

Ugochukwu Agbedo

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RESEARCH INTEREST

- Computational Materials
- Additive Manufacturing
- Steelmaking and Continuous Casting
- Material Processing, Testing, and Characterisation
- Metals, Ceramics, Composites and Nanomaterials
- Energy Design and Performance
- Super Alloys, Medium and High Entropy Alloys

EDUCATION

Doctor of Philosophy (Ph.D.) in Materials Science and Engineering 01/2024 – Present
Missouri University of Science and Technology Rolla, United States
Thesis: Temperature Dependence of Carbon Partitioning in Martensitic Stainless Steels

Master of Science (M.Sc.) in Advanced Materials and Processes Engineering 03/2023
Friedrich Alexander University (FAU) Erlangen, Germany
Thesis: Microstructural and Environmental Influence on the Bimodal Fatigue Lifetime Distribution of Ti-6246

Bachelor of Science (B.Sc.) in Metallurgical and Materials Engineering 08/2014
University of Nigeria (UNN), Nsukka, Nigeria
Thesis: Processing and Characterisation of Low Carbon Steels

WORK EXPERIENCE

Graduate Research Assistant 01/2024 – present
Materials Science and Engineering Departement, Missouri S&T Rolla, USA

- Design and processing of high performance steel alloys by induction melting.
- Conduct heat treatments to improve mechanical properties.
- Ensure process optimization through microstructural investigations to identify the impact of processing parameters.
- Prepare concise analysis reports, presenting findings and offering clear recommendations to industry partners.

Materials and Processes Engineer 04/2022 – 09/2023
MTU Aero Engine Munich, Germany

- Supported the processing of Ti, Al, and Ni-based super-alloy components by qualifying metal additive manufacturing processes.
- Coordinated and executed projects to verify manufacturing and inspection procedures with a focus on materials and processes.
- Developed test plans, conducted precise mechanical tests, and performed thorough failure analysis to identify root causes and provide actionable insights.

Graduate Research Assistant

Materials Science and Engineering Department, FAU

03/2021 – 03/2022

Erlangen, Germany

- Demonstrated expertise in preparing, heat-treating, and cold-working Ti, Co, and Ni-based superalloys for precise material properties.
- Thoroughly investigated the chemical and mechanical properties of high temperature alloys using optical and electronic microscopic techniques.
- Conducted comprehensive mechanical tests on various samples, providing valuable insights into material behavior.

Product Development Engineer

Kenman Automobile Company

07/2016 – 08/2019

Lagos State, Nigeria

- Organized test plans to characterize, compare, and validate manufacturing processes.
- Assisted in surface treatment and non-destructive testing of composite components.
- Created construction documents through technical drawings, and supported the engineering department in constructing and assembling prototypes.

TECHNICAL SKILLS

- Experience in materials processing, testing, simulation and failure analysis.
- Knowledgeable in using simulation software: Thermo-Calc, JMATPro & FactSage.
- Proficient in characterization techniques: XRD, DSC, SEM, EDX, EBSD, TEM, and Optical Microscopy.
- Knowledgeable in handling CAD applications: AutoCADLT and CorelDraw.
- Proficient in destructive and non-destructive testing.
- Data analysis and visualisation with Origin, Power BI, SQL, MATLAB and Python.

PUBLICATIONS

Corrosion Resistance and Mechanical Integrity of Nickel-Based Alloys in Extreme Environmental Conditions: Innovations and Applications

28/12/2024

International Research Journal of Modernization in Engineering Technology and Science

Advanced Heat Treatment Techniques for Enhancing Strength and Toughness in High-Performance Stainless steels and Metallic Alloys

28/12/2024

International Journal of Research Publication and Reviews

AWARDS/HONORS

Best Poster Award (2nd Position)

2022

Friedrich Alexander University of Erlangen, Germany

Best Graduate Student Award

2020

Friedrich Alexander University of Erlangen, Germany

Total Energy Undergraduate Scholarship

2013

Total Energy, Nigeria

LANGUAGES SKILLS

English



German



LEADERSHIP SKILLS

Laboratory Group Coordinator

Department of Advanced Materials and Processes Friedrich Alexander University,
group IV laboratory coordinator and representative.

2019 – 2020
Erlangen, Germany

President

University of Nigeria Undergraduate Student Association.

2012 – 2014
Nsukka, Nigeria

CERTIFICATION

GE Aerospace Engineering Virtual Experience on Forage

Designed energy sources for narrowbody aircraft propulsion systems in the next decade and their performance implications.

Demonstrated implications of bypass and compression ratio and tradeoffs in turbine engine design.

05/2023

Utiva Data Analysis

Extracted, processed, and managed data from databases using PostgreSQL.

Visualized, analyzed, and presented data using Power BI and Excel.

Made critical business decisions to enhance products and business policies.

02/2022

VOLUNTEERING

Organized a welcome event for international students and assisted in enhancing their ease of settling into the university community and the city in general.

09/2019 – 10/2021
Erlangen, Germany

Taught senior secondary school students mathematics during their preparation for their school leaving examination.

2017 – 2018
Enugu, Nigeria

Community Development Services in collaboration with Federal Road Safety Service.

2015 – 2016
Kaduna, Nigeria

PROFESIONAL ORGANIZATION

American Ceramic Society

Student Membership

American Society of Metals

Student Membership

Nigerian Society of Engineers

Graduate Membership

REFERENCES

Dr. Steffen Neumeier, Head of the High Temperature Materials Group, Institute I: General Materials Properties, Materials Science & Engineering, Friedrich-Alexander-Universität Erlangen-Nürnberg
steffen.neumeier@fau.de

Dr. Mario Buchely, Roberta and G. Robert Couch Assistant Professor, Material Science and Engineering, Missouri University of Science Technology
buchelym@mst.edu