

## CURRICULUM VITAE

# Maina David. M

**Address:** Institute of Nuclear Science and  
Technology, College of Architecture and  
Engineering, University of Nairobi. P. O. Box  
30197 - 00100 Nairobi  
Tel: 214912; Fax: 245566  
Mobile: 0733 761412

### Education:

1977 -1980      Chemistry, **BSc**  
University of Nairobi

1982 - 1984      Environmental Chemistry, **MSc**  
University of Nairobi

1988 - 1990      Applied Radiation Physics, **MSc**  
University of Birmingham, United  
Kingdom

### Positions

**January 2001 to Present**      Director, Institute of Nuclear Science and  
Technology, University of Nairobi, Kenya.

**1980 - 1985 (November)**      Assistant Research Officer, Ministry of  
Agriculture

### Publications

Bendibbie Munyao Mulwa, **David Muchori Maina**, Jayanti Pushotami Patel  
“Multielemental Analysis of Limestone and Soil Samples of Kitui South (Kenya)  
Limestone Deposits” IJFPS, Vol. 2, No.4, pp. 48-51 , Dec, 2012

**David M. Maina**, Lydia W. Njenga, John M. Onyari, Benjamin N. Kyalo  
"Trace Element Concentrations in Some Traditional Diets Consumed in Selected Parts of Eastern Province of Kenya" *Journal of Environmental Protection*, 2012, 3, 617-623

Njagi Joan Murugi, Ngugi Mathew Piero, Kibiti Cromwell Mwiti, Ngeranwa N. J. Joseph, Njagi Eliud N. Mwaniki, Njue M. Wilson, **Maina David** and Gathumbi Peter Karuri "Hypoglycemic Effects of *Caesalpinia Volkeensii* Alloxan-Induced Diabetic Mice" *Asian J Pharm Clin Res*, Vol 5, Suppl 2, 2012, 69-74.

Njagi JM1, Piero MN, Ngeranwa JJN, Njagi ENM, Kibiti CM, Njue WM, **Maina D**, Gathumbi PK "Assessment of Antidiabetic Potential of *Ficus Sycomorus* on Alloxan-induced Diabetic Mice" *International Journal of Diabetes Research*, 2012, 1(4): 47-51

Ngugi M. Piero, Njagi M. Joan, Kibiti M. Cromwell, **Maina D.**, Ngerenwa J. N. Joseph, Njagi N. M. Eliud, Njue M. Wilson, Gathumbi K. Peter. "Trace Elements Content of Selected Kenyan Antidiabetic Medicinal Plants" *Int J Curr Pharm Res*, 2012, Vol 4, Issue 3, 39-42

Akundabweni LSM, Mulokozi G and **DM Maina** "Ionic Variation Characterization in African Leafy Vegetables for Micronutrients Using XRF and HPLC" *AJFAND*, Vol 10(11), pp. 4320 - 4339.

Levi Shadeya-M Akundabweni, R.W. Munene, D; **D. M. Maina**, S.K. Bartilol "Mineral Micronutrient Density in Local Cereals Sampled from Bungoma, Maseno and Kibwezi Areas" *AJFAND*, Vol 10(11), pp. 4301 - 4319.

Akundabweni LSM, Munene RW, **Maina DM** and JM Mangala "Mineral Micronutrient Density Characterization Using Energy Dispersive X-ray Fluorescence (XRF) Analysis in Four On-Farm Kenyan Wild African Fruit Tree Germplasm" *AJFAND*, Vol 10(8), pp. 2901 - 2926.

L. Ntihakose, J. P. Patel, **D. M. Maina** and H. K. Angeyo. "NORM and Associated Gamma Radiation Field in the Coltan Mining Areas of Rwanda." Paper presented at the 3<sup>rd</sup> African IRPA Congress held at Laico Hotel, 13<sup>th</sup> to 17<sup>th</sup> September, 2010.

L. Ntihakose, J. P. Patel, H. K. Angeyo and **D. M. Maina** "Radiometric Characteristics of Artisanal Coltan Ore Extraction and Processing in Rwanda" Paper presented at the 3<sup>rd</sup> African IRPA Congress held at Laico Hotel, 13<sup>th</sup> to 17<sup>th</sup> September, 2010.

B. Mulwa, **D. M. Maina** and J. P. Patel "Radioactivity and dose assessment of limestone samples from Kitui South Limestone Deposits-Kenya" Paper presented at the 3<sup>rd</sup> African IRPA Congress held at Laico Hotel, 13<sup>th</sup> to 17<sup>th</sup> September, 2010.

B. K. Nyilitya, **D. M. Maina**, L. W. Njenga and J. M. Onyari "Bioavailability of Essential Trace elements in Some Traditional Diets Consumed in Eastern parts of Kenya as determined using the EDXRF Technique" Paper presented at the 3<sup>rd</sup> African IRPA Congress held at Laico Hotel, 13<sup>th</sup> to 17<sup>th</sup> September, 2010.

Dharani N, Onyari J. M. , Kinyamario J. I., Maina D. M., Mavuti K. M. "Distribution of Cd and Zn Levels in Soils and Acacia xanthophloea Benth. from Lake Nakuru National Park Kenya" Bull. Environ Contam Toxicol. 2010 85:318 - 323.

David R. Braun, Thomas Plummer, Peter Ditchfield, Joseph V. Ferrarro and **David M. Maina.**, "Oldowan behavior and raw material transport: perspectives from the Kanjera Formation" Journal of Archeological Science, 35 2329 -2345, 2008.

David R. Braun, J. K. Harris and **David M. Maina.**, "Oldowan behavior and raw material procurement and use:evidence from the Koobi for a formation" Archeometry, 51(1) 26 -42, 2008.

Mustapha A. O., Kalambuka H. A., **Maina D. M.**, Onyatta J., Kioko J., Masinza S., and Kamande J. " Needs fo Education and Training in Radiation Protection: Kenya Experience" The Second All African IRPA Regional Radiation Protection Congress, 22 - 26 April 2007, Egypt.

Njenga L. W., **Maina D. M.**, Kariuki D. N., and Mwangi F. K., "Aluminium Exposure from Vegetables and Fresh Raw Vegetable Juices in Kenya", Journal of Food, Agriculture & Environment. 2007 Vol 5(1).

Dharani N., Onyari J. M., and **Maina D. M.** "The distribution of Cu and Pb levels in

Soils and *Acacia Xanthophloea* Benth. From Lake Nakuru National Park, Kenya", *Bull. Environ Contam Toxicol.* 2007 79: 172 - 177

Gatari M. J., Pettersson J. B. C., Kimani W., Boman J., **Maina D. M.**, "Inorganic and black carbon aerosol concentrations at a high altitude on Mount Kenya", *J. Geophys. Res.*, 2006.

**Maina D. M.**, Gatari M. J., Bundi P., Muturi H. Poster "Impact of road transport on air quality in Kenya; Roadside survey in the cities of Mombasa and Nairobi". International Aerosol Conference, St Paul Minnesota, USA, 10-15 September 2006.

**Maina D. M.**, Gatari M. J., Bundi P., Muturi H., "Impact of road transport on air quality in Kenya; Roadside survey in the cities of Mombasa and Nairobi". At IGAC Conference in Cape Town, South Africa, 18-22 September 2006.

J. M. Mutuku, A. O. Makokha, G. M. Kenji, F. M. Mathooko, **D. M. Maina**, P. Wanyoro., "The Impact of Environmental Lead Poisoning on Iron and Haemoglobin Status in Kenya", 18<sup>th</sup> International Congress of Nutrition, 19-23 September 2005, Durban, South Africa - Nutritional Safari for Innovative Solutions.

**Maina D. M** and Kariuki D. N., "Heavy Metal Content of Leafy Vegetables grown on sludge amended soils", Inaugural National Nutrition Congress - Food and Nutrition Security for Health and Development. 21 - 23 February 2005, Nairobi, Kenya.

Mutuku J. M., Ukulo J. W. and **Maina D.M.**, "Microbial Quality of Ready-to-Drink Juice brands sold in the Kenyan Market", Inaugural National Nutrition Congress - Food and Nutrition Security for Health and Development. 21 - 23 February 2005, Nairobi, Kenya.

Sirengo J. S., **Maina D. M.** Mangala M. J. Mutuku J. M., "Urban Farming along Nairobi River: How Safe are the Food Crops?", Inaugural National Nutrition Congress - Food and Nutrition Security for Health and Development. 21 - 23 February 2005, Nairobi, Kenya.

Korir K. A., **Maina D. M.**, Mangala M. J., Kinyua A. M. and Mutuku J. M., "Trace Elements in some selected dietary staples in Kenya", Inaugural National Nutrition

Congress - Food and Nutrition Security for Health and Development. 21 - 23 February 2005, Nairobi, Kenya.

Omondi S. O., **Maina D. M.** and Onyari J. M., "Heavy Metal Concentration levels in Lates Niloticus, A Fish Species from Lake Victoria", Inaugural National Nutrition Congress - Food and Nutrition Security for Health and Development. 21 - 23 February 2005, Nairobi, Kenya.

Mukutu J. M., Makokha A. O., Kenji G. M., Mathooko, F. M. and **Maina D. M.**, "Lead Concentration in Milk and Cereal Products commonly consumed in Kenya", Inaugural National Nutrition Congress - Food and Nutrition Security for Health and Development. 21 - 23 February 2005, Nairobi, Kenya.

Kinyua F., **Maina D. M.**, Njagi E. N. M., Thiong'o F. W. and Mutuku J., "Investigation of the Essential Trace Element concentrations and Chemical safety of Pica Products consumed in some regions of Kenya and Tanzania", Inaugural National Nutrition Congress - Food and Nutrition Security for Health and Development. 21 - 23 February 2005, Nairobi, Kenya.

Gatari M. J., Boman J., **Maina D. M.**, "Trace element categorization of pollution sources in the equator town of Nanyuki, Kenya", X-Ray Spectrometry, 34:118-123, 2005

Gatari M. J., Kimani, W., Boman J., **Maina D. M.**, Pettersson J., and Zakey A. S.. Oral presentation "Study of inorganic and black carbon aerosols at a high altitude site on Mount Kenya, East Africa". The sixth informal conference on atmospheric and molecular science at Helsingor, Denmark, 3<sup>rd</sup> to 5<sup>th</sup> June 2005.

Gatari M. J., Boman J., **Maina D. M.** and J. B. C. Pettersson, "Measurements of near surface aerosols in the central district of Nairobi City, Kenya". European Aerosol Conference at Ghent, Belgium, 28<sup>th</sup> August to 2<sup>nd</sup> September 2005.

Gatari, M. J., **Maina, D. M.**, "Air pollution problems in the perspective of the Kenyan situation, regulation and awareness". International workshop on Environmental Health Education in the Eastern African Region; challenges and the way forward at Kenyatta University, Nairobi, Kenya: 24<sup>th</sup> to 26<sup>th</sup> March 2004.

Gatari M. J., Kimani, W., Boman J., **Maina D. M.**, Pettersson J., and Zakey A. S., "Study of trace metals in PM10 at Global Atmosphere Watch (GAW) station on Mount Kenya, Kenya, East Africa". European Aerosol Conference at Budapest, Hungary, 6<sup>th</sup> to 10<sup>th</sup> September 2004.

Gatari M. J., Boman J., **Maina D. M.**, Pettersson J., "Application of Cd109 Source in evaluation of background industrial aerosols in Nairobi, Kenya, East Africa". European Conference on X-Ray Spectrometry at Alghero, Italy: 6<sup>th</sup> to 11<sup>th</sup> June 2004.

J. A. W. Maina and **D. M. Maina**, "Infrastructures for Radiation Safety: Towards effective and sustainable systems - Authorization, Inspection and Enforcement in Kenya", *International Atomic Energy Agency (IAEA), IAEA-CN-107*, p. 374 - 377, 2003.

**D. M. Maina** and J. Maina, "Development of Technical Capabilities for Sustainable Radiation and Waste Safety - Status of resources and services in Kenya: A stakeholder's view", *International Atomic Energy Agency (IAEA), IAEA-CN-107*, p. 9 - 12, 2003.

Gatari M. J., Boman J., **Maina D. M.**, "Trace element categorization of pollution sources in the equator town of Nanyuki, Kenya". European Conference on Energy Dispersive X-Ray Spectrometry at Berlin, Germany: 16<sup>th</sup> to 21<sup>st</sup> June 2002.

**Maina, D. M.**, A. M. Kinyua, S. K. Nderitu, J. O. Agola and M. J. Mangala, "Indoor Radon (222 Rn) Levels in Coastal and Rift Valley Regions of Kenya", *International Atomic Energy Agency (IAEA), IAEA-CN-91/56*, p. 401-405, 2002.

Gatari M., Boman J., **Maina D. M.**, "Inorganic elemental concentrations in near surface aerosols sampled on the northwest slopes of Mount Kenya", *Atmospheric Environ.*, 35: 6015-6019, 2001

Gatari M. J., M. Stikans, E. S. Lindgren, M. Oblad and **Maina D. M.**, "Study of trace metals in background aerosols of urban and rural Kenya" *J. Aerosol Science*, Vol 29, Suppl. 1, pp S747 - S748, 1998.

**Maina D. M.** and Kinyua A. M. " The Kenyan perspective on the utility of EDXRF

technique in agriculture", *Int. J. BioChemPhy.*, 7, 1997.

Gatebe C. K. Kinyua, A. M., Mangala, J. M., Kwach, R., Njau, L. N., Mukolwe, E. A., and **Maina D. M.** " The determination of suspended particulate matter of major significance to human health using nuclear techniques in Kenya" *J. Radioanal. Nucl. Chem*, Vol 203, 125 - 134, 1996

Gatebe C. K. Kinyua, A. M., **Maina D. M.**, Gatari, M. J., Anyira, K., J. M., Kwach, R., Njau, L. N., Mukolwe, E. A., Matheri, G. P. K. Rerian, P. N., Formenti P. and Annergarn, H. J. " Heavy metal analysis of suspended particulate matter (SPM) in Nairobi" IAEA 3<sup>rd</sup> Coordination Meeting of Research Contract No. Ken/7528; Applied Research on Air Pollution Using Nuclear and Related Analytical Techniques, Kingston, Jamaica, 22-26 October, 1996. 125 - 134, 1996.

Kinyua, A. M., **Maina, D. M.** ,Maina, C., Mangala, M. J., Jumba, I. O., Gatebe, C. K. and Gatari, M. J." Non-destructive Analysis of Mercury (Hg) by Energy Dispersive X-ray Fluorescence Technique in Beauty Creams Sold in Kenya" IAEA-SM- 344/49; Proceedings of International Symposium on Harmonization of Health Related Environmental Measurements Using Nuclear and Isotopic Techniques, Hyderabad, India, 4-7 November, 1996

Mangala, M. J., **Maina, D. M.**, and Kinyua, A. M., "Intercomparison on the Determination of Minor and Trace Elements in Glass Samples by EDXRF Method", IAEA on Application of EDXRF Methods for Monitoring of Environmental Pollution, Vienna, Austria, 17 - 21 October, 1994.

**Maina D. M.**, and Kinyua A. M., "Further Research on Heavy Metal Pollution of Lake Victoria", IAEA Workshop on Application of EDXRF Methods for Monitoring of Environmental Pollution, Vienna, Austria, 17 - 21 October 1994.

**Maina D. M.**, Kinyua, A. M., and Maina, C., "EDXRF Analysis of Mercury in Body Beauty Creams Sold in Kenya", Fourth Scientific Conference, Aga Khan Hospital, 14-16 September, 1994.

Kinyua, A. M., **Maina D. M.**, Mangala, M. J. and Gatari M. J., "Energy Dispersive X-ray Fluorescence (EDXRF) in Non-destructive Testing of Oil Samples", First African Regional Conference on Non-destructive Testing (ARCNDT), Nairobi,

Kenya, 22 - 24 June, 1994

**Maina D. M.**, and Kinyua A. M., and Mangala, M. J., "The Use of X-ray Fluorescence in Environmental Pollution Monitoring of Lake Nakuru and its Catchment Area", Seminar on Research and Monitoring for lake Nakuru National Park and its Catchment, Nakuru, Kenya 29-30<sup>th</sup> may, 1993.

**Maina D. M.**, Mangala, M. J. and Kinyua, A. M., " Preliminary Assessment of Heavy Metal Pollution Levels of Lake Victoria", IAEA Workshop on Trace Element Mobilization and Determination, Algiers, 6-10 November, 1993.

Kinyua, A. M., Mangala, M. J., **Maina, D. M.** and Muia, L. M., "X-ray Fluorescence Analysis of Organic and Inorganic Samples at the Centre for Nuclear Science Techniques (CNST)", 1<sup>st</sup> National Conference on Nuclear Methods, ABU, Zaria, Nigeria, September 2 - 4, 1992.

Mangala, M. J., Muia, L. M., Kinyua, A. M., and **Maina, D. M.** and "A Validation of Analytical Data in Research and Industry Using Certified Reference Materials", 1<sup>st</sup> National Conference on Nuclear Methods, ABU, Zaria, Nigeria, September 2 - 4, 1992.

Holynska B., Muia, L. M., and **Maina, D. M.**, " Evaluation of Fundamental Parameters Method for Biological Materials and Soils Analysis by Energy Dispersive X-ray Fluorescence Spectroscopy", Appl. Rad. Isot. Vol 38(1), 45 - 47, 1987.

### **MSc Supervision**

#### **NAME OF STUDENT**

#### **TITLE OF THESIS**

Kipkirui A. Korir

Trace Element Analysis of Environmental and Biological Samples Using Total Reflection X-Ray Fluorescence

Orata Francis

Determination of Heavy metals in Sediments, Fish and Aquatic Plants from Lake Victoria



Douglas Ndirangu Maina	Heavy Metals and Natural Radioactivity Levels in Soils Around the Titanium Mining Site in Kwale District
Beth Mwihaki Kaboro	Assessment of Levels of Urban Air Pollutants and Trace Elements in Roadside Soils; A case Study in Eastleigh Area, Nairobi
Chumba James Keter	Mamography Practice and its Optimization of Radiation Protection in Kenya
Sewe Fredrick Osiang'o	Use of Radioisotopes in Detecting Allelic Variants of <i>MSP<sub>2</sub></i> Gene of <i>Plasmodium faciparum</i> : A case Comparison with Agarose Gel Electrophoresis
Ochieng Bernard Owino	Assessment of Radiotion Dose in X-Ray Fluoroscopically-Guided Interventionl Procedures in Kenyan Hospitals
Joseph A. W. Maina	Determination of Radionuclide Concentrations in Foodstuffs and Consumer Products From Nairobi by Gamma Spectroscopy
Namwiba Zakayo Benson	Characterization of Elemental Densities of Selected Herbal Haematinics and Antiacids Used in the Maasai Region of Kenya
Korir Geoffrey Kibet	Assessment of Quality Assurance Compliance of Computed Tomography Machines Used in Kenyan Hospitals
Jacob Ongudi Agola	Assessment of Natural Radiation Levels in Olkaria Geothermal Area.

## Seminar Presentations

1) **Research Activities at the Institute of Nuclear Science & Technology** .  
 Paper presented at Institute of Nuclear Science & Technology Seminar Event,  
 Held at the Institute of Nuclear Science Conference Room, University of Nairobi,  
 7<sup>th</sup> - 8<sup>th</sup> December, 2009

**Author:** D. M. Maina.

2) **Radioanalysis of Imported Consumer Products.** Paper presented at Institute of Nuclear Science & Technology Seminar Event, Held at the Institute of Nuclear Science Conference Room, University of Nairobi, 7<sup>th</sup> - 8<sup>th</sup> December, 2009

**Author:** D. M. Maina.

3) **Development and Standardization of an XRF-based Plant Mineral Density Variation Capture Technique toward Promising Nutraceutical Agrobiodiversity in Underutilized Food plants.** Paper presented at Institute of Nuclear Science & Technology Seminar Event, Held at the Institute of Nuclear Science Conference Room, University of Nairobi, 7<sup>th</sup> - 8<sup>th</sup> December, 2009

**Authors:** L. Akundabweni, R. M. Wanjiru and D. M. Maina

4) D. M. Maina (2004). Shielding of Radiation Premises. Paper presented at a Seminar organised by the International Atomic Energy Agency on Radiation Protection in Diagnostic and Interventional Radiology, 5 - 14<sup>th</sup> May, 2004.

5) D. M. Maina (2003). Biological Effects. Paper presented at a Seminar organised by the East African Association of Radiation Protection on Transport of Radioactive Materials, 24<sup>th</sup> April, 2004.

6) D. M. Maina (2003). Types of Exposure Devices. Paper presented at a Seminar organised by the East African Association of Radiation Protection and Safety, 7<sup>th</sup> November, 2002.

#### **Consultancy Training:**

The Institute has a **Certificate in Applied Radiation Protection** course which lasts three months (3). I have been the lead trainer for the following groups:

1) **Radiation Protection Board;** 11 Officers were trained on August - October, 2004.

Kenya Revenue Authority, 9 Officers trained in diverse dates between April, 2005 and March, 2006.

2) **Kenya Agricultural Research Institute**; 2 officers were trained on July - September, 2005

**International Livestock Research Institute**; 1 Officer trained on July - September, 2005

3) Ministry of Public Health and sanitation; Trained 8 officers from October 2010 to June 2011 for **Diploma in Radiation Protection**.

### **Teaching Responsibilities**

Institute of Nuclear Science and Technology (1994 - Present)

**Courses:** Radiation Protection, Particle Detection, Applications of Nuclear Techniques, Research Methodology 1 and 11

Department of Physics: SNS 623: Radiation Protection; 2009/2010 and 2010/2011

### **Consultancy**

1) Ministry of Nairobi Metropolitan Development; Consulting Services for Assessment of Air Quality in Nairobi Metropolitan Region; October 2011. Consultancy Awarded.

2) Radiation Survey Measurements of the two Medical Linac Machines prior to commissioning at the Heart & Cancer Treatment Centre - The Aga Khan University Hospital, Nairobi, March 2011.

3) Short Professional training Course for ILRI, March 2010

### **IAEA Project**

Ken2010 - Establishment of a Teaching, Training and Research Centre of Non-Destructive Testing at Institute of Nuclear Science and Technology, University of Nairobi. IAEA has accepted to fund the Project.

### **Outreach Activities**

1) Chairman, East African Association of Radiation Protection

2) D. M. Maina (2004). Shielding of Radiation Premises. Paper presented at a Seminar organised by the International Atomic Energy Agency on Radiation Protection in Diagnostic and Interventional Radiology, 5 - 14<sup>th</sup> May, 2004.

D. M. Maina (2003). Biological Effects.. Paper presented at a Seminar organised by the East African Association of Radiation Protection on Transport of Radioactive Materials, 24<sup>th</sup> April, 2004.

D. M. Maina (2003). Types of Exposure Devices. Paper presented at a Seminar organised by the East African Association of Radiation Protection and Safety, 7<sup>th</sup> November, 2002.

#### **Relevant Training:**

The Institute has a **Certificate in Applied Radiation Protection** course which lasts three months (3). I have been the lead trainer for the following groups:

**Radiation Protection Board;** 11 Officers were trained on August - October, 2004.

Kenya Revenue Authority, 9 Officers trained in diverse dates between April, 2005 and March, 2006.

**Kenya Agricultural Research Institute;** 2 officers were trained on July - September, 2005

**International Livestock Research Institute;** 1 Officer trained on July - September, 2005

**Institute of Nuclear Science;** 3 MSc students trained on August - October 2004 and January - March 2006

#### **Teaching Responsibilities**

Institute of Nuclear Science and Technology (1994 - Present)

**Courses:** Radiation Protection, Particle Detection, Applications of Nuclear Techniques, Research Methodology 1 and 11

Member, National Nuclear Electricity Project, Ministry of Energy

### **Referees**

1) Prof. D. N. Kariuki  
Department of Chemistry  
University of Nairobi  
P. O. Box 30197 - 00100  
Nairobi, Kenya.

2) Prof. J. Patel  
Department of Physics  
University of Nairobi  
P. O. Box 30197 - 00100  
Nairobi, Kenya

.