



THE TECHNICAL UNIVERSITY OF KENYA  
FACULTY OF ENGINEERING AND THE BUILT ENVIRONMENT  
SCHOOL OF MECHANICAL AND MANUFACTURING ENGINEERING

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The Managing Director  
Kenya Bureau of Standards  
P.O. Box 54974  
Nairobi.

21<sup>st</sup> February, 2020

Dear Sir,

**SUBJECT: NOMINATION OF DR. MUTUA TO TECHNICAL COMMITTEE ON AIRCRAFTS (KEBS/TC 130), REFRACTORIES (KEBS/TC 083), BOILERS AND PRESSURE VESSELS (KEBS/TC 110) AND INTELLECTUAL PROPERTY SERVICES (KEBS/TC 183)**

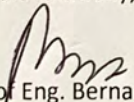
I am pleased to nominate Dr. Fredrick Nzioka Mutua, a staff member in the School of Mechanical and Manufacturing Engineering of The Technical University of Kenya to all or any of the technical committees mentioned in the subject line.

The mission of the Technical University of Kenya is to provide technological education and training to contribute towards the advancement and uplifting of the society through research and innovation. Through the School of Mechanical and Manufacturing Engineering, the university continues to play a key role in economic positioning of Kenya in Africa and the world through training competent Mechanical and Manufacturing Engineers who can apply the acquired knowledge to optimize the existing as well as create new systems to boost the manufacturing sector which is at the heart of the BIG 4 AGENDA. To better play its role in this sector, it is crucial for the school to be at par and play a pivotal role in the development of current standards through providing technical support.

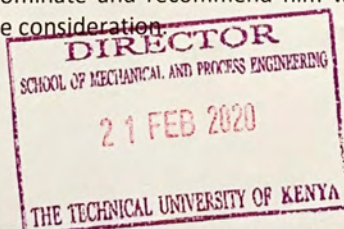
Dr Mutua has carried extensive research in civil aviation composites for application in aircraft systems, has several patents and is well versed with refractory materials as well as pressure vessels. He is registered with Engineering Board of Kenya (EBK) as a graduate Engineer and is currently on a mentorship programme with the EBK that will lead to upgrading to professional Engineer status.

In light of the above, I nominate and recommend him without any reservation. Looking forward to your favourable consideration.

Yours faithfully,

  
Prof. Eng. Bernard Odera

DIRECTOR, SCHOOL OF MECHANICAL AND MANUFACTURING ENGINEERING



# FREDRICK NZIOKA MUTUA

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## CAREER PROFILE SUMMARY

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I am a research and project management specialist with vast experience working in different sectors specifically undertaking numerous research projects both locally and internationally most of which have been published. I am proficient at managing comprehensive review and analysis of programme operations and developing and implementing strategies and solutions that achieve consensus among key stakeholders in the project. Similarly, I excel in monitoring and evaluating project ongoings to ensure effective implementation and success of the projects. I am also a graduate holder. Additional skills I have acquired; analytical skills, interpersonal, personnel administration, strategic management, problem solving and leadership skills. I have excellent networking skills that have been key in my building relationships with interested stakeholders. My focus is to secure a position where my skills and experience will be key in the realization of the organization's objectives.

## EDUCATION

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- **PhD. in Materials processing Engineering-** Donghua University, Shanghai, China: 2015-2019
- **Master of Engineering in Material Science-** Donghua University, Shanghai, China: 2010-2013
- **Bachelor of Technology in Textile Engineering-** Moi University: 2002 – 2007
- **Kenya Certificate of Secondary Education-** Machakos Boys High School: 1996 – 2000

## KEY SKILLS AND COMPETENCIES

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- **Program Planning and Management:** Ability to design, plan and participate in the implementation and development of project activities by ensuring they are all monitored and assessed to ensure their effective and timely implementation.
- **Monitoring and Evaluation:** Experienced in scrutinizing processes, designing and implementing evaluation procedures to show impact for local and international programs.
- **Partnership Building:** Experienced in establishing partnerships with key stakeholders, identifying areas of synergy and creating mutually beneficial partnerships necessary for project success.
- **Report and Proposal Writing:** I have prepared concept notes and proposals for fundraising and also prepared project reports and submitted them in a timely manner to management.
- **Research skills:** Experience in undertaking indepth research and analytics which entailed using appropriate research methods and using the available resources to conduct a detailed analysis in order to come up with valid and appropriate results.
- **Qualitative and Quantitative Analysis:** Experienced in analyzing trends and opinions and numerical data to provide insights into the problems or help to develop ideas or hypotheses for potential and formulate facts and uncover patterns in research
- **Communications skills:** Excellent communication skills with the ability to engage with people from all background and create a professional relationship with both colleagues, and superiors
- **Managing Work Efficiently:** I am able to manage time and deal with my work load proportionately, ensuring efficient completion of the workload while utilizing available resources, to carry out the role in the most efficient way.

- **Team working skills:** Ability to work with a team of other colleges ensuring that a good rapport is created. I have effectively managed project workforce which entailed; managing conflict, motivating the employees, ensuring team work and delivery.
- **Leadership and Supervision skills:** Experienced in leading and managing teams and ensuring that performance is well monitored.

## **WORK HISTORY**

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### **Lecturer**

**Technical University of Kenya: January 2015 to date**

#### **Duties and Responsibilities**

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- Lecturing, research, guiding final year students in their research projects and community services
- Developing linkages and writing project proposals
- Participation in research exchanges through international and local conferences

#### **Research interests:**

- Applications of materials in defence systems, Light engineering materials, composite materials, Nano composite materials, Nano technology, polymer engineering, surface modification of materials, spectroscopic and mechanical analysis of materials, and use of local resources to advance science and solve industrial problems.

### **Lecturer**

**Bahir Dar University, Ethiopia: June 2013 to January 2015**

#### **Duties and Responsibilities**

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- Lecturing in both undergraduate and graduate levels
- research work- Completed two funded research projects on biomaterials
- Designing and implementation of community based development projects
- Dissemination of research and community based projects outcomes through publications
- Training and value addition through integrating research and industrial projects
- Any other duties that maybe assigned to me by the university

### **International Business Development Officer**

**Shanghai Prince International- P.R China: March 2012- April 2013**

#### **Duties and Responsibilities**

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- Background search and development of new clients from across the world
- Preparing inquiries, quotations, Tracking order progress and updating client till the goods are received
- Establishing possible client complains as well as handling client complaints
- Accompanying clients during manufacturing field visits for quality assessments
- Evaluating suppliers to ensure timely delivery of procured equipment and goods

### **Project Manager & Project Coordinator**

**Kenya Girl Guide Association (KGGA): December 2008- August 2010**

#### **Duties and Responsibilities**

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- Coordinating training and administrative functions
- Monitored and evaluated assigned programs and projects using standard tools and procedures.
- Prepared monthly reports on assigned projects and programs to assist evaluation procedures
- Oversaw application of monitoring and evaluation activities.
- Performed data collection, data analysis and data interpretation to support project evaluation.

- Preparing proposals for presentation to donors
- Conducted monitoring and evaluation activities throughout the project cycle, at the same time ensuring good project documentation.
- Utilized the project funds effectively through proper budgeting and monitoring of operational funds on a weekly basis.
- Handling procurement functions and ensuring that all project work done by vendors are according to the project milestones and adhere to requisite standards
- Ensuring all products I plan for and develop are customer centric and adhere to the defined development standards in line with project guideline
- Resource planning and dispatch
- Ensuring project functions run effectively, sorting out any problems that may arise and escalating any problems when need arises.

## OTHER PAST EXPERIENCES

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- **Work Study Engineer; Alltex EPZ Ltd:** October 2007- December 2008; I was tasked with planning and ensuring the execution of projects.
- **Technical Division Attachée – Thika cloth mills ltd:** June 2007 – August 2007
- **Technical Division Attachée – Thika cloth mills ltd:** June 2006 – August 2006

## ACADEMIC PUBLICATIONS

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### Journal papers

1. Fredrick Nzioka Mutua, Tingting Yang, Yuanbo Gao, Bo Zhu and Yong He **Preparation, analysis and isothermal crystallization behaviour of poly(1,3-Bis(aminomethyl)cyclohexamethylene oxamide)** Journal of Applied Polymer Science 135 (23):46345-n/a. doi:10.1002/app.46345
2. Fredrick Nzioka Mutua, Yuanbo Gao, Tingting Yang, Bo Zhu and Yong He **Preparation and characterization of poly(2-methyl-1,5-pentamethylene oxamide) (PM52) polymer** Polymers for Advanced Technologies-2018 doi: 10.1002/pat.4266
3. Fredrick Nzioka Mutua, Cong Cheng, Yusheng Dong, Chuyu Zheng, Bo Zhu, Yong He **Synthesis and Properties of Bio-Based Poly(pentamethylene oxamide)** Polymer Engineering and Science—2017
4. Fredrick Nzioka Mutua, Zhongling Wu, Yusheng Dong, Yong He **Preparation and characterization of poly(m-xylylene oxamide) and its copolymer** Journal of Macromolecular Science, Part a: Pure and Applied Chemistry 2017, Vol. 54, No. 10, 695–701
5. Fredrick Nzioka Mutua, Tingting Yang, Yuanbo Gao, and Yong He **A novel high-performance biobased polyamide** Society for plastic Engineers(spe)- 2017 doi 10.2417/spepro.006933
6. Cong Cheng, Fredrick Nzioka Mutua, Yusheng Dong, Bo Zhu, Yong He, **Bio-based poly(pentamethylene oxamide) synthesized by spray/solid-state polycondensation** Polymer Bulletin 2017 vol. 75 No. 1, 121-134
7. Yusheng Dong, Jizong Chen, Fredrick Nzioka Mutua, Yuanbo Gao, Yong He **Preparation and Properties of Poly(hexamethylene oxamide) Copolymers containing ether moiety** Polymer Engineering And Science—2017
8. Tingting Yang, Fredrick Nzioka Mutua, Yuanbo Gao, Shuxiu Li, Hao Dong, Bo Zhu and Yong He, **Synthesis and characterization of poly (1,6-hexamethylene oxamide-co-m-xylyleneoxamide)copolymers:** Polymers for Advanced Technologies-2018
9. 杨凡, 高远博, FredrickNziokaMutua, 董雨生, 何勇, **原位聚合制备碳纤维增强MC尼龙6复合材料及其性能表征**, 材料开发与应用, 2018.

10. Jacob Koech, Edison Omollo, Fredrick Nzioka Mutua, Josphat Mwasiagi **Thermal Analysis of Polyamide-66/POSS nanocomposite fiber** international Journal of Engineering and Technical Research (IJETR) ,7(4), 2017 (2454-4698) (P)
11. Fredrick Nzioka Mutua, Edison Omollo, Edwin Khamala, Josphat Igadwa Mwasiagi, Lucy Ciera1,Yimin Wang **A study of the characteristics of hollow glassmicrospheres reinforced thermoplastic polyurethane composite foam** Research & Reviews In polymers RRPL, 6(1), 2015 [018-031]
12. Lucy Wanjiru Ciera, Fredrick Nzioka Mutua, Naomi Wangari Njuguna, Edison Omollo **Characterization of PETfibers incorporated with bacteria spores** Material Science an Indian Journal MSAIJ, 13(11), 2015 [353-358]
13. Edison Omollo Oduor, Josphat Igadwa Mwasiagi , Fredrick Nzioka Mutua **Preliminary Study regarding the Effects of Different Soil Treatments on the Strength of Canvas Material during the Soil Burial Test** Tekstilec, 2015, letn. 58(4), str. 262-267
14. Fredrick Nzioka Mutua, Peijie Lin, Jacob Kiptanui Koech, Yimin Wang **Surface Modification of Hollow Glass Microspheres** Materials Sciences and Applications, 2012, 3, 856-860.
15. Lodrick M. Wangatia, Fredrick Nzioka Mutua, Cai Zai-sheng **A Study of the Structure and Properties of Male Silk** American Journal of Materials Research 2015; 2(1): 12-15
16. Jacob Kiptanui Koech, Qun Shao, Fredrick Nzioka Mutua, Yimin Wang **Application of Hydrazine Hydrate in the Synthesis of Octa(aminophenyl)silsesquioxane (OAPS) Poss** Advances in Chemical Engineering and Science, 2013, 3, 93-97
17. Peijie Lin, Qun Shao, Fredrick Nzioka Mutua, Yao Lu, Yimin Wang, **The preparation and cell structure study of HGB/TPU composite foam material**合成技术及应用2012
18. Edwin Kamalha, Yuansheng Zeng, Zeng Yongchun, Mutua Nzioka Fredrick, **FTIR and WAXD Study of Regenerated Silk Fibroin**, Advanced Materials Research2013, 667,211-215

## Patents

19. 程聪, 何勇, FredrickNziokaMutua(穆瑞克), **一种热塑性树脂基碳纤维复合材料及其制备方法**, 20161 0006413.X, 2016- patent
20. 何勇, Fredrick Nzioka Mutua (穆瑞克), **一种热塑性树脂基碳纤维复合材料的连续 制备工艺**, CN201810267716 .6, 2018- Patent

## Conferences

21. Fredrick Nzioka Mutua, Yuanbo Gao, Tingting Yang, Yong He **Spray polycondensation and characterization of poly[1,3-bis(aminomethyl)cyclohexamethylene oxamide-co-2-methyl-1,5- pentamethylene oxamide] copolymer** 2nd international seminar on advanced materials research (ISAMR 2018 )
22. Alex M. Muumbo, Fredrick Nzioka Mutua **Renewable Energy: The Paradigm Shift in Addressing Energy Shortfalls in Developing Countries**, (2015) South Africa
23. Fredrick Nzioka Mutua, Edison Omollo,EdwinKamalha,Yimin Wang, **HGMS/TPU Composite Foam in Value Addition of Cotton Fiber Sports Gear**, 2ndInternational Conference of iOTEX on “Cotton, Textile and Apparel Value Chain in Africa”(CTA 2013) May 10 - 11/2013, Bahir Dar, Ethiopia
24. Fredrick Nzioka Mutua, J.I. Mwasiagi, J. Wamboi, Lucy Ciera, **Comparison of Re-usable and Disposable Sanitary Pads (A case Study of Kenyan Rural women)**, 3rd Annual International Conference on Cotton, Textile and Apparel Value Chain in Africa (CTA 2014), May 2-3rd 2014, page 170-176
25. Lucy Ciera, Fredrick Nzioka Mutua, Wangari Njuguna, Josphat I. Mwasiagi, **Tensile properties of Poly Ethylene Terephthalate (PET) fibers incorporated with bacteria**

**spores**, 3rd Annual International Conference on Cotton, Textile and Apparel Value Chain in Africa (CTA 2014), May 2-3rd 2014, page 81-89

26. Edison Omollo, Winnie Auma Otieno, Josphat Igadwa Mwasiagi, Fredrick Nzioka Mutua, Ambrose Kiprop, **A Study into Potential Ways of reducing the testing time Textile Materials during Soil Burial**, Test 3rd Annual International Conference on Cotton, Textile and Apparel Value Chain in Africa (CTA 2014), May 2-3rd 2014, page 160-169

## **MEMBERSHIP**

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- Graduate Engineer – Engineers Board of Kenya

## **REFEREES**

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