

CURRICULUM VITAE

1. PERSONAL INFORMATION

Name - Shikanga Amukohe Emmanuel
Date of Birth - 22nd December 1976
Marital status - Married
Children - Three
Address - P.O. Box 101, Kakamega (50100).
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Language - English, Swahili, Abaluya
Citizenship - Kenyan
Gender - Male
County of Birth - Kakamega
ID No. - 20114191
Passport No. - B149802

2. QUALIFICATIONS

2.1. Academic Qualifications

2012 DTech. Chemistry, Department of Chemistry, Tshwane University of Technology, South Africa.
2008 MTech. Chemistry (*cum laude*), Department of Chemistry, Tshwane University of Technology, South Africa.
2001 BSc. Hons. Chemistry, Department of Chemistry, Moi University, Kenya.
1995 O Level Certificate, Moi Forces Academy, Nairobi, Kenya
1991 Kenya Certificate of Primary Education, Mumias Central Primary School, Kenya

2.2. Professional Courses (Short Courses)

17-20 Nov 2017 Chemical Inventory Management System For Universities In Western Kenya, Kenya Chemical Society, Kenya.
04-07 July 2017 Chemical Security Vulnerability Assessment Training, by Kenya Chemical Society, Kisumu, Kenya.

22-26 Feb 2010 Multivariate Data Analysis Basic Course, Umetrics, Umea, Switzerland
27-29 Oct 2008 Basic Statistics and Method Validation, Tshwane University of Technology, South Africa.

3. **FELLOWSHIPS**

2008-2012 PHD/DTech. Postgraduate student grant, National Research Foundation, South Africa.
2006-2007 MSc/MTech. Postgraduate student grant, National Research Foundation, South Africa.

4. **SKILLS AND EXPERTISE**

- High performance liquid chromatography (HPLC)
- Ultrahigh performance liquid chromatography (UHPLC)
- Liquid chromatography mass spectrometry (LC-MS)
- Gas chromatography mass spectrometry GC-MS)
- High performance thin layer chromatography (HPTLC)
- High speed countercurrent chromatography (HSCCC)
- UV-Vis spectrophotometry
- Vibrational spectroscopy: Near infrared (NIR), Fourier transform mid IR (FTIR), Hyperspectral imaging spectroscopy (HIS)
- Method development and validation using HPTLC, HPLC, UHPLC and GC-MS
- Thermogravimetric analysis
- Flame photometry
- Atomic absorption spectrometry
- Chemometric data evaluation
- Biological assays (antioxidant, antimicrobial activities)
- Biopharmaceutics (Transport studies)

5. **WORK EXPERIENCE**

Jan 2014 – Current Lecturer, Department of Chemistry, Maseno University.
Jan - Dec 2013 Lecturer, Department of Chemistry, Dedan Kimathi University of Technology.
Jan 2006-Dec 2012 Lecturer Assistant, Tshwane University of Technology, Department of Chemistry.

Jan 2004- Nov 2005 BOM Teacher (Chemistry and Physics), St. Peters Seminary Mukumu.

Jan 2003- Dec 2003 BOM Teacher (Chemistry and Physics), Mukumu High School.

Jan 2002- Dec 2002 BOM Teacher (Chemistry, Mathematics and Physics), Makhokho Secondary School.

Mar 2001- Sept 2002 Laboratory Analyst, Mumias Sugar Company, Mumias, Kenya

6. RESPONSIBILITIES

April 2017 – Current Examination and Timetable Coordinator, School of Physical and Biological Sciences, Maseno University.

Jan - Dec 2013 Departmental Coordinator of Attachment Placement, Supervision and Industrial Trips, Department of Chemistry, Dedan Kimathi University of Technology.

7. POSTGRADUATE SUPERVISION

MSc. Supervision

2018-Current: Fredrick W. Nyongesa: MSc/Ns/00011/017
Soil factors influencing adsorption of organophosphate insecticide drained through soak pits in Homabay County.

2017-Current: Adino Edward Odwori: Pg/MSc/Ns/00142/2015.
Effects of fish cage farming on water quality and heavy metal bioaccumulation in *Oreochromis niloticus* (Tilapia) in Usenge, Lake Victoria, Kenya.
Department of Environmental Sciences, Maseno University.

2016-Current: Carolyne Shanyisa: Pg/MSc/Sc/00080/2015.
Thesis Title: Effects of gold mining on the water quality and crop composition (*Crotalaria spp.*) as a function of soil quality in selected streams in Kakamega County, western Kenya.
Department of Chemistry, Maseno University.

2016-Current: Ochola George: Pg/MSc/Sc/00041/2015.
Thesis Title: Determination of highly carcinogenic polyaromatic hydrocarbons (PAHs) and hydrazine in water based on polymer/nanoparticles Composites.
Department of Chemistry, Maseno University.

- 2015-Current: Rogers Omondi Ong'injo: Pg/MSc/00027/2014.
Thesis Title: Effect of biochar amendment on phosphorus availability and green house gas emissions in anaerobic soils from the lower yala river basin.
Department of Chemistry, Maseno University.
- 2014-Current: Violet Achieng Orodó: Pg/MSc/Sc/00070/2012
Thesis Title: Determination of the Effect of Papyrus Reeds (*Cyperus Papyrus*) on the Water Quality in River Yala, Yala Swamp and Lake Sare in Siaya County, Kenya.
Department of Environmental Sciences, Maseno University.
- 2014-Current: Obat Oyamo Kennedy: Pg/MSc/Sc/00081/2013
Thesis Title: Synthesis of Zeolite from Sugarcane Bagasse Fly Ash for Wastewater Treatment.
Department of Chemistry, Maseno University.

8. CONFERENCES/SEMINARS/WORKSHOPS

8.1. Workshops Attended

- 29th -31st Jan 2020: Pedagogy, andragogy and Mentorship Training, offered by Kenya-Nottingham _SPHEIR Project. University of Nairobi, Nairobi.
- 23rd Sept – 04th Oct 2013: Pedagogy offered by Dedan Kimathi University of Technology, Nyeri.
- 6th June 2103: Publishing Scientific Research, Offered by Springer Link in Dedan Kimathi University of Technology, Nyeri.
- 11th -15th April 2011: Metabolomics Workshop offered by University of Leiden, The Netherlands.

8.2. Presentations at Academic and Professional Conferences/Congresses

Orodó, V., Abuom, P., **Shikanga, E.A.** Effects of *Cyperus papyrus* on physico-chemical parameters of water and sediments in Yala Swamp and Lake Sare in western Kenya. Pan African Chemistry Network Congress: Sustainable water resources for Africa. Nairobi University, Kenya, 30th Nov-2nd Dec 2016.

Orodo, V., Abuom, P., **Shikanga, E.A.** Uptake of selected heavy metals from water and sediments in Yala Swamp and Lake Sare in western Kenya by *Cyperus payrus*. Pan African Chemistry Network Congress: Sustainable water resources for Africa. Nairobi University, Kenya, 30th Nov-2nd Dec 2016.

Alwala, J., **Shikanga, E.**, Kasabuli, D.B., Wanzala, W. Antimicrobial activity of *Persea americana* leaf extract against *Staphilacoccus mutans*. First International Conference on Transformative Leadership for Societal Empowerment in the 21st Century. Kibabii Univesity, Kenya. June 2016.

Alwala, J., **Shikanga, E.**, Wanzala, W. Assessment of selected heavy metals from two commercial cigarette brands and tobacco culitavated in Emuhaya District, western Kenya. First International Conference on Transformative Leadership for Societal Empowerment in the 21st Century. Kibabii Univesity, Kenya, June 2016.

Unathi, M., Viljoen, A., **Shikanga, E.**, Marston, A., van Vuuren, S. 2013. Indigenous South African medicinal plants with dermatological relevance: From a screening approach, to combination studies and bioactive solation. Podium presentation, 16th Conference of Annual Indigenous Plant Use Forum (IPUF), Nelspruit, South Africa, 1st – 4th, July 2013.

Shikanga, E.A., Vermaak, I., Viljoen, A.M., Combrinck, S., Marston, A., Gericke, N. Herbal medicine Quality Control: Chemotypic Variation of Psychoactive Alkaloids in *S. tortuosum* and Differentiation of *S. tortuosum* and *S. crassicaule* Species using Hyperspectral Imaging. Podium presentation. SACI Young Chemists' Symposium, (South African Chemical Institutue: Gauteng Region and Royal Society of Chemistry (South Africa North section)), University of Pretoria, South Africa, 9th Nov 2012.

Shikanga, E.A., Viljoen, A.M., Combrinck, S. Phytochemical variation of alkaloids in *Sceletium tortuosum* plants and commercial products. Podium presentation. Faculty of Science Research Day, Tshwane University of Technology, Pretoria 9th Aug 2012.

Shikanga, E.A., Vermaak, I., Viljoen, A.M., Combrinck, S., Marston, A., Gericke, N. Chemotypic variation of mesembrine-type alkaloids in *S. tortuosum* and distinguishing between *S. tortuosum* and *S. crassicaule*. Podium presentation, 15th Conference of Annual Indigenous Plant Use Forum (IPUF), University of Venda, South Africa, 2th - 5th, July 2012.

Shikanga, E.A., Viljoen, A.M., Chen, W., Hamman, J.H., Combrinck, S., Gericke, N. An investigation of the *in vitro* transport of *Sceletium tortuosum* alkaloids across porcine buccal, sublingual and intestinal membranes. Poster, 59th International Congress and Annual meeting of the Society for Medicinal plants and Natural products Research (GA), Antalya, Turkey, 4th - 9th September 2011.

Viljoen, A.M., **Shikanga, E.**, Hamman, J.H., Combrinck, S., Gericke, N. *Sceletium tortuosum* - an ancient treatment for modern Society. Podium presentation. 59th International Congress and Annual meeting of the Society for Medicinal plants and Natural products Research (GA), Antalya, Turkey, 4th - 9th September 2011.

Shikanga, E.A., Viljoen, A.M., Chen, W., Hamman, J.H., Combrinck, S., Gericke, N. Transport of mesembrine-type alkaloids from *Sceletium tortuosum* across porcine intestinal, buccal and sublingual mucosal tissues. Poster, 14th Conference of Annual Indigenous Plant Use Forum (IPUF), St. Lucia, South Africa, 4th-7th July 2011.

Shikanga, E.A., Regnier, T., Combrinck, S., Du Plooy, W., Botha, B. Fungitoxicity of *Lippia* extracts and purified compounds against a Guazatine-resistant strain of *Penicillium digitatum*. Poster presentation. 4TH World Congress on Medicinal and Aromatic Plants-using plants to benefit people (WOCMAP IV), 9-14 Cape Town, South Africa, November 2008.

Shikanga, E.A., Regnier, T., Combrinck, S., Botha, B., Du Plooy, W. Antifungal activity of *Lippia* extracts and purified compounds against *Penicillium digitatum*. Poster presentation. 5th Citrus Research Symposium, Central Drakensberg, South Africa, 6th- 9th August 2008.

Shikanga, E., Combrinck, S., Regnier, T., Drewes, S., Botha, B. Polar secondary metabolites present in four indigenous *Lippia* species. Podium presentation. Indigenous Plant Use Forum, Graaff-Reinet, South Africa, 7th -10th July 2008.

Shikanga, E.A., Combrinck, S., Angeh, A.T., Botha, B.M. 2006. Isolation of bioactive polar compounds from *Lippia Scaberrima*. Poster presentation. Faculty of Science Research Day, Tshwane University of Technology, Pretoria, 5th August 2008.

Shikanga, E.A., Combrinck, S., Angeh, A.T., Botha, B.M. 2006. Isolation of bioactive polar compounds from *Lippia Scaberrima*. Poster presentation. The 38th National Convention of the South African Chemical Institute, University of KwaZulu Natal, Durban, South Africa, 3rd-8th Dec 2006.

8.3. Convening and Coordinating Workshops and Seminars

4th-7th July 2016: Member of Organising Committee: Experts Workshop on Sustainable Use of Water Resources.
Host Organization: Exellent Center For Development Cooperation in Sustainable Water Management in Developing Countries (EXCEED-SWIDON) and Maseno University.
Venue: Jumuia Hotel, Kisumu.

9. RESEARCH AND PUBLICATIONS

9.1. Publications

Shikanga, E., Kamau, D., Wamuyu, K. 2015. Evaluation of Iridoid glycosides in *Lippia javanica*. *Phytochemistry*, 64: 114–122.

Shikanga, E.A., Viljoen, A.M., Vermaak, I., Combrinck, S. 2014. A novel approach in herbal quality control using hyperspectral imaging: Discriminating between *Sceletium tortuosum* and *Sceletium crassicaule*. *Phytochemical Analysis*, 24(6): 550-555.

Unathi, M., Viljoen, A., **Shikanga, E.**, Marston, A., van Vuuren, S. 2013. Antimicrobial activity of southern African medicinal plants with dermatological relevance: From an ethnopharmacological screening approach, to combination studies and the isolation of a bioactive compound. *Journal of Ethnopharmacology*, 148: 45-55.

Shikanga, E.A., Kamatou, G.P., Chen, W., Combrinck, S., Viljoen, A.M. 2012. Validated RP–UHPLC PDA and GC–MS methods for the analysis of psychoactive alkaloids in *Sceletium tortuosum*. *South African Journal of Botany*, 82: 99-107.

Shikanga E.A., Viljoen, A., Combrinck, S., Marston, A. Gericke, N. 2012. The chemotypic variation of *Sceletium tortuosum* alkaloids and commercial product formulations. *Biochemistry Systematics and Ecology*, 44: 364-373.

Shikanga E.A., Vermaak, I., Viljoen, A.M. 2012. An HPTLC-densitometry method for quantification of the pharmacologically important alkaloids in *Sceletium tortuosum* raw material and products. *Journal of Planar Chromatography*, 25 (4): 283-289.

Shikanga, E.A., Hamman, J.H., Chen, W., Combrinck, S., Gericke, N., Viljoen, A.M. 2011. *In vitro* permeation of mesembrine-type alkaloids from *Sceletium tortuosum* across porcine oral and intestinal mucosa. *Planta Medica*, 77:1-9.

Shikanga, E.A., Viljoen, A., Combrinck, S., Marston, A. 2011. Isolation of *Sceletium* alkaloids by high-speed countercurrent chromatography. *Phytochemistry Letters*, 4: 190-193.

Shikanga, E.A., Regnier, T., Combrinck, S. 2010. South African *Lippia* herbal infusions : Total phenolic content, antioxidant and antibacterial activities. *South African Journal of Botany*, 76:567571.

Olivier, D.K., **Shikanga, E.A.**, Combrinck, S., Krause, R.W.M., Regnier, T., Dlamini, T.P. 2009. Phenylethanoid glycosides from *Lippia javanica*. *South African Journal of Botany*, 76:58-63.

Shikanga, E.A., Regnier, T., Combrinck, S., Botha, B. 2009. Polar *Lippia* extracts as alternatives for the postharvest control of Guazatine®-resistant strains of *Penicillium digitatum* in citrus. *Fruits*, 64(2):75-82.

9.2.Thesis and Dissertation

July 2008-Dec 2012:	Doctoral thesis: Chemotypic variation and biopharmaceutics of <i>Sceletium tortuosum</i> alkaloids. Supervisor: Prof. Alvaro M. Viljoen. Co-supervisor: Prof. Sandra Combrinck Co-supervisor: Dr. Nigel Gericke
Jan 2006-June 2008:	Masters Dissertation: Bioactive Polar Compounds in South African <i>Lippia</i> Species. Supervisor: Prof Sandra Combrinck Co-supervisor: Prof Ben M. Botha

10. RECOGNITION

10.1.Thesis Examination

Internal Examiner for MSc and PHD Thesis

Oct 2017 : Evaluation of Selected Management Practices Contributing to Primary

- Oct 2017 : Synthesis and Application of Nitrogen-Donor Zinc and Copper Complexes as Catalysts in Polymerization of Lactides and ϵ -Caprolactones.
By: Mr Okemwa Teddy Timothy
Reg No.: PG/MSc/Sc/00018/2010
- Sept 2017 : Effects of Physico-chemical Properties of Sodium Exchanged Zeolites on the Fate of Malathion in Wastewater.
By: Mr Elly Tety Osewe
Reg No.: PG/PHD/Sc/00158/2010
- Sept 2016 : Effective Combinations of Selected Local and Natural Materials for Domestic Water Purification on Borehole Water.
By: Mr Agunja Eric Omondi
Reg No.: PG/MSc/00033/2012
- Sept 2016 : Variations in Soil and Foliar Nutrient Levels, Yields and Quality of Two Ratoon-Sugarcane Crops Due to Harvesting Age, Nitrogen and Potash Fertilizations in Western Kenya.
By Mr Samwel Oginga Nyandere
Reg No. : PG/MSc/Sc/00019/2010
- May 2016 : Determination of Heavy Metal Levels in Soil and Accumulation in Sugarcane Grown in Muhoroni and South Nyanza Sugar Nuclear Estates, Kenya.
By Odumba Zablon Otieno
Reg No.: PG/MSc/Sc/00054/2010
- June 2015 : The Effect of Rate and Split Application of Nitrogenous Fertilizers on Nutrients of Two Varieties of Sugarcane Grown in Western Kenya.
By Mr George Aindo Achieng'
Reg No.: PG/MSc/Sc/00054/2010

9.2. Reviewer for Professional Periodicals/ Journals

Phytochemistry Letters
Journal of Ethnopharmacology
South African Journal of Botany
Studies on Ethnomedicine
Bulletin of the Chemical Society of Ethiopia

3. Workshop Facilitator/Trainer

- 11th -14th June 2018: Facilitator/Trainer: Cane Testing Implementation Training: Sugar Cane Processing, Good lab Practices, Quality Assurance, Chemometrics, Occupational Health and Safety.
Host Organization: ChromAfrica.
Venue: Jambo Impala Ecolodge, Kisumu.
- 20th -27th Sept 2017: Facilitator/Trainer: ISO 17025-2005: Laboratory Competence: Good lab Practices, Quality Assurance, Measurement Uncertainties.
Host Organization: ChromAfrica.
Venue: Royal City Hotel, Kisumu.
- 17th -24th July 2017: Facilitator/Trainer: Cane Testing Units: ISO 17025-2005 and Chemometrics.
Host Organization: ChromAfrica.
Venue: Royal City Hotel, Kisumu.
- 30th Nov -2nd Dec 2016: Facilitator/Trainer: Water Analysis training.
Host Organization: ChromAfrica.
Venue: Maseno University.

4. Awards

- 9th Nov 2012: SACI Young Chemists' Award: Best Doctoral Student, Podium Presentation: SACI Young Chemists' Symposium, (South African Chemical Institute: Gauteng Region and Royal Society of Chemistry (South Africa North section)), University of Pretoria, South Africa.
- 4th-7th July 2011: Young Scientist Award: Best Poster Presentation: 14th Conference on Annual Indigenous Plant Use Forum (IPUF), St. Lucia, South Africa,
Young Scientist Award: Best Poster Presentation: Faculty of Science Research Day, Pretoria Campus, Tshwane University of Technology.

5. Appointment to Boards

- 19th March 2019 – BOM Chairman: Shihumbu Girls secondary School,
Current : Shinyalu.

19th March 2019- BOM Member St. Calre's Maraogoli Girls High School,
Current : Mbale.
Oct 2015- Current : BOM Chairman: St. Albert Shanjero Primary School,
Shinyalu.

10. Research Projects

1. Chemotaxonomic evaluation and biological activities of essential oils and isolated compounds from plants.
2. Quality control of medicinal plants.
3. Uptake of heavy metals from water and sediments by plants
4. Wastewater management

1. Academic Programmes

- 2013 Curriculum Development in the Department of Chemistry Dedan Kimathi University of Technology:
- BSc Industrial Chemistry
- BSc Leather Technology.
- MSc Industrial Chemistry
- 2016- Curriculum Development and Review in the Department of Chemistry
current Maseno University
t - BSc. Analytical Chemistry with IT (Development and review)
- BSc. Chemistry with IT (Review)
BSc. Industrial Chemistry with IT (Review)
- MSc. Chemistry (Review)

2. MEMBERSHIP TO PROFESSIONAL BODIES

Jan 2014 : Kenya Chemical Society (KCS) Western Chapter: Ordinary Member.

References

Prof Sandra Combrinck,
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Tshwane University of Technology,
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Prof Rob McCrindle,
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