene, S., Nyokong, T. and Mashazi, P.** (2018) The effect of the cobalt and manganese central metal ions on the nonlinear optical properties of tetra(4-propargyloxyphenoxy)phthalocyanines. *New Journal of Chemistry*. 42 (2018). p.9857.
70. **Ndebele, N., Mack, J. and Nyokong, T.** (2018) A 3,5-DistyrylBODIPY Dye Functionalized with Boronic Acid Groups for Direct Electrochemical Glucose Sensing. *Electroanalysis*. 2018. p.1-9.
71. **Ngoy, B.P., Hlatshwayo, Z., Nwaji, N., Fomo, G., Mack, J. and Nyokong, T.** (2018) Photophysical and optical limiting properties at 532 nm of BODIPY dyes with *p*-benzyloxystyryl groups at the 3,5-positions. *Journal of Porphyrins and Phthalocyanines*. 22 (2018). p.413-422.
72. **Ngoy, B.P., May, A.K., Mack, J. and Nyokong, T.** (2018) Effect of bromination on the optical limiting properties at 532 nm of BODIPY dyes with *p*-benzyloxystyryl groups at the 3,5-positions. *Journal of Molecular Structure*. 2018. p.1-9.
73. **Nwahara, N., Achadu, O.J. and Nyokong, T.** (2018) In-situ synthesis of gold nanoparticles on graphene quantum dots-phthalocyanine nanoplateforms: First description of the photophysical and surface enhanced Raman scattering behaviour. *Journal of Photochemistry and Photobiology A – Chemistry*. 359 (2018). p.131-144.
74. **Nwahara, N., Nkhahle, R., Ngoy, B.P., Mack, J. and Nyokong, T.** (2018) Synthesis and photophysical properties of BODIPY-decorated graphene quantum dot-phthalocyanine conjugates. *New Journal of Chemistry*. 42 (2018). p.6051-6061.
75. **Nwaji, N., Achadu, O.J. and Nyokong, T.** (2018) Photo-induced resonance energy transfer and nonlinear optical response in ball-type phthalocyanine conjugated to semiconductor and graphene quantum dots. *New Journal of Chemistry*. 42 (2018). p.6040-6050.
76. **Nwaji, N., Dingiswayo, S., Mack, J. and Nyokong, T.** (2018) Photophysical and enhanced nonlinear optical response in asymmetric benzothiazole substituted phthalocyanine covalently linked to semiconductor quantum dots. *Spectrochimica Acta Part A – Molecular and Biomolecular Spectroscopy*. 204 (2018). p.629-639.
77. **Nwaji, N., Mack, J. and Nyokong, T.** (2018) An optical limiting study in aminophenoxy substituted phthalocyanine in the presence of semiconductor quantum dots. *Journal of Luminescence*. 203 (2018). p.247-256.

78. **Nwaji, N., Mack, J. and Nyokong, T.** (2018) Photophysical and strong optical limiting properties of ball-type phthalocyanines dimers and their monomeric analogues. *Journal of Photochemistry and Photobiology A – Chemistry*. 352 (2018). p.73-85.
79. **Nwaji, N., Mack, J. and Nyokong, T.** (2018) Enhanced nonlinear optical response of benzothiazole substituted ball-type phthalocyanines in the presence of metallic nanoparticles. *Optical Materials*. 82 (2018). p.93-103.
80. Ion, R.M., **Nyokong, T., Nwahara, N.**, Suica-Bunghez, I.-R., Iancu, L., Teodorescu, S., Dulama, I.D., Stirbescu, R.M., Gheboianu, A. and Grigorescu, R.M. (2018) Wood preservation with gold hydroxyapatite system. *Heritage Science*. 6 (37). p.1-12.
81. **Oderinlo, O., Tukulula, M., Isaacs, M., Hoppe, H.C., Taylor, D., Smith, V.J. and Khanye, S.D.** (2018) New thiazolidine-2,4-dione derivatives combined with organometallic ferrocene: Synthesis, structure and antiparasitic activity. *Applied Organometallic Chemistry*. 32 (2018). p.1-12.
82. **Oluwole, D.O., Achadu, O.J., Asfour, F., Chakona, G., Mason, P., Mataruse, P. and McKenna, S.** (2018) Postgraduate Writing Groups as Spaces of Agency Development. *South African Journal of Higher Education*. 32 (6). p.370-381.
83. **Oluwole, D.O.,** Manoto, S.L., Malabi, R., Maphanga, C., Ombinda-Lemboumba, S., Mthunzi-Kufa, P. and **Nyokong, T.** (2018) Evaluation of the photophysicochemical properties and photodynamic therapy activity of nanoconjugates of zinc phthalocyanine linked to glutathione capped Au and Au₃Ag₁ nanoparticles. *Dyes and Pigments*. 150 (2018). p.139-150.
84. **Oluwole, D.O. and Nyokong, T.** (2018) Optical nonlinearity of pentadecylphenoxy substituted sandwich-type metallophthalocyanines in the presence of Ag-CdSeTe/ZnTeSe nanocrystals: Effects of conjugation and central metals. *Dyes and Pigments*. 151 (2018). p.254-262.
85. **Oluwole, D.O.,** Sari, F.A., **Prinsloo, E., Dube, E.,** Yuzer, A., **Nyokong, T.** and Ince, M. (2018) Photophysicochemical properties and photodynamic therapy activity of highly water-soluble Zn(II) phthalocyanines. *Spectrochimica Acta Part A – Molecular and Biomolecular Spectroscopy*. 203 (2018). p.236-243.
86. **Oluwole, D.O., Nwaji, N., Nene, L.C., Mokone, L., Dube, E. and Nyokong, T.** (2018) Novel nano-dyad of homoleptic sandwich-type phthalocyanines with nitrogen doped graphene quantum dots for nonlinear optics. *New Journal of Chemistry*. 42 (2018). p.10124-10133.
87. **Peteni, S. and Nyokong, T.** (2018) Effect of doping vs covalent linking of a low symmetry zinc phthalocyanine to silica nanoparticles on singlet oxygen production. *Inorganica Chimica Acta*. 482 (2018). p.431-437.
88. **Sekhosana, K.E., Nkhahle, R. and Nyokong, T.** (2018) The Primary Demonstration of Exciton Coupling Effects on Optical Limiting Properties of Blue Double-Decker Lanthanide Phthalocyanine Salts. *ChemistrySelect*. 3 (2018). p.6671-6682.
89. **Sewry, J.D. and Paphitis, S.** (2018) Meeting important educational goals for chemistry through service-learning. *Chemistry Education Research and Practice*. 19 (2018). p.973-982.
90. **Sindelo, A., Osifeko, O.L. and Nyokong, T.** (2018) Synthesis, photophysicochemical and photodynamic antimicrobial chemotherapy studies of indium pyridyl phthalocyanines: Charge versus bridging atom. *Inorganica Chimica Acta*. 476 (2018). p.68-76.

91. Fonkui, T.Y., Ikhile, M.I., Muganza, F.M., Fotsing, M.C.D., Arderne, C., **Siwe Noundou, X., Krause, R.W.M.**, Ndinteh, D.T. and Njobeh, P.B. (2018) Synthesis, characterization and biological applications of novel Schiff bases of 2-(trifluoromethoxy) aniline. *Journal of Chinese Pharmaceutical Sciences*. 27 (5). p.307-323.
92. Teinkela, J.E.M., **Siwe Noundou, X.**, Nguemfo, E.L., Meyer, F., Wintjens, R., **Isaacs, M.**, Mpondo Mpondo, E.M., **Hoppe, H.C., Krause, R.W.M.** and Azebaze, A.G.B. (2018) Biological activities of plant extracts from *Ficus elastica* and *Selaginella vogelli*: An antimalarial, antitrypanosomal and cytotoxicity evaluation. *Saudi Journal of Biological Sciences*. 25 (2018). p.117-122.
93. Mbeunkeu, A.B.D., Azebaze, A.G.B., Tala, M.F., Teinkela, J.E.M., **Siwe Noundou, X., Krause, R.W.M.**, Vardamides, J.C. and Laatsch, H. (2018) Three new pentacyclic triterpenoids from twigs of *Manniophyton Fulvum* (Euphorbiaceae). *Phytochemistry Letters*. 27 (2018). p.1-8.
94. Senthilkumar, S., Goswami, R., **Smith, V.J.**, Bajaj, H.C. and Neogi, S. (2018) Pore Wall-Functionalized Luminescent Cd(II) Framework for Selective CO₂ Adsorption, Highly Specific 2,4,6-Trinitrophenol Detection, and Colorimetric Sensing of Cu²⁺ Ions. *ACS Sustainable Chemistry & Engineering*. 6 (2018). p.10295-10306
95. **Sobola, A.O., Watkins, G.M.** and Van Brecht, B. (2018) Synthesis, characterization and biological study of Cu(II) complexes of aminopyridine and aminomethylpyridine Schiff bases. *Journal of the Serbian Chemical Society*. 83 (7-8). p.242-245.
96. **Stone, J., Mack, J., Nyokong, T.**, Kimura, M. and Kobayashi, N. (2018) Photophysical properties of a novel styryl-BODIPY with a fused crown ether moiety. *Journal of Porphyryns*

2017 Publications:

1. Adeyemi, C.M., Isaacs, M., Mnkandhla, **D., Klein, R., Hoppe, H.C., Krause, R.W.M., Lobb, K.A. & Kaye, P.T.** 2017. Synthesis and anti-parasitic activity of C-benzylated (N-arylcarbonyl)alkylphosphonate esters. *Tetrahedron*, 73: 1661–1667. Available: <http://dx.doi.org/10.1016/j.tet.2017.01.045>

Older:

1. Robert E. Gawley, Rosalyn Klein, Neil J. Ashweek, and Iain Coldham, Structural studies of {6Li} 2-lithiopyrrolidines using NMR spectroscopy. *Tetrahedron*, 61(13), 2005, 3271-3280
2. . Neil J. Ashweek, Peter Brandt, Iain Coldham, Samuel Dufour, Robert E. Gawley, Fredrik Haeffner, Rosalyn Klein, Graciela Sanchez-Jimenez, Barrier to Enantiomerization of Unstabilized, Chelated, and Dipole-Stabilized 2-Lithiopyrrolidines. *Journal of the American Chemical Society*, 127(1), 2005, 449-457
3. 3. Rosalyn Klein and Robert E. Gawley. Configurational and Conformational Effects on Tin-Lithium Exchange in ?-Aminoorganostannanes by Rapid-Injection NMR. *Journal of the American Chemical Society* 129, 2007 4126-4127.
4. 4. ** P.T. Kaye, A.C. Gelebe, R. Klein, J.D. Sewry, and A.G Soper Benzodiazepine Analogues. Part 21. ¹³C NMR Analysis of Benzothiepine Derivatives. *Magnetic Resonance Chemistry*, 43(21), 2005, 952-955
5. Temitope O. Olomola, Rosalyn Klein and Perry T. Kaye, Convenient Synthesis of 3-Methylcoumarins and Coumarin-3-carbaldehydes, *Synthetic Communications*; 42(2), 2012, 251-257
6. 6. Thompo J. Rashamuse, Rosalyn Klein and Perry T. Kaye, Synthesis of Baylis–Hillman-Derived Phosphonated 3-(Benzylaminomethyl)coumarins, *Synthetic Communications*; 40(24), 2010, 3683-3690

7. Matshawandile Tukulula, Rosalyn Klein and Perry T. Kaye, Indolizine Studies, Part 5: Indolizine-2-carboxamides as Potential HIV-1 Protease Inhibitors, Synthetic Communications; 40(13), 2010, 2018-2028
8. Byron J. Truscott, Rosalyn Klein, and Perry T. Kaye, Expedient synthesis of N-substituted N-mesitylimidazolium salts as NHC precursors, Tetrahedron Letters, 51, (38), 2010, 5041–5043
9. Temitope O. Olomola, Rosalyn Klein, Kevin A. Lobb, Yasien Sayed, and Perry T. Kaye, Towards the synthesis of coumarin derivatives as potential dual-action HIV-1 protease and reverse transcriptase inhibitors, Tetrahedron Letters, 51(48), 2010, 6325–6328
10. Michael E. Brown, Ronald C. Cosser, Michael T. Davies-Coleman, Perry T. Kaye, Rosalyn Klein, Emmanuel Lamprecht, Kevin Lobb, Tebello Nyokong, Joyce D. Sewry, Zenixole R. Tshentu, Tino Van Der Zeyde, and Gareth M. Watkins, Introducing Chemistry Students to the "Real World" of Chemistry. Journal of Chemical Education, 87(5), 2010, 500-503.
11. Thompo J. Rashamuse, Musiliyu A. Musa, Rosalyn Klein, Perry T. Kaye, Regio-controlled Michaelis-Arbuzov reactions of 3-(halomethyl)coumarins. Journal of Chemical Research, 2009, (5), 302-305.
12. Eloise Marais, Rosalyn Klein, Edith Antunes, and Tebello Nyokong. Photocatalysis of 4-nitrophenol using zinc phthalocyanine complexes. Journal of Molecular Catalysis A: Chemical 261, 2007, 36-42.
13. B. A. Scheepers, R. Klein, And M. T. Davies-Coleman. Synthesis of triprenylated toluquinone and toluhydroquinone metabolites from a marine-derived Penicillium fungus. Tetrahedron letters 47, 2006, 8243-8246.
14. Rosalyn Klein, Suthananda N. Sunassee, and Michael T. Davies-Coleman, Factors influencing prenylation of an aromatic organolithium. Journal of Chemical Research, 2010, (8), 468-472.

Teaching Experience:

Since 2005 I have had the pleasure of lecturing organic chemistry at Rhodes University. Initially I thought the challenge was to teach the right material to the students before me. As I progressed through the first three years and completed the Post Graduate Diploma in Higher Education, I began to think differently. I am still sure that teaching the right material is important, since it lays a foundation for the kind of thinking that marks a graduate. With this in mind I have made every effort to develop critical, thoughtful learning skills within my students in organic chemistry from first year through to honours. I have also brought principles of developing graduates to bear in my course coordination at third year level. This has been especially evident in the development of our research internship programme, where I have been given carte blanche in the development of guidelines and assessment materials for the whole department.

The scope of my lecturing has encompassed the following:

First year: 200 – 300 Students

- Introduction to Organic Chemistry
- Biological Building Blocks
- (Extended Studies: Introduction to General Chemistry)
- General and Organic Chemistry practicals

Second Year: 40 - 70 Students

- Aromatic structure and synthesis
- Natural and synthetic polymers
- Organic Chemistry practical's

Third year: 20 - 40 Students

- Carbonyl Chemistry
- Retrosynthesis
- Green Chemistry
- Organometallics
- Organic Chemistry practicals
- Research Internships (development of outcomes and assessment process)

Honours:

- 7 - 13 Students
- Advanced synthetic techniques
- Catalysis in organic synthesis
- Green chemistry

MSc students supervised (completed)

- Kethobole Sekgota (Supervisor)
- Christopher Rafael (Sole Supervisor)
- Che Makanjee (Supervisor)
- Annalene Meyer (Sole Supervisor – 2012)
- Byron Truscott (Co-supervisor – 2011)
- Yi-Chen Lee (Co-supervisor – 2010)
- Matshawandile Tukulula (Co-supervisor – 2009)
- Dubekile Nyoni (Co-supervisor – 2009)
- Nathan Rose (Co-supervisor – 2007)

PhD students supervised (completed)

- Augustus Oluwafemi (Supervisor)
- Omobolanle Jesumoroti (Supervisor - 2017)
- Yusuf Hassan (Supervisor - 2015)
- Gaelle Ngnie (Sole Supervisor - 2016)
- Cristina Toma (part time, Supervisor)
- Temitope Olomola (Co-supervisor – 2012)
- Marius Mutorwa (Co-supervisor – 2012)

Community Engagement:

I have a passion for education and consider it both an obligation and a pleasure to be engaged in the community in which I live as a professional. I have made every effort to involve myself in the ongoing projects of the Chemistry Department with regards to educational outreach (Khanya Maths and Science Club). I was also delighted to be included in our first service learning project (Chemistry II Practical on Dye synthesis) where I have for three years been involved in running the practical component. I regularly volunteer to help with our schools outreach programme where we offer laboratory practical work to local learners (organised as part of their curriculum).

