



RHODES UNIVERSITY, MAKHANDA, SOUTH AFRICA



DR GIDAY WELEGERGS (POSTDOCTORAL FELLOW)
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CONTACT DETAILS:

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EDUCATION DETAILS:

PhD (Chemistry) 2023 – University of South Africa, Johannesburg, South Africa

MSc (Chemistry, with distinction) 2013 – Gondar University, Gondar, Ethiopia

BSc (Chemistry, with great distinction) 2009 – Arba-Minch University, Arba-Minch, Ethiopia.

EMPLOYMENT HISTORY :

- Debre Berhan University, P.O.BOX 445, Debrebirhan, Ethiopia, from 2010-2018.

- Designation; as graduate assistant and Lecturer.

RESEARCH TITLE:

Synthesis of semiconductor oxides/Sulfides and its carbon-based nanocomposites as electrode materials for electrochemical energy storage (supercapacitors & batteries) and Photodegradation.

PUBLICATIONS :

- 16. Giday G. Welegergs, Abera D. Ambaye, Mbulelo Jokazi, Nnamdi Nwahara and Tebello Nyokong Bioengineering of one dimensional hierarchical Cu₇S₄ hollow nanotubes for non-enzymatic glucose sensing applications RSC Advances (2024), 14, 27122–27131, <https://doi.org/10.1039/d4ra05199h>
- G.G.Welegergs, Z.M Mehabaw, H.G. Gebretinsae, M.G. Tsegay, L. K, Z. Khumalo, N. Matinisie, Z.T. Aytuna, S. Mathur , Z.Y. Nuru, S. Dube, M. Maaza, Electrodeposition of nanostructured copper oxide (CuO) coatings as spectrally solar selective absorber: Structural, Optical and electrical properties, Infrared Physics, and Technology, 133(2023) 104820 <https://doi.org/10.1016/j.infrared.2023.104820>
- N. L. Botha, K. J. Cloete, G.G. Welegergs, M. Akbari, R. Morad, L. Kotsedi, N. Matinise, R. Bucher, S. Azizi & M. Maaza, Physical properties of computationally informed phyto-engineered 2-D nanoscaled hydronium jarosite, Nature scientific report, 13(2023) 2442. <https://doi.org/10.1038/s41598-022-25723-z>
- G. G. Welegergs, Room Temperature Surface Bio-Sulfurisation via Natural Sativum Annilin and Bioengineering of Nanostructured CuS/Cu₂S, Nanohorizon 2(2023), 1-27. <https://doi.org/10.25159/NanoHorizons.45486dad4f9>
- G.G. Welegergs, H.G. Gebretnisae, M.G. Tsegay, A. Bhardwaj, S. Mathur, T.G. Kebede, Z.Y. Nuru, S. Dube, M. Maaza, Spectrally selective single-layered Ag@CuO nanocermet coatings for photothermal Applications: Green synthesis method, Optical Materials, 135 (2023) 113247. <https://doi.org/10.1016/j.optmat.2022.113247>.
- M.G. Tsegay , H.G. Gebretinsae , **G.G. Welegergs**, Sh. Azizi, M.P. Seopela, M. Henini, M. Maaza, Z.Y. Nuru , Optical response of green synthesized thin Cr₂O₃ films prepared via drop and spin coatings, material proceeding today, (2023) xxxx, <https://doi.org/10.1016/j.matpr.2023.06.225>.
- G.G. Welegergs, H.G. Gebretnisae, M.G. Tsegay, C. Mtshali, N. Mongwaketsia, Z.Y. Nuru, S. Dube, and M. Maaza, Single Layered Biosynthesised Copper Oxide (CuO) Nanocoatings as Solar Selective Absorber, applied sciences, 13(2023) 1867-1881, <https://doi.org/10.3390/app13031867>
- H.G Gebretinsae, M.G Tsegay, G.G Welegergs, M Maaza, ZY Nuru, Effect of rotational speed on the structural, morphological, and optical properties of biosynthesized Nickel Oxide thin films for selective solar absorber nanocoatings, Energies, 15(2022) 8960. <https://doi.org/10.3390/en15238960>
- M.G. Tsegay, M, H. Gebretinsae, G.G. Welegergs, M. Maaza, and Z. Nuru, Novel green synthesized Cr₂O₃ for selective solar absorber: Investigation of structural, morphological, chemical, and optical properties,

Solar Energy, 236(2022) 308-319. <https://doi.org/10.1016/j.solener.2022.03.011>

- G.G.Welegers, H.G.Gebretinsae, M.G.Tsegay, Z.Y.Nuru, S.Dube, M.Maaza, Thickness dependant morphological, structural, and optical properties of SS/CuO nanocoatings as solar selective absorber, Infrared Physics and Technology, 113 (2021) 103619. <https://doi.org/10.1016/j.infrared.2020.103619>
- **G.G. Welegers**, R Akoba, J Sacky, ZY Nuru, Structural and optical properties of copper oxide (CuO) nanocoatings as selective solar absorber. MaterialToday proceedings, 36(2020) 509-513. <https://doi.org/10.1016/j.matpr.2020.05.298>
- **G.G Welegers**, H Gebretinsae, N Matinise, Z.Y.Nuru, M Maaza, Electrochemical properties of green synthesised Zinc oxide (ZnO) nanoparticles, MRS advances, 5(2020) 1103-1112.
- Rashidah Akoba, **Giday G. Welegers**, De W.Selwyn, Nagla Numan, Juliet Sackey, Zebib Y.Nuru, Nanostructured black moly surfaces for solar thermal absorbers by wet chemical etching, Materials Today proceedings, 36(2021) 251-255. <https://doi.org/10.1016/j.matpr.2020.03.325>
- R Akoba, G.G.Welegers, M Luleka, J Sackey, Effect of Etchant Concentration on the Optical Properties and Surface Topography of MoO₃ Selective Solar Absorber, MRS Advances, 5(2020) 133–1143. <https://doi.org/10.1557/adv.2020.194>
- H. Gebretinsae, G.G Welegers, N. Matinise, M. Maaza and Z. Y. Nuru, Electrochemical study of Nickel Oxide (NiO) nanoparticles from cactus plant extract, MRS Advances, 5(2020), 1095–1102, <https://doi.org/10.1557/adv.2020.118>.

Awards:

- Postdoctoral Rhodes University fellowship (PDRF) from Jan. 2024–Dec 2024.
- German academic exchange service (DAAD) in region PhD scholarship from Jan. 2019 to May 2022, University of South Africa, South Africa.

Overseas travels:

- Cologne University, German, from Sept 01, 2021 – Nov.30, 2021.

Reason for visit: PhD Research internship sponsored by DAAD.