

Dr. BENARD FREDRICK JUMA



PERSONAL DETAILS

NAME: Benard Fredrick Juma, Post Doc (Univ. Rostock, Germany), PhD(Uni. Botswana), MSc. (Uni. Nbi), BSc. (Uni. Nbi)

NATIONALITY: Kenyan

LANGUAGES: English, German, Swahili, Dholuo

RELIGION: Christian

POSITION: Senior Lecturer, Organic Chemistry, Masinde Muliro University of Science and Technology

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NEXT OF KIN: Julia Janet Adhiambo Juma
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PERSONAL PROFILE

Experienced Organic Chemist: In total synthesis of natural products, phytochemical studies, structure elucidation of organic compounds, modern isolation techniques, activity evaluation of compounds and structure activity relationships amongst others. With an h index of 12 and i-10 inddx of 13 I am currently ranked 7th in MMUST by the AD Scientific index for scienties in 2022.

EDUCATION AND QUALIFICATION

Oct '06 – Oct '08 **Post Doc Fellow.** Universität Rostock, Institut für Chemie. Full time research on synthesis of Erythraline alkaloids and investigation of structure activity relationships.

Feb '01 - Jul '05 **PhD** (Organic Chemistry, Natural Products – synthesis and pharmacological properties), University of Botswana (Partly at the Humboldt-Universität zu Berlin, Germany). By research and thesis.
Thesis entitled “Phytochemical and biological activity investigation of *Erythrina lysistemon* and *Gardenia volkensii* growing in Southern Africa and partial synthesis of C-3 oxygenated erythrina alkaloids.” Supervisor: Prof R. R. T. Majinda

Oct '97 – Mar '00 **Master of Science** (Organic Chemistry, Natural Products), University of Nairobi. By coursework and thesis

Thesis entitled “Phytochemical investigation of *Psiadia punctulata* for bio-active principles”. Supervisor: Prof J. O. Midiwo and Dr. A. Yenesew.

Mar '92 - Jun '96 **Bachelor of Science (Chemistry)**, University of Nairobi.
By coursework and project
Project entitled “Isolation, structural determination and bio-activity of the surface exudates of *Plectranthus species G* and *Polygonum senegalense* plants”
Supervisor: Prof J. O. Midiwo

RESPONSIBILITIES

May 2022- To date **Chairman Department of Pure and Applied Chemistry**. Masinde Muliro University of Science and Technology. Responsibilities as stipulated in the university statutes

June 17 - To date **Departmental Academic Programs Leader (Undergraduate) -**

Nov '13 - Jun 2017 **Faculty Graduate Studies Committee Chairman**. Masinde Muliro University of Science and Technology. Responsibilities include overseeing all postgraduate affairs in the Faculty of Science on behalf of the dean of the Faculty. These including review of admissions and research proposal, examinations, recommendation on awards of degrees etc.

Jun '12 - Sept 12 **Ag. Director Research Extension and Linkages**. Masinde Muliro University of Science and Technology. Responsibilities included Development of appropriate research policy and programs, Promotion and co-ordination of research and scientific publications, Coordination of workshops and seminars, Mobilization and soliciting of financial support for research and extension programs, Maintenance of collaboration and linkages and Promotion of knowledge dissemination.

April 2010 Development of faculty of science strategic plan and Department of Pure and Applied Chemistry Strategic plan.

Various times **Ag. Chairman Department of Pure and Applied Chemistry**. Masinde Muliro University of Science and Technology. Responsibilities as stipulated in the university statutes

WORK EXPERIENCE

2011 - to date **Senior Lecturer, Organic Chemistry**. Masinde Muliro University of Science and Technology. Lectures both Postgraduate and undergraduate courses and carrying out research (Supervising graduate research student).

2007 - to 2011 **Lecturer, Organic Chemistry**. Masinde Muliro University of Science and Technology. Lectures both Postgraduate and undergraduate courses and carrying out research (Supervising graduate research student).

May '06 - Sept '06 **Part-Lecturer** Kabarak University, Department of Physical and Mathematical Sciences. Teaching and examining students in chemistry.

- Jul '05 - Oct '05** **Research scientist** (Voluntary) (Chemistry department, University of Botswana). Development of separation procedures for crude extracts using High Speed Counter current machine.
- Apri '00 - Feb '01** **Research Assistant** (Chemistry Department, University of Nairobi). Laboratory based. Involved search for and modification of biologically activity organic compounds from medicinal plants. Different spectroscopic techniques (NMR, UV, IR, etc) used for structure elucidation and various biological activity tests employed.
- Jun. '96 - Jul. '96** **Research Assistant** (Chemistry Department, University of Nairobi). Work involved search for phytochemicals from medicinal plants and a study of their biological activities. Also involved application of various spectroscopic techniques in structure elucidation.
- May '93 - Dec '95** **Research assistant:** Part-time (Chemistry Department, University of Nairobi). Work involved was as describe above.

TEACHING

August 2007 – to date

Department of Pure and Applied Chemistry
Masinde Muliro University of Science and Technology

Postgraduate

- SCH 830 - Organic Spectroscopy
- SCH 831 - Modern Synthetic Organic Chemistry
- SCH 832 - Stereochemistry and Conformational Analysis
- SCH 838E - Recent Advances in Organic Chemistry
- SCH 822 - Advanced Separation Techniques

Undergraduate

- SCH 430 - Organic Spectroscopy
- SCH 431 - Chemistry of Natural Products
- SCH 432 - Polymer Chemistry
- SCH 332 - Alicyclic and Heterocyclic Chemistry
- SCH 333 - Stereochemistry, Conformational Studies and Reaction Mechanisms
- SCH 334E - Medicinal Chemistry
- SCH 220 - Introduction to Analytical Chemistry
- SCH 230 - Organic Chemistry I
- SCH 231 - Organic Chemistry II
- SCH 100 - Fundamentals of Chemistry I
- SCH 101 - Fundamentals of Chemistry II
- SCI 261 - Chemistry of Functional Groups
- SCI 462 - Polymer and Petroleum Chemistry

IMPACT

H_i index = 12

i₁₀ index = 13

Source - google scholar and Research Gate and AD Scientific Index website

PUBLICATIONS

1. Ondeko DA, **Juma BF**.* Lilechi DB and Nyongesa PK (2020); Synergistic interactions of the Chemical Constituents of *Centella asiatica* and *Hyptis pectinata* in the Antimicrobial Activities - preparation. In preparation
2. Ondeko DA, **Juma BF**.* Lilechi DB and Nyongesa PK (2020); LC-ESI/MS and GC-MS methanol extract analysis, phytochemical and antimicrobial activity studies of *Centella asiatica*. *Asian Journal of Chemical Sciences*. **8** (3): 32 – 51. DOI: 10.9734/AJOCS/2020/v8i319046
3. Onjero, I, **Juma BF***, Cheruiyot J, Kamau RW (2020); Antimicrobial Activity and Interactions of *Toddalia asiatica* Isolated Coumarins with Two Known Drugs. *International Research Journal of Pure and Applied Chemistry* 21(15): 1-16. doi.org/10.9734/irjpac/2020/v21i1530248
4. Armwood, S , **Juma BF**, Ombito JO, Majinda RRT and Gwebu ET (2018); Effect of erythrinaline alkaloids from *Erythrina lysistemon* on human recombinant caspase-3, *African Journal of Pharmacy and Pharmacology* **12**(15): 183-187. doi.org/10.5897/AJPP2016.4628
5. Wekesa Nesor¹, Lilechi, D. Baraza^{1*}, Cheruiyot Jackson, Ochieno Dennis, **Juma B.F.**,² Kamau R. Wairimu¹ , Sigot Asenath³ and Matthias Heydenreich,⁴ (2016); Antimicrobial Coumarins from the Oyster Culinary-Medicinal Mushroom, *Pleurotus ostreatus* (Agaricomycetes), from Kenya. *International Journal of Medicinal Mushrooms* **18**(10):905-913. DOI: 10.1615/IntJMedMushrooms.v18.i10.60
6. Rahab W. Kamau, Danstone L. Baraza and **Benard F. Juma***(2015); Antimicrobial compounds from *Melia volkensii*. *Natural Products Research*. DOI:10.1080/14786419.2015.1101104
7. **Benard Juma**, Muhammad Adeel, Alexander Villinger, Helmut Reinke, Anke Spannberg, Christine Fischer, Peter Langer, (2011); Synthesis of 2,6-Dioxo-1,2,3,4,5,6-hexahydroindoles and their Transformation into 5,8,9,10-Tetrahydro-6*H*-indolo[2,1-*a*]isoquinolin-9-ones. The 14th NAPRECA Symposium and AAMPS Ethnoveterinary Medicine Symposium, ICIPE, Nairobi.
8. Midiwo, J. O.; Owuor FAO; **Juma, B. F.**; Waterman, P. G. and Peter, M. G. (2010); ChemInform Abstract: Diterpenes from the Leaf Exudate of *Psiadia punctulata*. *ChemInform* **28**(28). DOI: 10.1002/chin.199728155
9. **Benard Juma**, Muhammad Adeel, Alexander Villinger, Helmut Reinke, Anke Spannberg, Christine Fischer, Peter Langer, (2009); “Synthesis of 2,6-Dioxo-1,2,3,4,5,6-hexahydroindoles by Acid-Catalyzed Cyclization of Acetal-Protected (2,4-Dioxocyclohex-1-yl)acetamides and their Transformation into 5,8,9,10-Tetrahydro-6*H*-indolo[2,1-*a*]isoquinolin-9-ones” *Advanced Synthesis and Catalysis*. **351**: 1073-1079. doi.org/10.1002/adsc.200800691
10. **Benard Juma**, Muhammad Adeel, Alexander Villinger, Peter Langer, (2008) “Efficient synthesis of 2,6-dioxo-1,2,3,4,5,6-hexahydroindoles based on the synthesis and reactions of (2,4-dioxocyclohex-1-yl)acetic acid derivatives” *Tetrahedron Letters*, **49**: 2272-2274. doi.org/10.1016/j.tetlet.2008.02.027
11. **Juma, B. F.** and Majinda R. R. T. (2007); Constituents of *Gardenia volkensii*: Their brine shrimp lethality and DPPH radical scavenging properties. *Natural Product Research* **21**: 121-125. doi.org/10.1177/1934578X0600100204

12. **Juma, B. F.**; Midiwo, J. O.; Yenesew, A.; Waterman, P. G.; Heydenreich, M. and Peter, M. G. (2006); Three *ent*-trachylobane diterpenes from the leaf exudates of *Psiadia punctulata*. *Phytochemistry* **67**: 1322–1325. doi.org/10.1016/j.phytochem.2006.04.007
13. **Juma, B. F.** and Majinda R. R. T. (2006); Constituents of *Erythrina lysistemon*: Their Brine Shrimp Lethality, Antimicrobial and Radical Scavenging Activities. *Natural Product Communications* **1**: 101-107.
14. Majinda R. R. T.; Wanjala C. C. W. and **Juma B. F.** (2005); Bioactive non-alkaloidal constituents from the genus *Erythrina*. *Studies in Natural Products Chemistry* **32**:821-853. DOI: 10.1016/S1572-5995(05)80070-5
15. Majinda R. R. T.; Wanjala C. C. W. and **Juma B. F.** (2005); Bioactive non- alkaloidal constituents from the genus *Erythrina*. In, Utta-ur-Rahman, (Ed), *Studies in Natural Products Chemistry*, vol 32 Elsevier, Amsterdam. pg 821-853. ISBN 13: 978-0-444-52171-2
16. **Benard F Juma**, Runner RT Majinda (2005); Three new compounds from *Erythrina lysistemon* and their antimicrobial, radical scavenging activities and their brine shrimp lethality. 11th NAPRECA Symposium Book of Proceedings, Antananarivo, Madagascar. 97-109
17. J Ogweno Midiwo, A Yenesew, **BF Juma**, Kerubo L Omosa, Irene L Omosa, Daniel Mutisya (2005); 11th NAPRECA Symposium Book of Proceedings, Antananarivo, Madagascar 9-19
18. **Juma, B. F.** and Majinda R. R. T. (2004); Erythraline alkaloids from the flowers and pods of *Erythrina lysistemon* and their DPPH radical scavenging properties. *Phytochemistry* **65**: 1397-1404.
19. J Ogweno Midiwo, A Yenesew, **BF Juma**, S Derese, JA Ayoo, AO Aluoch, S Guchu (2002); Bioactive compounds from some Kenyan ethnomedicinal plants: Myrsinaceae, Polygonaceae and *Psiadia punctulata*. *Phytochemistry Reviews* **1** (3): 311-323
20. Wanjala C. C. W.; **Juma B. F.**; Bojase C.; Gashe, B. A. and Majinda R. R. T. (2002); Erythraline alkaloids and antimicrobial flavonoids from *Erythrina latissima* *Planta medica* **68** (7): 640-642.
21. **Juma, B. F.**; Midiwo, J. O. and Abiy Yenesew (2001); Flavonoids and Phenyl propanoids on the surface of *Psiadia punctulata*: *Pytochemistry* **57**: (4) 571-579.
22. Midiwo, J. O.; Owuor, F.A.O.; **Juma, B.F** and Waterman, G.W. (1997); Diterpenes from the leaf exudate of *Psiadia punctulata*. *Phytochememistry* **45** 1: 117 –120.

SELECTED MANUSCRIPTS PRESENTED IN CONFERENCES

1. **Juma BF***, Baraza DL, Kamau RW, Ondeko DA, Onjero I, Majinda RRT, Wanjala C & Langer (2018); Bioactive constituents from some Kenyan ethnomedicinal plants and fungi: Leguminosae, Rubiaceae, Meliaceae, Apiacea and Rutaceae. 5th International Huboldt Kolleg, Nanyuki
2. **Juma BF**, Wanjala CC and Majinda RRT (2016); Non-alkaloidal compounds from some species of the genus *Erythrina*; 4th International Huboldt Kolleg (2016). Theme: “Research and Networking: Laying the Foundation for the Sustainable Development Goals.” Naivasha, Kenya
3. **Juma BF** and Majinda RRT (2016); Non-alkaloidal compounds from *E. lysistemon* and their antimicrobial, Radical Scavenging Activities and their Brine Shrimp Lethality. 7th International Alexander von Humboldt Kolleg, Addis Ababa, Ethiopia.
4. **Juma, B. F.** and Majinda R.R.T. (2015); Erythraline alkaloids of *Erythrina lysistemon* and their radical scavenging properties. The 8th International Conference of the Kenya Chemical Society (KCS), Nairobi Kenya.
5. **Benard Juma**, Muhammad Adeel, Alexander Villinger, Helmut Reinke, Anke Spannenberg, Christine Fischer, Peter Langer, (2011); “Synthesis of 2,6-Dioxo-1,2,3,4,5,6-hexahydroindoles by Acid-Catalyzed Cyclization of Acetal-Protected (2,4-Dioxocyclohex-1-yl)acetamides and their Transformation into 5,8,9,10-Tetrahydro-6*H*-indolo[2,1-*a*]isoquinolin-9-ones” *Advanced Synthesis and Catalysis*. **351**: 1073-1079. At the 14th Symposium of the NAPRECA (K) 2011, ICIPE, Kenya.
6. **Benard Juma**, Muhammad Adeel, Alexander Villinger, Peter Langer, (2008) “Efficient synthesis of 2,6-dioxo-1,2,3,4,5,6-hexahydroindoles based on the synthesis and reactions of (2,4-

- dioxocyclohex-1-yl)acetic acid derivatives”*Tetrahedron Letters*, **49**: 2272-2274. At the *NAPRECA (K) 2009 Annual Seminar/agm Day*, Egerton University.
7. **Juma, B. F.** and Majinda R. R. T. (2005); Antimicrobial, radical scavenging ability and cytotoxicity of the constituents of *Erythrina lysistemon* and novel isoflavonoid, *neo-liganan* and long chain aliphatic acid. *11th International NAPRECA Conference* at Panorama Hotel in Antananarivo, Madagascar.
 8. **Juma, B. F.** and Majinda R.R.T. (2003): Erythraline alkaloids of *Erythrina lysistemon* and their radical scavenging properties. *The 10th International NAPRECA Conference* at University of Addis Ababa in Ethiopia.
 9. **Juma, B. F.** ; Midiwo, J. O. and Abiy Yenesew (2001): Surface compounds of *Psiadia punctulata*; *The 9th International NAPRECCA Symposium on Natural products* at University of Nairobi, in Kenya.
 10. Midiwo, J. O.; Abiy Yenesew; **Juma, B. F.**; Derese, S.; Ayoo, J.; Aluoch, A. O. and Guchu, S. (2001): Bioactive substances from Kenyan Medicinal plants. *The 9th International NAPRECCA Symposium on Natural products* at University of Nairobi, in Kenya.
 11. **Juma, B. F.**; Midiwo, J. O. and Abiy Yenesew (1999): Surface compounds of *Psiadia punctulata*. *The 3rd Kenya Chemical Society International Conference*: at Jomo Kenyatta University of Agriculture and Technology, Kenya.
 12. **Juma, B. F.**; Midiwo, J. O. and Abiy Yenesew (1998): flavonoids and diterpenes on the surface exudates of *Psiadia punctulata*; *The 7th International NAPRECA workshop* at University of Dar-es-Salaam, Tanzania.

SELECTED CONFERENCES WORKSHOPS AND SEMINARS ATTENDED

1. The 5th International Conference of the NATURAL PRODUCTS RESEARCH NETWORK FOR EASTERN AND CENTRAL AFRICA - Kenya (NAPRECA-K) - Virtual Conference supported by University of Nairobi, Kenya. [7th to 8th April 2022]
2. The 6th Alexander von Humboldt (AvH-K) “KOLLEG” Conference 2021. Virtual conference Hosted by Kirinyaga University. Theme: “*Mitigating the Impact of Covid-19 and Future Pandemics: Role of Academia* [6th to 8th October 2021]
3. MMUST-KDSA (Kenya DAAD Scholars Association) International conference. Virtual conference Hosted by MMUST. Theme: “*The Role of Alumni Networks in Capacity Building and Global Development*. [15th to 18th June 2021]
4. NATURAL PRODUCTS RESEARCH NETWORK FOR EASTERN AND CENTRAL AFRICA UGANDA CHAPTER (NAPRECA-U) - Virtual Research Seminar supported by Busitema University, Uganda. Theme: Exploring Natural Products for Sustainable Health and Agriculture. [September 2020]
5. International Conference on Phytochemistry, Textile & Renewable Energy for Sustainable Development. Virtual Conference Hosted by Moi University, Eldoret, Kenya. Theme: Advancing Science, Technology and Innovation for Industrial Growth. [August 2020]
6. KDSA INTERNATIONAL CONFERENCE at the Sirkwa Hotel, Eldoret. Theme: The Role of Universities and Research Institutions in Realisation of the Kenya’s Big Four Agenda [June 2019].
7. The first Biophysics conference at Bishop Stam Pastoral Centre Kakamega, Kenya. Theme: Exploring Biophysics Diversity for sustainable Industrial and Economic Development [July 2019]
8. 5th International Huboldt Kolleg at Sportsman Arms Hotel, Nanyuki Kenya. Theme: “The Role of Alumni Networks in Mentorship and Collaboration in Multidisciplinary Research: Foundation for Kenya’s Vision 2030.” [2018]
9. 1st “Open Lab AFRICA workshop” at the Kibo Hotel, Arusha Tanzania. Theme “Establishment of Africa UK collaborative research on Natural Products” [2018]

10. DAAD National conference, at the Kisumu Hotel, Kisumu, Kenya, Theme: *Role of Higher Education in the Electoral Process and Democratization of Politics in Kenya* [2017]
11. 1st Alexander von Humboldt Foundation Conference in Ethiopia at the Harmony Hotel. Theme: Inspiring and Empowering Women Scientist for Active Engagement in Professional Career. [2016]
12. 4th International Huboldt Kolleg at the Sweet Lake Resort, Naivasha Kenya. Theme: "Research and Networking: Laying the Foundation for the Sustainable Development Goals." [2016]
13. 7th International Alexander von Humboldt Kolleg, Addis Ababa, Ethiopia. Theme: Inspiring and Empowering Women Scientists/Scholars for Active Engagement in Their Professional Career. [2016].
14. The 1st Humboldt Colloquium Kenya at the Safari Park Hotel, Nairobi, Kenya. Theme: *The Power of Excellence in Science – Enhancing Academic Capacities in Africa*[2014]
15. The 4th Conference on Edible and Medicinal Mushrooms (ACEMMIV), at the Golf Hotel Kakamega. [2014]
16. DAAD-Alumni conference, at the Safari Park Hotel, Nairobi, Kenya, Theme: *How to equip a leader* [2014]
17. The 3rd Humboldt International Kolleg Kenya at Technical University. Theme: *Environmental Monitoring Research Science and Technology for Sustainable Development in Kenya and the Impact on the National Vision 2030*. [2013]
18. The 2rd Humboldt International Kolleg Kenya at Taita Taveta University College. Theme: *The Future of Biodiversity in Africa: Scope, Opportunities, Collaboration, Access and Sharing of Benefit*. [2012]
19. The 14th Symposium of the NAPRECA (K) at the ICIPE, Kenya [2011]
20. KDSA CONFERENCE Theme: "Intellectual Social Responsibility and the Fight against Corruption in Kenya", At The Kenyatta University, Nairobi [2010].
21. The NAPRECA (K) 2009 Annual Seminar/AGM Day, Egerton University [2009].
22. KEDSA National conference on Science and Technology for Development, at the MMUST [2009].
23. DAAD Higher Education Forum on Capacity Building and Development Research in Sub-Saharan Africa and the Summer School for African Networks in the field of Technology and Development (Engineering and Natural Sciences) jointly conducted by the centre for Development Research (ZEF) at the university of Bonn, the Faculty of Process and Systems Engineering at the university of Magdeburg, Germany, and the German Academic Exchange Service (DAAD). [2005].
24. The 11th International NAPRECA Conference Panorama Hotel in Antananarivo, Madagascar (2005). Theme: "Natural Products and Drug Discovery".
25. The 11th NAPRECA pre-symposium workshop at IMRA in Antananarivo, Madagascar (2005). Theme: "Bioassay and NMR Techniques".
26. The 10th International NAPRECA Conference in Addis Ababa Ethiopia (2003).
27. Analytical Chemistry in Africa: Inaugural Conference: Southern and Eastern Africa Network of Analytical Chemists (SEANAC), Gaborone, Botswana, (2003).
28. The 9th International NAPRECA Conference in Nairobi, Kenya (2001).
29. The 9th NAPRECA pre-symposium workshop at the University of Nairobi, Kenya (2001). Theme: "Chromatographic Separation Techniques, NMR and Mass Spectroscopy".
30. The Fourth Kenya Chemical Society International Conference at Jomo Kenyatta University of Agriculture and Technology (August, 1999).
31. 3rd Theoretical Chemistry Workshop held in Institute of Nuclear Society, University of Nairobi, Kenya (1999).
32. The 9th NAPRECA summer school: "Natural Products Research specializing in basic research methods, Chromatography, Spectroscopy and computer aided literature search through email and the internet" in Dar-es-Salaam, Tanzania (1998).

RESEARCH EXPERIENCE

1. Synthesis of C-3 Oxygenated Erythrina Alkaloids Derivatives and a Study of Structure Activity Relationship.
2. Investigation of the Bioactive non- alkaloidal constituents from the genus *Erythrina*
3. Phytochemical investigation of *Gardenia volkensii* for pharmacologically relevant entities.
4. Study of the chemistry of *Erythrina lysistemon* and the biological activities of its constituents.
5. Study of the leaf surface exudates of *Psiadia punctulata* and their biological activities
6. Investigation of *Erythrina latissima* for Erythrinaline alkaloids and antimicrobial flavonoids.

AWARDS AND SCHOLARSHIPS

1. Post doctoral fellowship by Alexander von Humboldt (2006-2008)
2. Best young scientist presenter at the 11th NAPRECA Symposium on “Natural Products and Drug Discovery”, in Antananarivo, Madagascar (2005).
3. DAAD scholarship to pursue PhD (2001).
4. Government of Kenya Scholarship to pursue M.Sc degree as the 3rd best student in chemistry (1997).

RESEARCH GRANTS AND DONATIONS

- 2022:** NRF award KSh 50,000,000. Grant - GRNT-CALL-2021-00001
- 2012:** HP catalyst initiative worth KSh 30,000
- 2010:** University Research Fund
- 2010:** Equipment funding brought to MMUST through Alexander von Humboldt Euro 18,500 (KSh 210,000).
- 2009/2010:** Grand dubbed “Alexander von Humboldt Return Fellowship” for Humboldt and Georg Foster Research Fellows (KSh 500,000)
- 2009:** Book donation by Alexander von Humboldt (For Alexander von Humboldt Alumni)

CONFERENCES ORGANIZED WHILE AT MMUST

- June' 2021** 2021 MMUST-KDSA (Kenya DAAD Scholars Association) International conference. Virtual conference Hosted by MMUST. Theme: “*Mitigating the Impact of Covid-19 and Future Pandemics: Role of Academia*”
- May' 2014** The 4th African Conference on Edible and Medicinal Mushrooms (ACEMM IV) at Masinde Muliro University of Science and Technology, Kakamega, Kenya. Theme: *Mushroom Technology for Development: Transforming Knowledge to Practice*
- Nov' 2010** The First Alexander von Humboldt Kolleg Kenya Conference held at the Meridian Hotel, Nairobi, Kenya. Theme: *Synergy and Networking to Enhance Research and Development*
- June 2009** DAAD SCHOLARS NATIONAL CONFERENCE held at Bishop Stam Pastoral Centre, Kakamega, Kenya. Theme: “*Science and Technology for Development*”.

CURRENT RESEARCH INTERESTS

Targeted synthesis and modification of pharmacologically useful natural compounds coupled with study of structure activity relationships.

Instigation for Pharmacologically active compounds from the family Meliaceae with emphasis on Antimalarials, antimicrobials and cytotoxic entities with potential anticancer activities.

UNIVERSITY EXAMINATION RESPONSIBILITIES

EXTERNAL EXAMINATION

1. **Extenal examiner, Rongo University since 2018 -2022**
2. **Mr. Owino John Isemaki** (MSc. University of Nairobi, 2018); Preparation of functionalized *Tegetes minuta* (TaMi) dye
3. **Smart Johannes Mpofo** (PhD. UNIVERSITY OF JOHANNESBURG, 2014). *Elephantorrhiza elephantina* and *Pentania prunelloides*; antimicrobial activities and synergy
4. **Mr. Buyinza Daniel** (MSc. UNIVERSITY OF NAIROBI, 2012).
Phytochemical Investigation of *Zanthoxylum holstzianum* for antimicrobial principles.
5. **Musakala Justus Omuga** (MSc. UNIVERSITY OF NAIROBI, 2012).
Comparison of Different Cement Types for Stabilization of Different Road Sub-Grade Soils
6. **Muhammad Arman** (PhD Pakistan, 2010)
Study of Phytoalexins Induced in *Cicer arietinum* and *Pisum sativum* by Treatment of Biotic Elicitor if *Hypnea musciformis* (Red Algae)

SELECTED INTERNAL GRADUATE EXAMINATION

1. **Ebrahim Sande** (MSc. MMUSST, 2020)
2. **Owino John Isemaki** (MSc. MMUSST, 2018)
Preparation of functionalized *Tegetes minuta* (TaMi) dye
3. **Atieno Josephine Achieng'** (MSc. MMUSST, 2015)
Properties of a Crystalline Energy Branch for Hard-Sphere Assembly of Fermions
4. **Wekesa N. Justus** (MSc. MMUSST, 2014)
Antimicrobial Compounds and Volatiles from Oyster Mushrooms and *Spirulina Platesis*
5. **Synvanus M. Luchera** (MSc. MMUSST, 2014)
An investigation of the relationship between Classroom Assessment and Learning Mole Concept in Kenyan Secondary Schools

SOME STUDENTS' SUPERVISION

GRADUATE STUDENTS

Continuing students

1. **Sharon Kosgey MMUST (PhD)**
Effectiveness of Aromatherapy on Stress Among Parents of Autistic Children: Analysis of Saliva Cortisol Levels and Blood Pressure on Stress Reduction
2. **Ondeko D. Amunga, MMUST (PhD)**
Identification of chemical constituents of three local anti-cancer herbs and investigation of synergistic interactions of their crude extracts and pure compounds
3. **Wekesa (PhD)**
Investigation of the *Croton megalocapus* and *Bridelia micrantha* for anticancer activity and synergistic interactions in their constituents
4. **Mureka Edwward Wafula (PhD)**
Chemical and Pharmacological Analysis of Anticancer Principles From Plants and Marine Organisms.
5. **Naomi (MSc)**
A study of the antimalarial activity of combined plant extracts traditionally used in Kenya

Graduated students

1. **Rahab W. Kamau, MMUST (MSc)**

- Chemical Constituents of *Melia Volkensii* (Guerke) and Their Antifungal, Antibacterial and Antiplasmodial Activities
2. **Isaiah Onjero, MMUST (MSc)**
Phytochemical Investigation of *Toddalia Asiatica* and *Teclea Nobilis* for Antiplasmodial, Antibacterial and Antifungal Agents
 3. **Ondeko D. Amunga, MMUST (MSc)**
Phytochemical and antimicrobial assay of *Centela asiatica* and synergy with *Hyptis pectinata*
 4. **Adhiambo Velma, MMUST (MSc)**
Adulticidal activity & Feeding Deterrence of *Plectranthus marruboides* and *Tetradenia riparia* Essential Oils Against *Prostephanus truncatus* (Coleoptera: Bostrichidae)

UNDERGRADUATE STUDENTS

1. Mutola BF - Essential Oils Composition of *Ocimum basilicum* and *Ocimum gratissimum* Leaves From Kenya and Synergy in their Anti-Microbial Activit.
2. Mumbe SR - Investigation of Essential Oils of *Ocimum Gratissimum*, *Ocimum Kilimandscharicum* for Weevil repellence, Stingless Bee Attraction Activity and Their Synergistic Action
3. Kikvi J M - Structure Identification of Bioactive Coumarins from *n*-Hexane Extract of *Toddalia asiatica* Root Bark
4. Mwenga SN - Isolation and Identification of Mid Polar Coumarins From *Toddalia asiatica* Stem Bark
5. Wambui VW - Antimicrobial Activity and Phytochemical Screening of Extracts of *Ajuga Remota*
6. Wahu W. J. - Phytochemical Studies of Two Traditional Leafy Vegetables; *Basella Alba* and *Corchorus Olitorius*
7. Owinji O. E. - Phytochemical Analysis of *Lantana Trifolia* Used In Treatment of Eye Inflammations.
8. Songol J. D. - Phytochemical Constituents and Antimicrobial Activity Of *Plectranthus pseudomarrubiodes*
9. Njoroge KM - Phytochemical Analysis and Antioxidant Activity of *Anacardium occidentale* Leaves
10. Tulu TM - Analysis of Phytochemical Constituents in *Ocimum kilimandscharicum* Growing in Kenya.
11. Chelangat V. - Analysis of Phytochemicals in *Achyranthes aspera* and *Lycopus virginicus*
12. Ogal BA. Determination of the Degree of Methyl Esterification and Acetylation of Pectin Extracted From The Leaves of Avocado Tree
13. Chelanga KK - Extraction Of Volatiles From Mexican Merigold (*Tagetes minuta*) Leaves, That Has Ant Repellant Activity
14. Lewis M.- Extraction of Fungicides Antibiotics and Vermicides From *Solanum incanum* Fruit Sap
15. Munyoki MC. - Antibacterial Activity On *Psidium guajava* Towards Diarrhea
16. Odhiambo A. - Phytochemical Analysis Of Solvent Extract Of *Albizia Gumifera*
17. Muli M. - To Quantify The Phytochemical Present In The *Casimiroa Edulis* (White Sapote) As Well As Its Radical Scavenging Activity.
18. Ondiek IO. - Phytochemical Analysis of *Tithonia diversifolia* and Its Properties in Excess Stomach Acid Relief
19. Kipruto N. - Phytochemical Studies Of Dodder (*Cuscuta chinensis*) and Its Radical Scavenging Activity
20. Onyango S. - UV-Vis Determination of the Presence of Folates in (*Hibiscus aabdariffas*) Leaves.

CONSULTANCY

Together with other colleagues involved in “TIVET institution equipment acquisition”

PROFESSIONAL AFFILIATIONS

1. Kenya DAAD Scholars Association (National Secretary general)
2. Alexander von Humboldt Fellows in Kenya (National Secretary)
3. Natural Products for East and Central Africa (NAPRECA).
4. Kenya Chemical Society (KCS) - member.

AFFILIATIONS/EXTERNAL LINKS

1. KEMRI – Consortium on anti-cancer research (NRF award)
2. Institut für Chemie, Universität Rostock und Leibniz-Institut für Katalyse Universität Rostock (Germany)
3. Chemistry Dep't University of Botswana
4. Chemistry Dep't, University of Nairobi

SHORT TRAINING AND RESEARCH VISITS

- Oct 3 – Oct 6, '05** DAAD Higher Education Forum on Capacity Building and Development Research in Sub-Saharan Africa. Center for Development Research, Zentrum für entwicklungsforschung (ZEF), Bonn, Germany.
- Sept 25 -Oct 2 '05** Summer School for African Networks in the field of Technology and Development (Engineering and Natural Sciences) is organized by the Faculty of Process and Systems Engineering, Otto-von- Guericke University of Magdeburg, Magdeburg, Germany.
- Aug 22- Aug 27 '01** 9th NAPRECA Pre-symposium Workshop on Structural Elucidation and Chromatography, Department of Chemistry, University of Nairobi, Nairobi, Kenya.

OTHER SKILLS

- i. Knowledge, skills and experience in using Bruker Avance DPX 300 NMR, Topspin program for raw data processing (NMR), Shimadzu UV-2101PC spectrometer, Polatronic D optical rotation meter (Schmidt + Haensch), HPLC (Shimadzu), High Speed Counter Current, etc.
- ii. Working knowledge and hands on experience in MS Word, MS PowerPoint, MS Excel, Chem Draw, Isis Draw, Corel Draw, Computer Graphics, spreadsheets and use of Internet

COMMUNITY SERVICE

- i. Chairman - Christ Church Schools, Kisumu Advisory committee
- ii. Church Elder – PEFA – Christ Church of Kisumu
- iii. Vice Chair - Kenya Re Residents Association Kisumu
- iv. Vice Chairman – Usawa Self Help Group

REFEREES

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