**Department of Chemistry**

**Introduction**

This year (2018) was a year of promotions for our Department, with the announcement coming out on MOLE day, 23rd October, which celebrates Avogadro’s constant. This is a significant achievement, and each of these staff members, Professor Khene, Klein, and Lobb, hold up the name of our Department in everything they do, and deserve our congratulations.

Professor Khene got the year off to a great start with a Research Development Grant for Y-rated researchers from the NRF. Later he also celebrated being selected as one of the newest members of the South African Young Academy of Science (SAYAS).

Professor Klein completed a successful 3-year term as the Chair of the Green-Chemistry Division of the South African Chemical Institute (SACI) in December 2018 with an invited talk at the National Convention. Green Chemistry is the newest division of SACI, but is highlighted in the recent “Green Economy” strategy, and has grown tremendously both at Rhodes and nationally during her term.

Thirdly, Professor Lobb has co-authored no fewer than 11 publications this year, including one that featured on the cover of Tetrahedron Letters, one of the premier journals in Organic and Physical Chemistry. Prof Lobb’s collaborations with colleagues in Chemistry, other researchers at Rhodes, and people abroad is evident in his publications.

Distinguished Professor Nyokong also deserves our congratulations, not least for receiving her third Honorary Doctorate (Doctor of Science Honoris Causa) on the 18th April 2018 from the University of Kwazulu-Natal (UKZN) with the previous two being awarded by Walter Sisulu University (WSU) and the University of South Africa (UNISA) in 2010. The number of publications listed below, and student graduations also attest to the phenomenal impact and influence that this outstanding A-rated scientist has in South Africa.

Professor Nyokong is the Director of the DST/Mintek Centre for Nanotechnology Innovation, which in 2018 was awarded an Institute status by Senate. The Institute continues to excel in many respects, including an NRF B2 rating for Dr Mack (this was a first-time B2 rating, which underlines the considerable international recognition that Dr Mack has developed for his research).

Dr Mashazi (who was appointed this year as the Deputy Director of the NCI) was awarded an NRF Research Development Grant for Y-Rated Researchers for 2019. More importantly, in recognition of his research leadership as a Principal Investigator, he was also awarded a R3 million grant from the NRF - National Equipment Program to upgrade the TOF-SIMS instrument, which is one of only two of its kind in South Africa.

This equipment and the other infrastructure means that the NCI is a draw-card for many visitors from advanced research institutes all around the world. The state-of-the-art facilities and expert supervision also means that the postgraduate students are regular award winners at conferences and in national and international competitions. This method of instilling an ethos of excellence in her students is often seen in the achievements of Professor Nyokong’s graduates. An example of this Dr Muthumuni Managa (who graduated in April 2019). Dr Managa was announced as one of the Mail and Guardian’s top 200 young South Africans in Science and Technology category at a gala dinner on the 28th June.

These young scientists and all the others from our Department often go on to take up important positions around the world. Mr Zweli Hlatshwayo (MSc graduate from 2018), for example is only the second scholar from Chemistry to be awarded a Fulbright Fellowship to study overseas. Dr Edward Sekhosana was appointed this year as a Senior Lecturer at the University of South Africa (UNISA). Dr Christian Nkanga (PhD graduate from 2018) was awarded a Novartis Next Generation Scholarship and spent 3 months in Basel, Switzerland. Christian is the first Rhodes student to be selected for this.

I need to acknowledge our alumni and collaborators, who continue to help us become a Department that changes lives across the world. Former HoD and now Dean of Natural Sciences at UWC, Prof Michael Davies-Coleman is a new ASSAf member. Former student Dr Sunny Sunassee was a UNESCO-Merck Best Young African Researcher Awardee, and even our 2018 admin intern Alyssa Williams was selected as one of the Top 100 Future Leaders by the SA Graduate Employers Association.

In particular, I would also like to thank Professor Dudley Shallcross and Mr Tim Harrison from the University of Bristol, whom we hosted as our 2018 Barker Lecturer visitors. These two visitors have helped us establish programs such as the “Pollutants Tale” outreach demonstration, and provided many ideas for future joint projects.

Finally, to all our researchers, students, graduates, collaborators, technical and administrative support staff I would say a big thank you for helping us remain one of the most productive and successful departments at Rhodes.

**Postgraduates / Graduations**

As our Department continues to grow and become more successful, so too does the list of outstanding students and postgraduates. It’s therefore very hard to single out individuals, but apart from those mentioned elsewhere in the report, I’d like to congratulate Nasiphi Mpiti (hons graduate) and Lisa Shwempe for their first places in the annual SACI regional seminars. Also, Nobuhle Ndebele, Refilwe Matshitse and Aviwe Magadla for best presentations at the DST/Mintek Nanotechnology Workshop.

Of our 2018 PhD graduates, Dr Oluwafemi and Dr Nwaji received Rhodes Postdoctoral fellowships, and another former postdoc, Dr Richard Beteck published an article in Nature.

Congratulations to all our graduates, especially those whose degrees were awarded with distinction.

**Distinguished Visitors / International Visits**

Professor Dudley Shallcross and Mr Tim Harrison were SciFest visitors from Bristol and hosted by the Department for the Barker Lecturer series. They gave two very different research seminars on the “Impacts of public engagement”, and on “The problems of indoor and outdoor air pollution”. They also gave a public talk:- The Biosphere is Cool.

The CNI also hosted a number of research visitors who spent time in the CNI working on the amazing instruments. This included a delegation from Mintek who have been a long-term supporter of the CNI, and also Mr Krzysztof Jankowski and Mr Szymon Caluch from the "Jacob of Paradies Academy in Gorzow, Poland.

The Vice Chancellor also hosted a celebratory dinner on the 28 November 2018, where several current and former students spoke of the enormous positive influence that Professor Nyokong has been to them personally, and to science.

Congratulations to all who contributed in any way to our work, and as we welcome 2019 as the International Year of the Periodic Table, let me wish you success for the future.

**Professor Rui Krause**

**Head of Department**

Concerts, Exhibitions, Performances, Workshops, Events

**Hulushe, S.T.**

**Hulushe, S.T.** Learner Participant. *5th European Crystallographic School,* Stellenbosch University, Stellenbosch. South Africa, 8 - 14 July 2018.

**Louzada, M.S. and Khene, S.**

**Louzada, M.S.** and **Khene, S.** Oral Presentation. Investigation of Self Phase Modulation of Tetra Substituted Phthalocyanine Isomers as Optical Sensors. *DST/Mintek NIC 10th Annual Workshop*. Mintek, Johannesburg. South Africa. 26 - 28 March 2018.

**Mafukidze, D.M. and Nyokong, T.**

**Mafukidze, D.M.** and **Nyokong, T.** Poster Presentation. Graphene quantum dots-phthalocyanine polystyrene conjugate embedded in asymmetric polymer membranes for photocatalytic oxidation of 4-chlorophenol. *DST/CSIR NIC 10 Year Anniversary Workshop*. CSIR International Convention Centre, Pretoria. South Africa. 14 - 16 October 2018.

**Magadla, A., Britton, J., Oluwole, D.O. and Nyokong, T.**

**Magadla, A.**, **Britton, J.**, **Oluwole, D.O.** and **Nyokong, T.** Poster Presentation. Development of phthalocyanine-metallic nanoparticles conjugates for possible application in water purification and as antimicrobial agents. *DST/Mintek NIC 10th Annual Workshop*. Mintek, Johannesburg. South Africa. 26 - 28 March 2018.

**Mapukata, S. and Nyokong, T.**

**Mapukata, S.**, Hainer, A.S., Lanterna, A.E., Scaiano, J.C. and **Nyokong, T.** Oral Presentation. Nanoparticle decorated titania fibers for sacrificial electron donor assisted hydrogen generation. *DST/CSIR NIC 10 Year Anniversary Workshop*. CSIR International Convention Centre, Pretoria. South Africa. 14 - 16 October 2018.

**Matshitse, R. and Nyokong, T.**

**Matshitse, R.** and **Nyokong, T.** Oral Presentation. Singlet oxygen generating properties of different sizes of positively charged graphene quantum dot nanoconjugate systems. *DST/Mintek NIC 10th Annual Workshop*. Mintek, Johannesburg. South Africa. 26 - 28 March 2018.

**Matshitse, R.** and **Nyokong, T.** Poster Presentation. Photophysical and nonlinear optical characteristics of pyridyl substituted phthalocyanine - detonated nanodiamond conjugated systems in solution. *DST/CSIR NIC 10 Year Anniversary Workshop*. CSIR International Convention Centre, Pretoria. South Africa. 14 - 16 October 2018.

**Mgidlana, S., Oluwole, D.O. and Nyokong, T.**

**Mgidlana, S.**, **Oluwole, D.O.** and **Nyokong, T.** Poster Presentation. Development of Nonlinear Optical Sensors using Asymmetrical Zn(II) Phthalocyanine-Quantum Dots Conjugates. *DST/Mintek NIC 10th Annual Workshop*. Mintek, Johannesburg. South Africa. 26 - 28 March 2018.

**Ndebele, N., Mack, J. and Nyokong, T.**

**Ndebele, N.**, **Mack, J.** and **Nyokong, T.** Oral Presentation. Synthesis of Fluorescent Boron Dipyrromethene (BODIPY) dyes funcionalized with Boronic Acid for Sensing. *DST/Mintek NIC10th Annual Workshop*. Mintek, Johannesburg. South Africa. 26 - 28 March 2018.

Distinguished Visitors

**Haynes, D.A.**

Prof DA Haynes. Department of Chemistry & Polymer Science, Stellenbosch, South Africa. *Lecture towards functional materials from multi component crystals*. April 2018.

**Jankowski , K. and Caluch, S.**

Mr K Jankowski and Mr S Caluch. Jacob of Paradies Academy in Gorzow Wielkopolski, Poland, Gorzow Wielkopolski, Poland. *Made use of the Centre’s facilities and did some research on the results of physical parameters of nanoparticles of metals and semiconductors*. April 2018.

**Mjwara, P.**

Dr P Mjwara. Department of Science and Technology, Pretoria, South Africa. *Tour with students/staff - Chemistry Building and Rhodes/DST Centre for Nanotechnology Innovation and Meeting with Dr Clayton and Prof Nyokong*. November 2018.

**Murage, M.**

Ms M Murage. United States International University, Nairobi, Kenya, Nairobi, Kenya. *Exchange Student - NRF South Africa - Canada Research Chairs Trilateral Partnerships Initiative*. September 2018.

**Shallcross, D.E.**

DE Shallcross. Bristol University, Tyndall Ave, Bristol BS8, UK. *Lecture: Climate change Workshops: Science Outreach*. March 2018.

International Visits

**Kubheka, G.**

**Kubheka, G.** BA Material Forschung Berlin, Germany. *DAAD-NRF Joint Scholarship Programme*. 15 October - 14 December 2018.

**Mack, J.**

**Mack, J.** United States International University, Nairobi, Kenya. *NRF South Africa/Kenya Research Collaboration*. 13 - 16 August 2018.

**Mapukata, S.**

**Mapukata, S.** University of Ottawa, Ottawa, Canada. *Exchange Student: NRF South Africa/Canada Research Collaboration*. 24 May - 24 August 2018.

**Molupe, N.**

**Molupe, N.** Queen's University, Belfast, Northern Ireland. *Cancer Research: Part of Pearson-Young Memorial Trust Funding*. 18 September - 4 October 2018.

**Ndebele, N.**

**Ndebele, N.** United States International University, Nairobi, Kenya. *Exchange Student: NRF South Africa/Kenya Research Collaboration*. 13 - 29 August 2018.

**Nene, L.C.**

**Nene, L.C.** Ecole Nationale Supérieure de Chimie de Paris, Paris, France. *MSc Exchange Student (Research Collaboration)*. 1 February - 31 July 2018.

**Nxele, S.R.**

**Nxele, S.R.** Ecole Nationale Supérieure de Chimie de Paris, Paris, France. *Joint PhD Degree*. 1 September - 28 February 2018.

**Nyokong, T.**

**Nyokong, T.** United Stated International University, Nairobi, Kenya. *NRF South Africa - Canada Research Chairs Trilateral Partnerships Initiative*. 25 - 28 February 2018.

**Nyokong, T.** L’Oreal UNESCO, Paris, France. *L’Oreal UNESCO for Women in Science - 20th Anniversary*. 19 - 23 March 2018.

**Nyokong, T.** L’Oreal UNESCO, Paris, France. *Jury Deliberation Meeting for 2019 Women in Science Awards*. 26 - 28 September 2018.

**Shabangu, S.M.**

**Shabangu, S.M.** United States International University, Nairobi, Kenya. *Exchange Student - NRF South Africa - Canada Research Chairs Trilateral Partnerships Initiative*. 1 - 29 August 2018.

**Soy, R.**

**Soy, R.** United States International University, Nairobi, Kenya. *Exchange Student: NRF South Africa - Canada Research Chairs Trilateral Partnerships Initiative*. 26 November - 10 December 2018.

Peer Reviewed Non-Subsidy-Earning Journal Research Publications

**Ayeni, A.O. and Watkins, G.M.**

**Ayeni, A.O.** and **Watkins, G.M.** (2018) Impact of thiocyanate on the Catecholase activity of Cu(II) and Fe(III) complexes of 2-((4-(2-hydroxy-4-methylbenzyl)piperazin-1-yl)methyl)-5-methylphenol (a Mannich base). *Acta Chemica IASI.* 26 (1). p.59-73.

**George, R., Nyoni, S., Shumba, M. and Nyokong, T.**

**George, R.**, **Nyoni, S.**, **Shumba, M.** and **Nyokong, T.** (2018) Porphyrin nanorods modified glassy carbon electrode surface for oxygen reduction reaction catalysis. *Journal of Chemical Society of Nigeria (JCSN)*. 43 (1). p.147-157.

**Hulushe, S.T. and Watkins, G.M.**

**Hulushe, S.T.** and **Watkins, G.M.** (2018) Guest inclusion of methanol and ethanol in zirconium metal-organic frameworks (Zr-MOFs). *Materials Today: Proceedings*. 5 (2018). p.10415-10423.

**Sen, P.**

**Sen, P.**, Yildiz, S.Z., Dege, N., Atmaca, G.Y., Erdogmus, A. and Dege, M. (2018) Synthesis of a Novel Benzimidazole Moiety-Appended Schiff Base Derivative: Fluorescence and Chemosensor Study. *Journal of the Turkish Chemical Society, Section A: Chemistry (JOTCSA)*. 5 (3). p.1375-1386.

**Siwe Noundou, X. and Krause, R.W.M.**

Afieroho, O.E., **Siwe Noundou, X.**, **Krause, R.W.M.**, **Isaacs, M.**, Olley, L., **Hoppe, H.C.** and Abo, K.A. (2018) An Antiplasmodial Depside from a Nigerian Lichen Dirinaria Picta, Epiphytic on the Oil Palm Elaeis Guineense. *Bolivian Journal of Chemistry (Revista Boliviana de Quimica)*. 35 (1). p.31-39.

Kenneth, E.M., **Siwe Noundou, X.**, John, M.C., Patience, O.O. and **Krause, R.W.M.** (2018) Evaluation of Accelerated Stability Testing of a Mirtazapine-loaded Nanoemulsion as per International Conference on Harmonization (ich) Protocols. *American Journal of Nanoscience and Nanotechnology Research*. 6 (1). p.1-10.

**Sobola, A.O. and Watkins, G.M.**

**Sobola, A.O.** and **Watkins, G.M.** (2018) Spectroscopic Study of Keto-Enol Tautomerism in N-Arylsalicyaldimine Derivatives-Hydrogen Bonding and Electronic Effects of P-Substituents. *FUW Trends in Science and Technology Journal*. 3 (1). p.92-95.

Peer Reviewed Subsidy-Earning Journal Research Publications

**Achadu, O.J. and Nyokong, T.**

**Achadu, O.J.** and **Nyokong, T.** (2018) Fluorescence "turn-ON" nanosenor for cyanide ion using supramolecular hybrid of graphene quantum dots and cobalt pyrene-derivatized phthalocyanine. *Dyes and Pigments.* 2018. p.1-8.

**Ayeni, A.O. and Watkins, G.M.**

**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.

**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.

**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.

**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.

**Beteck, R.M.**

**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-Subsituted Non-fluoroquinolones. *South African Journal of Chemistry – Suid-Afrikaanse Tydskrif Vir Chemie.* 71 (2018). p.188-195.

**Bromley, C.**

**Bromley, C.**, Raab, A., Parker-Nance, S., Beukes, D.R., Jaspars, M. and Davies-Coleman, M.T. (2018) Hyphenated LC-ICP-MS/ESI-MS Identification ofHalogenated Metabolites in South African Marine Ascidian Extracts. South African Journal of Chemistry – Suid-Afrikaanse Tydskrif Vir Chemie. 71 (2018). p.111-117.

**Centane, S., Sekhosana, K.E., Matshitse, R. and Nyokong, T.**

**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.

**Chani, F.M. and Sewry, J.D.**

**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.

**Chindeka, F., Mashazi, P., Britton, J., Fomo, G., Oluwole, D.O., Sindelo, A. and Nyokong, T.**

**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.

**Darrell, O.T., Hulushe, S.T., Mtshare, T.E., Beteck, R.M. and Krause, R.W.M.**

**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.

**Davies-Coleman, M.T.**

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., McMahon, 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.

**Dube, E. and Nyokong, T.**

**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.

**Dube, E., Nwaji, N., Mack, J. and Nyokong, T.**

**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.

**Dube, E., Oluwole, D.O. and Nyokong, T.**

**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.

**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.

**Dube, E., Oluwole, D.O., Nwaji, N. and Nyokong, T.**

**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.

**Faridoon, H., Mnkandhla, D. and Kaye, P.T.**

**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.

**Fomo, G., Achadu, O.J. and Nyokong, T.**

**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.

**Fomo, G., Nwaji, N. and Nyokong, T.**

**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.

**Gumbo, M., Beteck, R.M., Mandizvo, T. and Khanye, S.D.**

**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.

**Idowu, M.A., Xego, S., Arslanoglu, Y., Mack, J., Antunes, E. and Nyokong, T.**

**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.

**Isalomboto Nkanga, C. and Krause, R.W.M.**

**Isalomboto Nkanga, C.** and **Krause, R.W.M.** (2018) Abstract: Formualtion and characterization of pH-/light-responsive liposomes for macrophage targeted delivery of isoniazid. *Chemical Papers.* 10 (2018). p.24-25.

**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.

**Isalomboto Nkanga, C.**, **Walker, R.B.** and **Krause, R.W.M.** (2018) pH-Dependant release of isoniazid from isonicotinic acid (4-hydroxy-benzylidene)-hydrazide loaded liposomes. *Journal of Drug Delivery Science and Technology.* 45 (2018). p.264-271.

**Kaye, P.T.**

**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.

**Khan, F.I.**

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.

Ali, S., **Khan, F.I.**, Chen, W., Rahaman, A. and Wang, Y. (2018) Open and closed states of Mrlip1 DAG lipase revealed by molecular dynamics simulation. *Molecular Simulation.* 44 (18). p.1520-1528.

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.

**Khan, F.I. and Lobb, K.A.**

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.

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**Khene, S.**

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