**CURRICULUM VITAE**

**Dr. Thomas Ochuku Mbuya**

Senior Lecturer, Department of Mechanical &Manufacturing Engineering

Email: [tmbuya@uonbi.ac.ke](mailto:tmbuya@uonbi.ac.ke)

Office+254203318262 ext. 28383; Mobile +254786207541

**Academic Background**

1. Doctor of Philosophy in Engineering Materials, University of Southampton, UK, June 2012.
2. Master of Science in Mechanical Engineering (Industrial Engineering Option), University of Nairobi, 2003.
3. Bachelor of Science degree in Mechanical Engineering (First Class Honours), University of Nairobi, 1997
4. Kenya Certificate of Secondary Education at Cardinal Otunga High School, Mosocho, 1990
5. Kenya Certificate of Primary Education at Bogitaa Primary School, 1987

**Work Experience**

1. June 2013 to Date Senior Lecturer, Department of Mechanical and Manufacturing Engineering, University of Nairobi. Administrative duties include: Coordinator of Examinations (2013-2017); School Board Committee on the Review of Examination Regulations (Chairman - completed); Department Committee on Income Generation (Chairman); School Committee on Exhibitions (Member); Departmental Committee on Performance Contracting (Chairman); College Staff Training Committee (Member); College Research Committee (Member); UON Research Development and Advisory Council (Member).
2. Mar. 2007 to June 2013 Lecturer, Department of Mechanical and Manufacturing
3. Engineering, University of Nairobi.
4. Mar. 2004 to Mar. 2007 Assistant Lecturer, Department of Mechanical and Manufacturing Engineering, University of Nairobi.
5. 1998 to 2004 Graduate Assistant, Department of Mechanical and Manufacturing Engineering, University of Nairobi

**Relevant Appointments, Awards, Recognitions and Membership in Professional Organisations**

1. Awarded the Commonwealth Rutherford Fellowship – 2018/2019
2. Nov. 2014 to Date Member and Chairman of the Steel and Aluminium Products Technical Committee of Kenya Bureau of Standards
3. March 2011 to July 2012 Editorial Assistant, Materials Science and Engineering A - Published by Elsevier ltd. (Worked under Prof. Marco J. Starink of the University of Southampton UK.)
4. Awarded a PhD scholarship by the Overseas Research Students Awards Scheme (ORSAS) – 2008
5. My biographical profile included in the Who's Who in the World (R) 2016 (33rd Edition).
6. Certification of recognition for outstanding service to the University of Nairobi (2013-2014).
7. Member of the Materials Research Society (MRS)
8. Member of the African Materials Science and Engineering Network (AMSEN)

**Selected Papers and Conference Presentations**

1. T.O. Mbuya, I. Sinclair, K.A. Soady and P.A.S. Reed,(2017) Application of X-Ray Microtomography to Evaluate Complex Microstructure and Predict the Lower Bound Fatigue Potential of Cast Al-7(0.7)Si-4Cu-3Ni-Mg Alloys, Advanced Engineering Materials, 19 (11): 1700218. doi:10.1002/adem.201700218
2. Bruno R. Mose. Shin Dong Kil, Thomas O. Mbuya, (2017) Microstructure and Mechanical Performance of a Secondary Cast Aluminium Piston Alloy with Minor Element Additions, International Journal of Cast Metals Research, Vol. 30(6), 348-355.
3. T.O. Mbuya, Y. Gu, R.C. Thomson and P.A.S. Reed, (2017), Effect of intermetallic particles and grain boundaries on short fatigue crack growth behaviour in a cast Al-4Cu-3Ni- 0.7Si piston alloy. Fatigue and Fracture of Engineering Materials and Structures, Vol. 40, 1428–1442.
4. M.F. Oduori, E.K. Musyoka and T.O. Mbuya, (2016), Materials selection for a manual winch rope drum. WASET International Journal of Chemical, Molecular, Nuclear, Materials and Metallurgical Engineering, Vol. 10 (1), 129-141.
5. T.O. Mbuya and P.A.S. Reed, (2014), Micromechanisms of short fatigue crack growth in a cast Al-Si piston alloy. Materials Science and Engineering A 612, 302-309
6. M. F. Oduori, T. O. Mbuya, J. Sakai, and E. Inoue, (2012) Modelling of Crop Stem deflection in the Context of Combine Harvester Reel Design and Operation. Agric Eng Int: CIGR Journal, 14 (2), 2012, 21-28.
7. M. F. Oduori, T. O. Mbuya, J. Sakai, and E. Inoue, (2012), Kinematics of the Tined Combine Harvester Reel, Agric Eng Int: CIGR Journal, 14(3), 53-60.
8. T.O. Mbuya, I. Sinclair, A.J. Moffat and P.A.S. Reed, (2012), Micromechanisms of fatigue crack growth in cast aluminium piston alloys. International Journal of Fatigue, 42, 2012, 227-237.
9. T.O. Mbuya, I. Sinclair, A.J. Moffat and P.A.S. Reed, (2011) Analysis of fatigue crack initiation and S–N response of model cast aluminium piston alloys. [Materials Science](http://www.sciencedirect.com/science/journal/09215093) [and Engineering A,](http://www.sciencedirect.com/science/journal/09215093) 528 (24), 7331-7340.
10. T.O. Mbuya, B.O. Odera, S.P. Ng’ang’a and M.F. Oduori, (2010) Effective Recycling of Cast Aluminium Alloys for Small Foundries. Journal of agriculture, science and technology 12 (2), pp 162-181.
11. B. R. Mose, S. M. Maranga and T. O. Mbuya, (2009), Effect of Minor Elements on the Fluidity of Secondary LM25 and LM27-Type Cast Alloys. AFS Transactions, Vol 117, pp 93-101.
12. M. Oduori and T. Mbuya, (2009) Wire Rope Selection for Manual Winch Application.
13. Journal of Engineering, Design and Technology, Vol. 7 (2), pp. 207-222.
14. M. F. Oduori, T. O. Mbuya, J. Sakai and E. Inoue, (2008) Shattered Grain Loss Attributable to the Combine Harvester Reel: Model Formulation and Fitting to Field Data. Agricultural Engineering International: the CIGR Ejournal. Manuscript PM 06 013. Vol. X.
15. T.O. Mbuya, B.O. Odera, S.P. Ng’ang’a and M.F. Oduori, (2007) Effect of Some Casting Parameters on the Microstructure and Mechanical Properties of Recycled Aluminium Castings of Various Automobile Components. The Kenya Journal of Mechanical Engineering, vol.3, No. 1, pp. 29-43.
16. T.O. Mbuya, M. F. Oduori, G. O. Rading, and M. S. Wekesa, (2006), Effect of runner design on the mechanical properties of permanent mould aluminum castings. International Journal of Cast Metals Research, vol. 19, No. 6, pp. 357-360.
17. T.O. Mbuya, (2006) Element effects on the fluidity of cast Al-Si alloys. AFS Transactions, vol. 114, pp. 163-180.
18. M.F. Oduori and T.O. Mbuya, (2005), The limiting value of the fleet angle of a rope running off a sheave. The Kenya Journal of Mechanical Engineering, Vol. 1, No. 1, pp. 37-46.
19. T.O. Mbuya, B.O. Odera and S.P. Ng’ang’a, (2003) Influence of iron on castability and properties of aluminium silicon alloys: literature review. International Journal of Cast Metals Research, Vol. 16, No. 5, pp. 451-465.
20. J. O. Obiko, B.R. Mose, P.A.S. Reed, T.O. Mbuya, Effect of Minor Elements on the Crack Initiation and S-N Performance of a Cast Al-Si-Cu-Ni-Fe piston alloy, The 8th International Conference of the African Materials Research Society held in Accra, Ghana, December 6-11, 2015.
21. T.O. Mbuya, J. Crump, K.A. Soady, A.J. Moffat and P.A.S. Reed, High temperature short fatigue crack growth micromechanisms in a cast aluminium piston alloys, Presented at the International Conference on Fatigue Damage of Structural Materials X, Hyannis Resort, Hyannis, MA, USA, 21-26th Sept. 2014.
22. T.O. Mbuya, I. Sinclair, K. Soady and P.A.S. Reed, Three-dimensional analysis of microstructure and casting defects in cast aluminium piston alloys, In Proceedings of the 13th International Conference on Aluminum Alloys (ICAA13), Carnegie Mellon University, Pittsburgh, Pennsylvania, June 3-7, 2012, pp. 55-60.
23. T. O. Mbuya, B. R. Mose, S.P. Ng’ang’a and S. M. Maranga, “Improving the Mechanical Performance of a Secondary Cast Aluminium Piston Alloy through Addition of Minor Elements”, In Proceedings of the 12th International Conference on Aluminium Alloys, Yokohama, Japan, Sept. 5-9, 2010, pp. 2432-2437. Received Excellence award.

**Referees**

Prof. Philippa A.S Reed

Professor (Structural Materials), Head of Engineering Sciences and Director of EngD at the Faculty of Engineering and the Environment, University of Southampton, Highfield, Southampton, SO17 1BJ. Email: [P.A.Reed@soton.ac.uk](mailto:P.A.Reed@soton.ac.uk)

Prof. George O. Rading

Professor (Engineering Materials), Department of Mechanical & Manufacturing Engineering, University of Nairobi, Box 30197 - 00100, Nairobi. Email: [Gorading@uonbi.ac.ke](mailto:Gorading@uonbi.ac.ke)