



EMBU UNIVERSITY COLLEGE
(A Constituent College of the University of Nairobi)

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DR. ALI HALAKE WAKO

Name: Dr. Ali Halake Wako

Title/Qualification: PhD.

Position: Lecturer

Department: Physical Sciences

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Area of Specialization: Materials Science

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Short Biography

Dr. Ali Halake Wako holds a PhD degree in Physics from the University of the Free State (South Africa). He also holds a Master of Science (MSc) degree in Physics from the same university. His area of specialization is Materials Science and Nanotechnology. Dr. Ali has seven (7) publications in peer reviewed journals and several conference proceedings papers on synthesis, characterization and fabrication of Rare Earth-doped nanomaterials for industrial applications in the manufacture of Semiconductors, Thin films, Lighting and display devices like fluorescence lamps, plasma display panels (PDP) and White light-emitting diodes (WLEDs) for white light production.

Research Interests

- Persistent luminescence materials with high quantum efficiency which exhibit high stability, brightness, and versatile industrial processing characteristics suitable for manufacture of lighting and display devices.
- Thin film growth technology for the fabrication of advanced devices such as electronic devices, Solar panels, optical and Corrosion resistant coatings via Chemical Bath Deposition (CBD) and Pulsed Laser Deposition (PLD) techniques .

Publications in Journals:

1. **Wako A.H.**, Dejene B.F. and Swart H.C. “*Trap characteristics of UV-activated $Y_3(Al,Ga)_5O_{12}:Ce^{3+}$ phosphors*”, Published in *OPTIK-International Journal for Light and Electron Optics*, 2016
2. **Wako A.H.**, Dejene B.F. and Swart H.C. “*Structural and luminescence properties of $SrAl_2O_4:Eu^{2+}, Dy^{3+}, Nd^{3+}$ phosphor thin films grown by pulsed laser deposition*”. Published in *Physica B, Condensed Matter Physics*, 2015.
3. F.B. Dejene, M.O. Onani, L.F. Koao, **A.H. Wako**, S.V. Motlounge, M.T. Yihunie, *Structure, morphology and optical properties of undoped and Mn-doped $ZnO(1-x)S_x$ nano-powders prepared by precipitation method*. Published in *Physica B, Condensed Matter Physics*, 2015.
4. **Wako A.H.**, Dejene B.F. and Swart H.C. “*Effect of Ga^{3+} and Gd^{3+} ions substitution on the structural and optical properties of Ce^{3+} -doped yttrium aluminium garnet phosphor nanopowders*. Published in *Luminescence, the Journal of Biological and Chemical Luminescence*, 2016.
5. **Wako A.H.**, Dejene B.F. and Swart H.C. “*Combustion synthesis, characterization and luminescence properties of barium aluminate phosphors*”. Published in the *J. Rare Earth*, 2014.
6. **Wako A.H.**, Dejene B.F. and Swart H.C. “*Roles of Doping Ions in Afterglow Properties of Blue $CaAl_2O_4:Eu^{2+}, Nd^{3+}$ Phosphors*”. Published in *Physica B, Condensed Matter Physics*, 2014.
7. **Wako A.H.**, Dejene B.F. and Swart H.C. “*Properties of blue emitting $CaAl_2O_4:Eu^{2+}, Nd^{3+}$ phosphor by optimizing the amount of flux and fuel*”. Published in *Physica B, Condensed Matter Physics*, 2014.

Presentation of Papers at Academic and Professional Conferences

1. **Wako A.H.**, Dejene B.F. and Swart H.C. “*Influence of alkaline earth metal cations; Ca^{2+} , Sr^{2+} and Ba^{2+} on the structural and optical properties of $MAL_2O_4: Eu^{2+}, Nd^{3+}$ phosphors*”. Published in the *Proceedings of SAIP 2015*.
2. **Wako A.H.**, Dejene B.F. and Swart H.C. “*Characterization of cerium doped yttrium gadolinium aluminate garnet $(Y,Gd)_3Al_5O_{12}:Ce^{3+}$ phosphor thin films fabricated by pulsed laser deposition*”. Published in the *Proceedings of SAIP 2014*.
3. **Wako A.H.**, Dejene B.F. and Swart H.C. “*A preliminary study of Thermoluminescence of beta (β)-irradiated $SrAl_2O_4:Eu^{2+}, Dy^{3+}$ phosphor*”. Published in the *Proceedings of SAIP 2013*.

Books/Book Chapters Published