

CURRICULUM VITAE (CV) CURRENT AND PERSONAL INFORMATION

Prof. Symon Maina
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**Current
position:**
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A. EDUCATION

1. **Ph.D.** (Food Science) (1994) – University of Illinois at Urbana-Champaign, USA
2. **M.Sc.**(Chemistry) (1988) – Kenyatta University, Nairobi, Kenya
3. **Bachelor of Education** (1985) – University of Nairobi, Nairobi – Kenya.

B. RELEVANT RESPONSIBILITIES, POSITIONS & ACHIEVEMENTS

1. Professor of Food Chemistry – Egerton University:

Been a Professor for **sixteen (16) years** in the Department of Dairy and Food Science and Technology, Egerton University, Njoro - KENYA (**December 2002 – 2018** ie present). Was an **Associate Professor for four (4) years** (October 1998 – December 2002).

Achievement: Was appointed by the **Food and Agriculture Organization (FAO)** of the United Nations (UN) in the year 2007 a consultant for the **Joint FAO/WHO Expert Committee on Food Additives (JECFA)** for the period **2007-2012**.

Benefit to Egerton University: This appointment enhanced the “Egerton University Vision” of being a “World class University”. Egerton University was the representative of the African Region in this Committee, JECFA.

Achievement: Have been involved in setting some international academic linkages as follows:

a). University of Illinois at Urbana-Champaign, IL, USA in 2008 leading to one staff from Chemistry Department [Dr. Tom Kinyanjui] being trained at PhD (Food Science) Level.

b). Giessen University, Giessen, Germany in 2003 leading to two of our MSc students getting trained at Ph.D. level at Giessen University:

- i. Mr. Mailu – PhD (Biochemistry) funded by DAAD [Graduated in 2009]
- ii. Ms. Grace Chitsaka Mwangome – PhD (Food Science) funded by DAAD [Graduated in 2009]

c). Emory University, Emory, Atlanta, Georgia, USA in 2012-2014 leading to a two-year research grant facilitating partial support for two graduate students.

- i. Virate Jepkoei Kiprop – MSC (Food Science), Thesis examined – Graduated in December 2016.
- ii. Samuel Kariuki – PhD (Chemistry), On-going Research.

d). Vaal University of Technology in 2013-2015 leading to one of our staff Dr. Mary Omwamba being awarded a 12 months Post-Doctoral Fellowship [May 2013 – April 2014].

Benefit to Egerton University: Staff Capacity Building.

2. Senate Member – Egerton University Senate:

Been a member of the Egerton University Senate for twenty-three (23) years (1995 – 2018, ie present).

Achievement: Chaired three (3) Vice-Chancellor's Committees. These are:

- i. **Diploma Admissions Committee:** The committee was assessing issues on admission of diploma students at Egerton University and many of its recommendations have been implemented. For example, the individual admission letter signing by the Registrar (Academic Affairs).
- ii. **Food Production Committee:** The committee assessed the students' food issues at Egerton University and some of their recommendations have been implemented. For example, the provision of kitchenette facilities to students to minimize cooking in their rooms and harnessing of Njoro River water for use at the University.
- iii. **Quality Assurance Directorate:** The committee assessed the need for a Quality Assurance Directorate and functions of the Directorate. The Directorate was set up by the University.

3. University Industry Liaison Officer (UILO)– Egerton University:

Been the University Industry Liaison Officer and the Chairman of the Shows & Exhibition Committee since April 2016.

Achievements:

a). Was involved in the successful organization of the 64th World Ploughing Contest held at Egerton University in November – December 2017.

Benefit to Egerton University: A total of 26 Countries were involved exposing Egerton University as an International Institution especially in Agriculture.

b). Was involved in the successful organization and participation at the ASK Nakuru Branch Show and Nairobi International Trade Fair [2016 & 2017].

Benefit to Egerton University: Egerton University Won 1st Positions in various categories [Best Research Institution; Best Innovation etc] and 3rd positions at the Nakuru National & Nairobi International Trade Fair, respectively. Egerton University was exposed at the National & International Level as a Premier Institution in Agriculture.

c). Was involved in the Development and Preparations of various Memorandum of Understanding (MoUs) with various institutions & County Governments. These MoUs have presented a FRAMEWORK for Egerton University to Engage with the various actors in Agriculture & Industry for mutual benefits of the parties.

Benefit to Egerton University: Enhanced interactions with Industry and County Governments leading to:

- i. Safaricom Customer Care Centre construction by Safaricom next to the Institute of Gender. This will be manned jointly by Safaricom Staff & Egerton University students, imparting to our students' necessary mobile telephony skills in the emerging ICT revolution. The Centre will be handed to the University in 2018.
- ii. John Deere Pty, South Africa engaged two engineering graduates for six months internship in their premises in Kenya from April 2017. In September, one of the interns was formally hired.
- iii. The County MoUs are enabling structured engagements with the County Governments especially in extension and outreach services.

d). Was involved in the preparation of the University Industry Liaison Office Handbook.

Benefit to Egerton University: The Principles and Standard Operating Procedures (SOPs) if implemented will act as a platform in the

industrialization of Egerton University. This will lead to a significant portion of its incomes being derived from the respective off-shoot industries.

4. Chairman of Department – Egerton University:

Was Chairman of Department (COD) for a combined total of nine (9) years [1995 – 2004]. Chemistry Department 1995-1998 while Dairy & Food Science Department 1998-2004.

Achievement:

During my tenure as Chairman of the Department of Chemistry my excellent leadership skills culminated in getting support [by a scholarship to China and four assistantships in the USA] to train 5 MSc staff at Ph.D. level in a span of 3 years.

During my tenure as Chairman of the Department Dairy and Food Science, excellent leadership skills culminated in:

- i. The Dairy Department achieved a turnover of more than KES. 24,000,000/= in the year 2003 from about a turnover of less than KES. 100,000/= in year 1998.
- ii. A Graduate programme was prepared and launched in 2001 enabling the department participate directly in staff development for the department and the Food Industry. This culminated in the graduation of 10 M.Sc (Food Science) students by year 2005 and 2 Ph.D. students in year 2007.
- iii. Planning the future of Dairy Department for the 21st century. This led to the appraisal of the department in 2002 by the United States Department of Agriculture (USDA).

C. INTERNATIONAL ASSIGNMENTS

1. **Consultant/Expert Member:** Joint FAO/WHO Expert Committee on Food Additives (JECFA), Food and Agriculture Organization (FAO) of the United Nations (UN) Offices, Rome, Italy (**2008-2012**).
2. **Associate Editor** – Journal of American Oil Chemists' Society, Champaign, Illinois, USA (**Since 2006**).

D. PROJECTS INVOLVEMENT

Foreign Funded Research Projects

The following research projects have been funded externally by the indicated institutions:

1. **US\$ 11,602.** Texturized Soy Proteins (TSP) Incorporation in Meals served at the Egerton University Students Cafeteria. Funded by the National Soy Research Laboratory (NSRL), University of Illinois at Urbana-Champaign, USA (2010-2011).

2. **US\$ 30,532.** Analysis of vitamin A, beta-carotene and fat in breast - Mama SASHA: Sweet Potato Action for Security and Health in Africa – The International Potato Center (CIP) – Bill and Melinda Gates Foundation (2012-2014)

Foreign Funds Requested for Projects

1. RFP: 2015 - FUNDING INSTITUTION: BILL & MELINDA GATES FOUNDATION & DFID

PROJECT TITLE: Agriculture-Nutrition Impact: Enhancing Women's Agriculture Based Incomes and Mitigation of Child Malnutrition Using Locally Extruded Foods [USD. 645,000.00].

PRINCIPAL INVESTIGATOR: **Prof. Symon M. Mahungu, Ph.D.**

2. RFP: SOL 110932 – PEARL 2014. FUNDING INSTITUTION: BILL & MELINDA GATES FOUNDATION.

PROJECT TITLE: Development of Food Products Using Readily Available Crop Species by Extrusion Technology. [USD. 495,000.00].

PRINCIPAL INVESTIGATOR: **Prof. Symon M. Mahungu, Ph.D.**

E. PUBLICATIONS SUMMARY

1. **Thirty (32) papers** in peer reviewed/refereed journals such as Journal of American Oil Chemists' Society; Journal of Agricultural and Food Chemistry; Cereal Chemistry, Journal of Food Control, Journal of Food Chemistry and International Journal of Veterinary Science.

2. **Eight (8) Book chapters** by Internationally Recognized Publishers such as **Mercel Dekker/ CRC Press (USA) & Blackwell Publishers (UK)**

3. **Five (5) Scientific Reports**

4. **Two Theses** [Ph.D (Food Science) and M.Sc (Chemistry)]

F. PUBLICATIONS IN PEER REVIEWED JOURNALS

32. Dovel Branquinho Ernesto, Mary Omwamba, Abdul Faraj², Symon Mahungu. Physico-Chemical Characterization of Keitt Mango and Cavendish Banana Fruits Produced in Mozambique. Food and Nutrition Sciences, 2018, 9, 556-571. [DOI: 10.4236/fns. 2018.95042].

31. Dovel Branquinho Ernesto, Mary Omwamba, Abdul Faraj, Symon Mahungu. Optimization of Hot Water Temperature Dipping and Calcium Chloride Treatment to the Selected Physico-Chemical Parameters of Keitt Mango and

Cavendish Banana Fruits. Food and Nutrition Sciences, 2017, 8, 908-931. [DOI: 10.4236/fns.2017.810066]

30. Johnson K. Mwove, **Symon M. Mahungu**, Lilian A. Gogo, Ben N. Chikamai, Mary N. Omwamba. **(2017)**. Microbial quality and shelf life prediction of vacuum-packaged ready to eat beef rounds containing gum Arabic. International Journal of Food Studies, 2017, 6:24-33.

29. Johnson K. Mwove, Lilian A. Gogo, Ben N. Chikamai, Mary N. Omwamba, **Symon M. Mahungu**. **(2016)**. Preparation and Quality Evaluation of Extended Beef Rounds Containing Gum Arabic from *Acacia senegal* var. *kerensis*. Food and Nutrition Sciences, 2016,7:977- 988.

28. Virate J. Kiprop, Amy W. Girard, Lilian A. Gogo, Mary N. Omwamba, Symon M. Mahungu. **(2016)**. Determination of the Fatty Acid Profile of Breast Milk from Nursing Mothers in Bungoma County, Kenya. Food and Nutrition Sciences, 2016,7:661-670.

27. Lilian Gesare Soibe, Anakalo Shitandi, **Symon Mahungu**, Chikamai Ben and Lameck Agasa. **(2015)**. Effect of the Gum Arabic on the Physical-Chemical and Baking Properties of the Wheat-Plantain Composite Flour. *Journal of Food Research Technology* 3:98-105.

26. James A. Obar, Alfred A. Shitandi, **Symon M. Mahungu** and Agasa O Lameck. **(2015)**. The Abundance of Lactic Acid Bacteria in the Gastrointestinal Tract of Lake Victoria Nile Perch. *Food Science and Quality Mangement* 42:50-55.

25. Benard M. Kimatu, Abdul K. Faraj and **Symon M. Mahungu**. **(2015)**. Effect of incorporating alum in cane juice clarification efficiency and sucrose losses. *International Journal of Food Studies* 4:61-77 (doi:10.7455/ijfs/4.1.2015.a5).

24. Omwamba Mary, **Mahungu Symon M.** **(2014)**. Development of a Protein-Rich Ready-to-Eat Extruded Snack from a Composite Blend of Rice, Sorghum and Soybean Flour. *Food and Nutrition Sciences* 5, 1309-1317. (dx.doi.org/10.4236/fns.2014.514142).

23. Omwamba Mary, **Mahungu Symon M.**, and Faraj Abdul K. **(2014)**. Effect of texturized soy protein on quality characteristics of beef samosa. *International Journal of Food Studies* 3:74-81 (doi: 10.7455/ijfs/3.1.2014.a7).

22. Benard O. Oloo, Shitandi Anakalo, **Mahungu Symon**, Maling'a Joyce Barasa and Ogata B. Rose. **(2014)**. Effects of lactic acid fermentation on the retention of β -Carotene content in orange fleshed sweet potato. *International Journal of Food Studies* 3:13-33 (doi: 10.7455/ijfs/3.1.2014.a2).

21. Benard O. Oloo, Shitandi Anakalo, **Mahungu Symon**, Maling'a Joyce Barasa. **(2013)**. Effects of lactic acid fermentation on sensory profile of orange fleshed

sweet potato. *Journal of Food Nutrition Sciences* 1:1-5 (doi: 10.11648/j.jfns.20130101.11).

20. Daniel R. Muchiri, **Symon M. Mahungu**, and Simon N. Gituanja. **(2012)**. Studies on Mango (*Mangifera indica*, L.) Kernel Fat of Some Kenyan Varieties in Meru. *Journal of the American Oil Chemists' Society*. DOI 10.1007/s 11746-012-2054-6 (published online: 03 April 2012).

19. Lilian A.Gogo, Kennedy O Gogo, Peter L. Shalo, and **Symon M. Mahungu**. **(2012)**. Effect of Egg White Utilization on the Physico-chemical and Sensory Attributes of Protein-rich Yoghurt. *International Journal of Food Studies* 1:52-60. (DOI 10.7455/ijfs/ 1.1.2012. a6).

18. Mapesa, O.J., Nadine Waldschmitt, Ingrid Schmoeller, Carolin Blume, Thomas Hofmann, **Symon Mahungu**, Thomas Clavel and Dirk Haller **(2011)**. Catechols in caffeic acid phenethyl ester are essential for inhibition of TNF-mediated IP-10 expression through NF- κ B-dependent but HO-1- and p38-independent mechanisms in mouse intestinal epithelial cells. *Molecular Nutrition and Food Research* 55:1-12. (DOI 10.1002/mnfr.201100105).

17. Mapesa, O.J., Mbugua, S.K., **Mahungu, S.M. (2010)**. Sensory Evaluation of Dried Beef Strips Treated With Acetic Acid or Brine and Monosodium Glutamate. *Journal of Food Processing and Preservation* 34:272-286.

16. Ngure, F.M., Wanyoko, J.K., **Mahungu, S.M.**, Shitandi, A.A. **(2009)**. Catechins Depletion Patterns in Relation to Theaflavin and Thearubigins Formation in Tea. *Journal of Food Chemistry*, 115(1):8-14.

15. Aila, H., Shitandi, A.A., **Mahungu, S.M.**, Sharma, H.K. **(2009)**. Determination of the Depletion of Furazolidone residues in Chicken Tissues on Oral Ingestion Using a *Bacillus stearothermophilus* test. *Journal of Food Control* 20:543-547.

14. Kiplamai F.K., Shalo P.L., **Mahungu S.M.**, Tuitoek P.J. **(2009)**. Effect of fermentation on protein digestability of soybean and sweet potato blends by *Aspergillus Oryzae* and *Lactobacillus Plantarum*. *African Journal of Applied Sciences*, 1:44-49.

13. Anakalo Kihumbu G., Shitandi, A.A., **Mahungu, S.M.**, Khare, K.B., Harish Kumar Sharma **(2008)**. Nutritional Composition of *Pleurotus sajor-caju* Grown on Water Hyacinth, Wheat Straw and Corncob Substrates. *Research Journal of Agriculture and Biological Sciences*. 4(4):321-326.

12. Shitandi, A., Oketch, A., **Mahungu, S.M.** Evaluation of *Bacillus Stearothermophilus* tube test as a screening tool for anticocidal residues in poultry. *J. Vet. Sci.* **2006**, 7(2):177-180.

11. Singletary, K.W.; Faller, J.F.; Li, J.Y.; **Mahungu, S.M. (2000)** Effect of extrusion on isoflavones content and antiproliferative bioactivity of corn/soy mixture. *Journal of Agricultural & Food Chemistry* **2000**, 48, 3566-3571.
10. **Mahungu, S.M.**; Drozdek, K.A.; Artz, W.E.; Faller, J.F. (2000). Residence time distribution and barrel fill in pet food twin-screw extrusion cooking. *Cereal Chemistry*, 77, 220-222.
9. **Mahungu, S.M.**; Hansen, S.L.; Artz, W.E. (1999) Identification and quantitation of volatile compounds in two heated model compounds, trilinolein and linoleic acid esterified propoxylated glycerol. *Journal of Agricultural & Food Chemistry*, 47, 690-694.
8. **Mahungu, S.M.**; Diaz-Mercado, S; Li, J; Schewenk, M.; Singletary, K.W.; Faller, J.F. (1999) Stability of isoflavones during extrusion processing of corn/soy mixture. *Journal of Agricultural & Food Chemistry*, 47, 279-284.
7. **Mahungu, S.M.**, Artz, W.E. (1999) Direct on-column supercritical fluid extraction capillary gas chromatography/infrared spectroscopy-mass spectrometry. *Journal of Kenya Chemical Society*, 1, 39-42.
6. Muriithi, N; Mbuvi, H.A.; **Mahungu, S.M. (1999)**. The Reaction of the Molybdenum Halocarbonyl Complexes, $\text{Mo}(\text{CO})_4\text{X}_2$, with Alkylamines. Part 1. Preparation of Amine-Substituted Carbonyl Complexes of Molybdenum and Aminium Salts of the type. HX ($\text{X}=\text{Cl}, \text{Br}$) from a reaction of the Halocarbonyls with the Amines. *Journal of Kenya Chemical Society*, 1, 33-38.
5. **Mahungu, S.M.**; Hansen, S.L., Artz, W.E. (1998) Volatile compounds in heated oleic acid-esterified Propoxylated glycerol. *Journal of American Oil Chemists' Society*, 75 (6) 683-690.
4. **Mahungu, S.M.**; Hansen, S.L., Artz, W.E (1994) Quantitation of volatile compounds in heated trilinolein by static headspace-capillary gas chromatography/infrared spectroscopy-mass spectrometry- *Journal of American Oil Chemists' Society*. 71, 1169-1171.
3. **Mahungu, S.M.**; Hansen, S.L., Artz, W.E (1994) Quantitation of volatile compounds in heated triolein by static headspace-capillary gas chromatography/infrared spectroscopy-mass spectrometry. *Journal of American Oil Chemists' Society*. 71, 453-455.
2. **Mahungu, S.M.**; Musselman, J; Artz, W.E. (1993) SGE Incorporated report of cryofocussing data of the BPX70 cynopropyl column. *SGE incorporated Column Performance Archives*.
1. **Mahungu, S.M.**; Muriithi, N. (1993) The reactions of dihalotetacarbonylmolybdenum (II) $\text{Mo}(\text{CO})_4\text{X}_2$ ($\text{x}=\text{Cl}, \text{Br}$) with alkyl amines. *Journal of Kenya Chemical Society*, 139-143.

G. PUBLICATIONS – BOOK CHAPTERS

8. Job O. Mapesa and **Symon M. Mahungu**. Chemistry and industrial use of acetic acid. In: Acetic Acid: Chemical Properties, Production and Applications. Angelo Basile, PhD (Ed). Nova Science Publishers Inc. New York, USA, **2013**, 1-18.
7. Anakalo A. Shitandi, Francis Muigai Ngure and **Symon M. Mahungu**. Tea Processing and its Impact on Catechins, Theaflavin and Thearubigin. In: TEA IN HEALTH AND DISEASE PREVENTION. Victor R. Preedy (Ed), Academic Press, Elsevier Inc., London, UK, **2013**, 193-205.
6. Mary N. Omwamba, William E. Artz and **Symon M. Mahungu**. Oxidation products and Metabolic processes. In: Frying of Foods 2nd Edition. Boskou, D., Elmadfa. I (Eds), CRC Press, Taylor & Francis Group, Boca Raton, Florida, USA, **2011**, 23-47.
5. **Mahungu, S.M.** and Inge Meyland. CASSIA GUM: Chemical and Technical Assessment (CTA) – FAO/WHO Report, Rome, Italy, 2010.
4. **Mahungu, S.M.**, Hansen, S.L.; Artz, W.E. Fat substitutes and replacers. In: Food Additives 2nd Edition. Branen, A.L.; Davidson, P.M.; Salminen, S.; Thorngate III, J.H. (Eds), Marcel Dekker, Inc., New York, U.S.A. **2002**, 311-337.
3. **Mahungu, S.M.**; Artz, W.E. Emulsifiers, In: Food Additives 2nd Edition. Branen, A.L.; Davidson P.M.; Sallminen, S.; Thorngate III, J.H. (Eds), Marcel Dekker, Inc., New York, U.S.A. **2002**, 707-755.
2. Artz, W.E., M.R. Myers, S.L. Hansen, K.C. Soheili, I.M. Arjona and **S.M. Mahungu**. “Lipid Oxidation and Fat Substitutes” In “Ciencia de Alimentos, Avancose perspectives. Vol II.” (Food Science, Advances Vol. II), Editors: A.Z. Mercadante; F.O. Bobbio; P.A. Bobbio; J.L. Pereira, and G.M. Pastore. Publishers – Faculdade de Engenharia de Alimentos – UNICAMP, Campinas, Brazil, **2001**, 150-159.
1. **Mahungu, S.M.**; Artz, W.E; Perkins, E.G. Oxidation products and Metabolic processes. In: Frying of Foods. Boskou, D., Elmadfa. I (Eds), Technomic Publishing Company. INC., Lancaster, Pennsylvania, USA, **1999**, 25-45.

H. PUBLICATIONS - SCIENTIFIC REPORTS

4. **Mahungu, S.M.**; Hansen, S.L.; Kim, E.; Artz, W.E. Comparison of volatile and nonvolatile components between EPG-08 Oleate and triolein with antioxidants and between EOG-08 Linoleate and trilinolein with antioxidants during deep fat frying. Arco Chemicals, Newtown Square, PA, USA, **1993**.

3. Mahungu, S.M.; Soheili C.K.; Kim, E.; Dunn, Jr, L.B.; Artz, W.E. Chemical analysis of the volatile and nonvolatile components contained in heated EPG-05 HR/SO. Arco Chemicals, Newtown Square, PA, USA, **1993**.

2. Mahungu, S.M.; Hansen, S.L.; Lu, X.J.; Myers, M.R.; Dunn, Jr, L.B.; Artz, W.E. Analysis of the nonvolatile and volatile components contained in heated EPG-08 HR/SO . ARCO Chemicals, Newton SQUARE, **1993**.

1. Mahungu, S.M.; Hansen, S.L.; Lu, X.J.; Myers, M.R.; Dunn, Jr, L.B.; Artz, W.E. Analysis of the nonvolatile and volatile components of heated EPG-08 Oleate. ARCO Chemicals, Newton Square, PA, USA, **1992**.

I. PUBLICATIONS - THESES

2. Mahungu, S.M.; Analysis of volatile compounds of heated esterified propoxylated glycerols. PhD. Thesis. University of Illinois, Urbana, Illionis, USA **1994**.

1. Mahungu, S.M. A study of the reactions of dihalotetracarbonylmolybdenum (II) with alkyl amines. MSc. Thesis. Kenyatta University, Nairobi, Kenya. **1988**.

J. PUBLICATIONS – CONFERENCE PAPERS

9. Mahungu, S.M., Faraj, A.K., Omwamba, M.N. Sensory Evaluation of Texturized Soy Protein-Mince Beef Samosa. The 3rd World Soybean Research Conference. Durban International Convention Center, Durban, South Africa 17th – 22nd February, 2013.

8. Ochieng, O.P., Wanjau, O.S., **Mahungu, S.M.;** Natural Products paper. Plant Isolates as alternative antioxidants in fat preservation in deep-frying processes. The 9th symposium of the Natural Product Research network of eastern and Central Africa (NAPRECA), Nairobi, Kenya 27th – 31st August, **2001**.

7. SOHEILI, K.C.; Tipayawat, P.; **Mahungu S.M.,** Artz W.E. Thin-film oil oxidation. 89th American Oil Chemists' Society Meeting and Expo., Chicago, Illinois, USA, **1998**.

6. Mahungu, S.M.; Artz, W.E. Identification and quantitation of the major volatile in heated triacylglycerols and a modified triacylglycerol using static headspace-capillary gas chromatography/infrared spectroscopy-mass spectrometry. 85th American Oil Chemists' Society Meeting and Expo, Atalanta, Georgia, USA **1994**.

5. Mahungu, S.M.; Lu, X.J.; Artz, W.E. Food flavor analysis with static headspace-capillary gas chromatography/infrared spectroscopy-mass spectrometry. Midwest American Oil Chemists' Society Meeting Champaign, Illinois, USA. **1992**.

4. Hansen, S.L.; Kreuger, W.J.; Dunn, Jr, L.B; **Mahungu, S.M.**; Artz, W.E. Nonvolatile components produced during heating and linoleic acid esterified propoxylated glycerol, a fat substitute model compound and trilinoleoylglycerol. ***The Kenya Chemical Society 4th International Conference, Njoro, Kenya. August 19th – 23rd, 2002.***

3. Hansen, S.L., Kreuger, W.J.; Dunn, Jr, L.B; **Mahungu, S.M.**; Artz, W.E. Nonvolatile components produced during heating and linoleic acid esterified propoxylated glycerol, a fat substitute model compound and trilinoleoylglycerol. ***The Kenya Chemical Society 4th International Conference, Njoro, Kenya. August 19th – 23rd, 2002.***

2. **Mahungu, S.M.** “Experiences in milk Processing at Egerton University-Successes and limitations at Egerton University and Neighbouring Communities.” AICAD REVIEW **2002** Vol. 1, 49-52.

1. **Mahungu, S.M.** “Economic Empowerment: Milk Hawking – Egerton University Experience”. (German Academic Exchange Service –DAAD Conference on Constitution) **2002**.

K. GRADUATE STUDENT SUPERVISION

Doctor of Philosophy (PhD)

On-Going

6. **Bernard Odhiambo Oloo.** Development of a HACCP process for indigenous chicken at Nakuru Municipal Abattoir. On-going [Ph.D. Proposal Successfully Defended in 2015 and Research work commenced]. Ph.D. Thesis Preparation on-going.

5. Salome Chelagat Muigai. “Isolation and Characterization of Bioactive Peptides from Kenyan Indigenous Fermented Milk, *Mursik*.” (On-going – Candidate Registered for Ph.D).

4. **Ernesto Branquinho Dovel.** “Effect of Hot Water and Calcium Treatment On The Shelf-Life of 'Keitt' Mangoes and 'Cavendish' Bananas From Mozambique.” (On-going) [Proposal Successfully Defended in December 2015. Research Work On-going in Mozambique]. (Submitted Ph.D. Thesis for Examination in June 2018).

Completed Successfully

3. **Job O. Mapesa.** “Functional and structure–activity studies of caffeic acid phenethyl ester: implications for inflammatory bowel disease”. PhD Thesis Project – Egerton University (Thesis submitted and scheduled for defense in September 2012 – Graduated on 21st December 2012).

2. **Stellamaris Muthoka.** “Rights to adequate food and its influence on food security. Ph.D Thesis project, Egerton University (graduated on 27th May 2011).

1. Grace Chitsaka Mwangome. “Life Cycle Assessment and Specific Energy Turnover Allocation of Milk and Beef Industries in Kenya. Ph.D. Thesis Project, Egerton University, Kenya & Justus-Liebig University, Giessen, Germany (graduated in 2009).

Master of Science

18. Mr. Johnson Kyalo Mwove. Preparation and Quality Evaluation of Beef Hams Containing Gum Arabic From *Acacia senegal* var. *kerensis*. [Graduated in December 2016]

17. Ms. Violet Jekogei Kiprop. Gas Chromatography-Mass Spectrometry Profiling of Fatty Acids in Breast Milk from Nursing Mothers in Bungoma County, Kenya. [Graduated in December 2016]

16. Ms. Saru, Charles Mwaighacho. The Effect of Crude Betalains From Beet Root on (*In Vitro*) Hypochlorous Acid Induced Low Density Lipoprotein Oxidation. [Graduated in December 2015]

15. Nato, Samuel Muyoma. Master’s thesis entitled “**Effect of Banana Peel Ash on Microbial, Composition and Sensory Properties of Dehydrated Beef**”. Egerton University Reg No. KM16/2454/09. [Graduated 2013].

14. Mugo, Edward Muita. The use of gum arabic from *acacia senegal* var *kerensis* as a stabilizer in low-fat yoghurt. M.Sc. Thesis Project, Egerton University (Thesis Defended successfully in April 2012 – Graduated on 21st December 2012).

13. Oketch, F.A. “Safety Assessment of Anticoccidial Drug Residues in Intensively Reared Chicken”. M.Sc. Thesis Project, Egerton University (Graduated 2007).

12. Nguere, F.M. “The Impact of variation in Polyphenol oxidase and peroxidase Activities of Fresh Tea shoots on Black Tea Quality and Antioxidative Activity”. M.Sc. Thesis Project, Egerton University (Graduated 2007).

11. M.G.K. Anakolo. “Effects of Water Hyacinth, wheat straw and corn oils substrates on composition of the edible mushroom (*plenrotus sajor-caju*). M.sc Thesis Project, Egerton University (Graduated 2007).

10. P.M.N. Ngoda. “A Comparative Analysis of Composite Bread from different Sweet Potato cultivars. M.Sc Thesis, Egerton University. (Graduated 2006).

9. E.A. Kabong’o. “Quality Aspects of Sun dried Fish Sold around Lake Victoria, Kenya. M.Sc Thesis Project, Egerton University (Graduated 2006).

8. L.A.Gogo. “Development of a Low-Cost protein-enriched Yoghurt for Use in Nutritional Support”. M.Sc. Thesis Project, Egerton University (Graduated 2005).

7. M.W. Mathenge. “Physico-chemical and Microbiological properties of a meat preserved by deep-fat frying. (Samburu Nyirinyiri) M.Sc. Thesis Project, Egerton University (Graduated 2005).

6. P. N. Njeru. “Isolation, Concentration and Characterization of Essential Oils from *Zanthoxylum Chalybeum* R. and Utilization in the Food Industry”. M.Sc. Thesis Project, Egerton University (Graduated 2005).

5. Kiplamai G.K. “Formulation of a High Nutrition Food Based on Vitamin A Enriched Sweet Potato using Soybean Fermented by different Cultures”. M.Sc. Thesis Project, Egerton University (Graduated 2005).

4. Isaak, E.M. “Effects of heating temperature on the characteristics of selected edible vegetables frying oils”. M.Sc. Thesis Project, Egerton University (Graduated 2004).

3. J.O. Mapesa. “Effect of Acetic Acid, Sodium Chloride and Drying methods on Inosine Monophosphate and Sensory Attributes in Beef Preservation” M.Sc. Thesis Project, Egerton University (Graduated 2004).

2. G.C. Mwangome. “Milk Fat changes in Accelerated Shelf Life Testing of Chapatis”. M.Sc. Thesis Project, Egerton University (Graduated 2004).

1. Okemwa, Evans Kenanda “Analysis of Girardina Seed Oil/Fat”. M.Sc. Thesis Project, Egerton University (Graduated 2004).

L. ADVANCED TRAINING

1. One-week training on **Extrusion Technology in Value Addition of Agricultural Produce** (4th – 7th August 2015) at **North-West University, Potchefstroom, South Africa.**

2. A two week course on **postharvest Technologies for cereals** during the **Summer School “Postharvest Technologies – High Tec For Food Security & Safety** at the **Univeristy of Goettigen**, Goettigen, Germany (**8th – 21st March 2009**). The short course was funded by the German Academic Exchange Service (DAAD). During the training period, attendance at Anuga FoodTech (Cologne, Germany) to observe the practical applications in the industry was mandatory.

3. A two week course on **postharvest and value chain addition technologies for fruits and vegetables** during the **Summer School on Fruits and Vegetables Processing Chains** at **Univeristy of Hannover**, Hannover, Germany (**25th March – 9th April 2006**). The short course was funded by the German Academic Exchange Service (DAAD). During the training period, attendance at Anuga FoodTech (Cologne, Germany) to observe the practical applications in the industry was mandatory.

4. One week **Organizational Governance and Leadership Training** (July 30th – August 2nd 2013 at Lukenya, Athi River). Organized by Act Change Transform (ACT!). The aim of the training was “**Broadening the Trainees Understanding of the Concept and Practice of Good Organizational Governance and Leadership**”.

M. TEACHING

1. **Professor of Food Chemistry:** Department of Dairy and Food Science and Technology, Egerton University, Njoro-KENYA (December 2002 - to - present).

2. **Associate Professor of Food Chemistry:** Department of Dairy and Food Science and Technology, Egerton University, Njoro-KENYA (October 1998 – December 2002).

3. **Senior Lecturer:** Chemistry Department, Egerton University, Njoro- KENYA (February 1995 - October, 1998).

4. **Lecturer:** Chemistry department, Egerton University, Njoro- KENYA (March 1989 - February 1995).

5. **Assistant Lecturer:** Chemistry Department, Egerton University, Njoro-KENYA (March 1988 - March 1989).

6. **Part-Time Lecturer:** Chemistry Department, Moi University, Eldoret-KENYA (January -December, 1990).

7. **Teaching Assistant:** Chemistry Department, University of Illinois, Urbana, Illinois, U.S.A. (January - May, 1994).

8. **Research Assistant:** Food Science Department, University of Illinois, Urbana, Illinois, U.S.A (August 1991 - May, 1994).

N. PROFESSIONAL VISITS, AWARDS AND CONSULTANCIES

1. **Visiting Research Scholar** - University of Giessen, Germany - 3 months (**May-August 2003**), Department of Nutrition in Developing Countries, Institute of Nutritional Sciences.

2. **Visiting Research Scholar** - University of Illinois, Urbana, Illinois, U.S.A. - 9 Months (**December, 1997- August, 1998**) Department of Food Science and Human Nutrition.

3. **Cochran Fellow – National Soybean Research Laboratory (NSRL)**, University of Illinois, Urbana, Illinois, U.S.A. (**July – August, 1999**).

4. **Consultant** - Best Food Technical Centre (A Division of CPC International), Somerset, New Jersey, U.S.A. (**November – December, 1993**).

5. **Consultant** - PLAN Kenya – Eastern Program Area: Diagnostics Capacity Assessment (DCA) –**2002**.
6. **Consultant** - PLAN Kenya –Eastern Program Area: Capacity Building-**2002**.

O. CONFERENCES, SEMINARS AND WORKSHOPS PARTICIPATION

13. Mary N. Omwamba and Symon M. Mahungu. Conference on Soy Possibilities: Market Trends. Centre of Sustainable Livelihoods (CSL), Vaal University of Technology, Vanderbijlark, South Africa (27th – 31st July 2015). Presented a paper titled **“Market Trends of Soy Foods – A Case Mitigating Against Food Insecurity & Malnutrition In Sub-Sahara Africa.”**

12. The 3rd Dialogue of Innovative Higher Education Strategies (DIES): **“Quality Assurance Through Curriculum Design – A Case Study of Higher Education Management in East Africa.** Nairobi, Kenya, 9th-11th October **2003**. Organized by: The Inter-University Council of East Africa (IUCEA), Jomo Kenyatta University of Agriculture and Technology, German Academic Exchange Service (DAAD) and Association of Universities and Other Higher Education Institutions in Germany (HRK) in cooperation with InWEnt and GTZ, Germany.

11. The Kenya Chemical Society 4th International Conference on Chemistry, Industry and Research. Egerton University, Njoro, KENYA. 19th – 23rd August, **2002**. Presented two papers (1. Supercritical chromatography analysis of cheese. (2. NMR analysis of Nonvolatile components produced during heating of linoleic acid esterified propoxylated glycerol, a fat substitute model compound and trilinoleoylglycerol).

10. Workshop on **Institutionalizing Democracy in Kenya: Prospects and Challenges.** Limuru Conference Centre, Kenya, 23rd-24th May, **2002**. Organized by Kenya 6 public Universities in Conjunction with German Academic Exchange Service (DAAD). Presented a paper “Economic Empowerment: Milk Hawking – Egerton University Experience”.

9. Workshop on **Poverty alleviation efforts** organized by Africa Institute for Capacity Development (AICAD) at Utalii Hotel, Nairobi, Kenya 14th – 15th May, **2001**. Presented a paper **“EXPERIENCES IN MILK PROCESSING AT EGERTON UNIVERSITY – SUCCESSES AND LIMITATIONS AT EGERTON UNIVERSITY AND NEIGHBOURING COMMUNITIES”.**

8. Rumwe Farmers Society Stakeholders Planning Workshop. Organized by Ministry of Agriculture and Rural Development in Conjunction with Deutsche Gesellschaft fur Technischue Zusammenarbeit (GTZ) GmbH. 14th – 15th December, **2000** at Njoro, Kenya.

7. Business Dynamism Seminar 2000 organized by Tetra Pak Ltd at Whitesands Hotel , Mombasa, Kenya 31st August – 2nd September, **2000**.

6. Value Adding in the Dairy Industry Seminar organized by PROMACO LTD (Kenya) and Chr. HANSEN (Denmark) 18th November, **1999** at Mayfair Inn, Nairobi, Kenya.

5. World Soybean Research Conference IV, Chicago, Illinois, USA, 1998. The 89th American Oil Chemists' Society meeting and Expo., Chicago, Illinois, USA, **1998**.

4. The 85th American Oil Chemists' Society meeting and Expo., Atlanta Georgia, USA. **1994**.

3. The Static Headspace Sampling Seminar, Hewlett-Packard Company, Naperville, Illinois – USA, **1993**.

2. The 20th International Society for FAT Research World Congress and 83rd American Oil Chemists' Society Annual Meeting and Expo, Toronto, Ontario – CANADA, **1992**.

1. Midwest American Oil chemists' Society Meeting, Champaign, Illinois, USA. **1992**.

P. RESEARCH INTERESTS AND INSTRUMENTATION EXPERTISE

Research Interests

My research interest includes but not limited to the following:

- Nutritional integrity of foods especially fruits and vegetables after value addition processing
- Isolation, separation, and identification of fats, oils and other related food components and their stability on heating
- Effects of natural antioxidants (such as Tea Antioxidants) and synthetic antioxidants on foods containing lipids and modified cellulose based food stabilizers
- Isoflavones stability in extruded foods and impact on human health
- Effects of extrusion on bulk density of pet foods
- Accelerated shelf life testing
- Meat preservation by organic acids and sun drying, and deep fat frying
- Functional foods and their relevance to developing countries
- Food rights and food security
- Gum Arabic chemistry and utilization in foods

Research Techniques Expertise

1. Use of Mass Spectrometry in Molecular Structure Elucidation/Characterization

2. Use of Infrared Spectrophotometry in Molecular Structure Elucidation and /or Characterization
3. Use of Capillary Gas Chromatography & Static Headspace (CGC-SHS) Techniques in Separation, Detection and Characterization of Volatiles
4. Use of High Performance Liquid Chromatography (HPLC, GPC or HPSEC) in Analysis of Hydrocolloids such as gum Arabic and bioactive compounds such as Isoflavones from legume based foods
5. Use of Supercritical Fluid Extraction (SFE) and Supercritical Fluid Chromatography (SFC) in lipid analysis
6. Use of Twin Screw Extruders in human and pet food cooking and product development

On-going Research Projects

The following are some of the projects that are on-going at Egerton University for both PhD and Master of Science students:

1. Value addition of gum arabic from *Acacia senegal var. kerensis* (general project with sub-projects that are on-going).
2. HPLC-Quantification of Vitamin A (retinol), fat, and beta-Carotene in breast milk from nursing mothers consuming orange fleshed sweet potatoes (OFSPs) – PhD Project.
3. Analysis of the proximate and physicochemical properties of dietary fibre in arrow roots (*Maranta arundinacea*) grown in various parts of Kenya – PhD Project.
4. GC-Analysis of the fatty acid profile of breast milk from mothers consuming orange fleshed sweet potatoes (OFSPs) – MSc Project.
5. Analysis of the optical rotation and the refractive index of methylated gum Arabic from *Acacia senegal var. kerensis* – MS Project .
6. Evaluation of the quality characteristics of wheat-plantain composite flour bread containing gum Arabic from *Acacia senegal var. kerensis*.
7. Assessment of the impact of beet root crude betalain extract in hypochlorous acid induced LDL oxidation – MSc Project.
8. Determination of polycyclic aromatic hydrocarbons' marker benzo[alpha]pyrene in jaggery – MSc Project.
9. Evaluation of the effect of alum in cane juice clarification on juice quality and sucrose losses – MSc Project.

Q. MEMBERSHIP- PROFESSIONAL SOCIETIES/ORGANIZATIONS (CURRENT)

1. American Oil Chemists' Society (AOCS), Champaign, Illinois, USA where am an Associate Editor for the *Journal American Oil Chemists' Society (JAOCS)*.
2. Gum Arabic and Resins Association (GARA) of Kenya.

R. RESPONSIBILITIES

21. Chairman – **FOOD ADDITIVES TECHNICAL COMMITTEE, NATIONAL CODEX/FOOD INDUSTRY STANDARDS COMMITTEE** (April 2018 - 2021) KENYA BUREAU OF STANDARDS.

20. Consultant for Q-Point [The Netherlands] in training staff at Instituto Superior Politecnico de Manica [ISPM] & Instituto Superior Politecnico de Gaza [ISPG], **Mozambique**, on Food Processing and Food Safety [**2014-2017**].

19. **Peer Reviewer – Commission for University Education**, CUE (November 2015 – Present).

18. External Examiner, Department of Food Science, University of Nairobi (**December 2015 – Present**).

17. Chairman – **FOOD ADDITIVES TECHNICAL COMMITTEE, NATIONAL CODEX/FOOD INDUSTRY STANDARDS COMMITTEE** (August **2012- 2015**) KENYA BUREAU OF STANDARDS.

16. Chairman – Board of Governors, Nakuru Girls’ High School, Nakuru Municipality, Nakuru County (August 2013 – Present).

(15). Ag. Chairman – Board of Governors, Nakuru Boys’ High School, Nakuru Municipality, Nakuru County (August 2013 – August 2015).

(14). Chairman – **Faculty of Agriculture Professorial Short listing Committee** (2006-present).

(13). Chairman - Dairy and Food Science and Technology Department, Egerton University Njoro-Kenya (**October 1998 - April 2004**).

(12). Chairman - Chemistry Department, Egerton University, Njoro-KENYA (**July 1995 – September 1998**).

(11). Team Leader-Plan Kenya, Eastern Program Area “Consultancy in Diagnostic Capacity Assessment. (DCA).

(10). Team-Leader – Plan Kenya, Eastern Program Area. “Capacity Building” **2002**.

(9). Committee Member - **NATIONAL CODEX/FOOD INDUSTRY STANDARDS COMMITTEE (2002-2005)** KENYA BUREAU OF STANDARDS.

(8). Committee Member –**1997** Best Lipid Oxidation Paper Award Selection Committee, American Oil Chemists’ Society, Champaign, Illinois, USA, 1998.

(7). External Examiner-Chemistry Department, Moi University, Eldoret-KENYA (**1996-2000**).

(6). External Examiner Graduate Theses. Chemistry Department, Kenyatta University and Chemistry Department, Nairobi-KENYA.

(5). Member-Board of Governors, Nakuru High School, Nakuru-Kenya (1999 – present).

(4). Chairman, Egerton University Vice Chancellor's committee on Food Production (Dec. 2000 – March, 2001).

(3). Chairman-Egerton University Vice-Chancellor's committee on Diploma Admissions at Egerton University (March, 2001 – September, 2001).

(2). Chairman-Egerton University Committee on Institute of Quality Assurance (IQA) establishment (2005).

(1). Reviewer – Journal of Agriculture, Science and Technology (JAST) Jomo Kenyatta University of Science and Technology, JUJA, Kenya (since **2002**).

S. CURRENT SALARY

Current **Gross Pay is KES 381,213/=** [Composed of a Basic Salary of KES 248,898/=; House Allowance KES 73,715/= & other allowances totaling KES 58,600/=].

REFEREES

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