

CURRICULUM VITAE

PERSONAL INFORMATION

Name : **Joseph Muna Karanja**
Passport No. : **A1916697**
Nationality : Kenyan
Address : P.O. Box 195, KILIFI, Kenya.
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Languages : English, Kiswahili and Chinese (spoken and written)
Marital Status : Married

EDUCATION BACKGROUND

2013- 2016 Wuhan University of Technology
 Doctor of Philosophy in Mechatronics Engineering
 Thesis Title: **The Study of New Type Optical Fiber Sensors
 based on Femtosecond Laser Precision Micromachining**

2005 - 2009 Kenyatta University
 Master of Science (Electronics & Instrumentation).
 Thesis Title: **Study Of $Sn_x Se_y$ Phase Change
 Random Access Memory (Pcm).**

1996-2001 Egerton University
 Bachelor of Education (Science)
 Second Class Honours Upper Division.

1991-1994 Heni Secondary School
 Kenya Certificate of Secondary Education
 Grade B (Plain)

1982-1990 St Marys' Primary school
 Kenya Certificate of Primary Education
 Grade B (Plain)

AREAS OF INTEREST

- Design and fabrication of optical fiber sensors and their applications using femtosecond laser micro-machining.
- Study of nanotechnology and their applications in semiconductor electronics with reference to phase change memory, solar cells, sensors etc
 - Design and fabrication of analogue and digital electronics circuits that are microprocessor driven.

CONFERENCE PRESENTATION

Joseph Muna Karanja, Yutang Dai, Xian Zhou, Bin Liu, " Multi-cavities Femtosecond laser aided microstructures for magnetic field sensing," in *Proc. of SPIE, International Symposium On Photonics And Optoelectronics*, Shanghai, China, 2015.

J.M. Karanja, P.M. Karimi, W.K. Njoroge and D.M. Wamwangi (2009). A New Phase Change Memory (PCM) based on SnSe₄ .Presented during 1st Kenyatta University research conference on *Technological innovations for economic growth held from 28th-30th April 2009*, Kenyatta University, Kenya.

Workshop Attended

Laser science and its Application and development of CO₂ laser. Organized by Africa Laser Centre (ALC), Stellenbosch University, South Africa in conjunction with Jomo Kenyatta University and held in Jomo Kenyatta University, Kenya, April 2009.

Light emitting diode (LED) bulbs production and assembly of knocked down kits under the Lighting up Kenya programme. Organized by the Office of the UNIDO representative for Kenya and Eritrea and held between 11th -13th March 2010 at Computer for Schools Kenya, Nairobi.

Application of Wireless Sensor Networks (WSN) for Weather Monitoring in East Africa. Organized by The *Abdus Salam International Centre for Theoretical Physics (ICTP)*, University of Nairobi and University of Capetown, South Africa held at School of Computing, University of Nairobi between 6th-8th July, 2011.

Selected published papers

1. **Joseph Muna Karanja**, Yutang Dai, Xian Zhou, Bin Liu Minghong Yang, and Jixiang Dai, "Femtosecond Laser Ablated FBG Multi-trenches for Magnetic Field Sensor Application," *Ieee Photonics Technology Letters*, vol. 27(16),pp.1717-1720, 2015.

2. **Joseph Muna Karanja**, Yutang Dai, Xian Zhou, Bin Liu and Minghong Yang, "Micro-structured Femtosecond Laser Assisted FBG Hydrogen Sensor," *Optics Express*, vol.23(24), pp 31034-31042, 2015.
3. **J.M. Karanja**, P.M. Karimi, W.K. Njoroge and D.M. Wamwangi, "Phase change memory based on SnSe₄ alloy," *Thin Solid Films*, vol. 527 pp323 – 326, 2013.
4. G.L. Yin, Y.T. Dai, **J.M. Karanja**, J.X. Dai "Optimization design for medium-high frequency FBG accelerometer with different eigenfrequency and sensitivity," *Sensors and Actuators A*, vol. 235 pp311–316, 2015.
5. F. Liu, Y. Dai, **J.M. Karanja** and M. Yang, "A low frequency FBG accelerometer with symmetrical bended spring plates", *Sensors* 17(1) pp206, 2017
6. X. Zhou, Y. Dai, M. Zou, **J.M. Karanja** and M. Yang, "FBG hydrogen sensor based on spiral microstructure ablated by femtosecond laser", *Sensors and Actuators B* 236, 2016.

WORK AND PROFESSIONAL EXPERIENCE

DATE	APPOINTMENT	RESPONSIBILITIES
2002- 2009	Manyatta high school.	Teaching Physics, Mathematics in high school and H.O.D(science)
2009- 2011	Kanjuku high school.	Teaching Physics, Mathematics in high school and H.O.D(science)
2010-2011	Kenyatta University Physics dept (P/T lecturer)	Semiconductor physics, Digital electronics and Computer and Communication
2010-2013	University of Nairobi School of Computing (P/T lecturer)	Assembly Language Programming
2012-2013	Technical University of Mombasa School of Engineering (P/T lecturer)	Physics I and II
2012-present	Pwani University (Lecturer)	Teaching undergraduate courses in physics department, developing laboratory practical manuals and supervise laboratory work for undergraduate students in physics.
		Units taught: Mechanics I and II, Electricity and magnetism I, II Physics of materials, Digital Electronics, Waves and optics

TECHNICAL SKILLS

- ✓ Skills in fiber optics sensor technology.
- ✓ Micromachining design using femto second laser machine.
- ✓ Skills in vacuum sputtering and thermal evaporation.
- ✓ Skills in thin film science and preparation.
- ✓ Skills in electrical, optical and structural characterization in thin film semiconductors.
- ✓ Sound knowledge in semiconductors and phase change memory (PCM) fabrication and characterization.
- ✓ Sound knowledge in digital electronics with data acquisition and PC interfacing
- ✓ Programming skills in Labview, Solidworks, ANSYS and CAD etc.

OTHER SKILLS ACQUIRED

DATE	PLACE	SKILLS
2000	Egerton University	Certificate in microcomputer application packages.
2001	Egerton University	Certificate in Computer Servicing and maintenance. (Hardware and software diagnosis).
2009	Kenyatta University	Cisco Certified Network Associate 1 (Networking Fundamentals)
2009	Kenyatta University	Cisco Certified Network Associate 2 (Routing Protocols And Concepts)
2010	Kenyatta University	Cisco Certified Network Associate 3 (LAN Switching And Wireless)

REFEREES

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Prof. Gabriel Katana
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