Ugochukwu Agbedo

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CAREER INTEREST

- Ferrous Metallurgy & Continuous Casting
- Additive Manufacturing
- Failure Analysis
- 3D Modelling, FEA & CFD Analysis (ANSYS)
- Heat Treatment Engineering
- Product Design & Performance Optimization

EDUCATION

Doctor of Philosophy (Ph.D.) in Materials Science and Engineering Expected – Spring 2027
Missouri University of Science and Technology Rolla, United States
Thesis: Role of Austenite Stabilization in Strengthening of Advanced 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 Department, Missouri S&T Rolla, USA
- Design and processing of high performance steel alloys.
- Conduct heat treatments to improve mechanical properties.
- Evaluate microstructure and properties for process optimization.
- Verify properties by thermodynamic and finite element-based simulations.
- Prepare concise analysis reports, presenting findings and offering clear recommendations to industry partners.

Graduate Research Assistant 05/2024 – 08/2024
Center for Aerospace Manufacturing Technologies, Missouri S&T Rolla, USA
- Assisted in producing wires from Cu-Ni alloy, 316L and FeMnAl alloy for additive manufacturing.
- Created test plans for the hot rolling and wire drawing processes.
- Conducted heat treatment, metallography and fractographic analysis.

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 03/2021 – 03/2022
Materials Science and Engineering Department, FAU Erlangen, Germany
- Demonstrated expertise in preparing, heat-treating, and cold-working Ti, Co, and Ni-based superalloys for precise material properties.
- Investigated the chemical and mechanical properties of high temperature alloys using optical and electronic microscopic techniques.
- Planned and conducted comprehensive mechanical tests on various samples, to understand material behavior.

Product Development Engineer 07/2016 – 08/2019
Kenman Automobile Company 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.
- Knowledgeable in finite element analysis with ANSYS.
- Proficient in Microsoft Applications
- Knowledgeable in handling CAD applications: Fusion360 and CorelDraw.
- Proficient in characterization techniques: XRD, DSC, SEM, EDX, EBSD, & TEM
- Data analysis and visualization with Origin, Power BI, SQL, MATLAB & Python.
- Strong leadership, communication and problem-solving skills.

PUBLICATIONS

Examining Critical Transformation Temperatures in Martensitic Stainless-Steel Castings. 08/05/2025
Agbedo, Ugochukwu J., Mario F. Buchely, and Caelan Kennedy
AISTech Conference Proceeding, May 2025.

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 2019 – 2020
Department of Advanced Materials and Processes Friedrich Alexander University, group IV laboratory coordinator and representative. Erlangen, Germany

President 2012 – 2014
University of Nigeria Undergraduate Student Association. Nsukka, Nigeria

CERTIFICATION

GE Aerospace Engineering Virtual Experience on Forage 05/2023
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.

Utiva Data Analysis 02/2022
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.

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

Solar Car Design Team
Missouri S&T

American Society of Metals
Student Membership

American Ceramic Society
Student Membership

Nigerian Society of Engineers
Graduate Membership

REFERENCES

Dr. Ronald J. O'Malley, *Iverson Chair Professor & Director,* PSMRC. Mat. Sci. & Eng. Missouri S&T
omalleyr@mst.edu, (573) 341-7683

Dr. Mario Buchely, *Roberta and G. Robert Couch Assistant Professor,*
Material Science and Engineering, Missouri University of Science Technology
buchelym@mst.edu, (573) 341-6972

PD. Dr. Steffen Neumeier, *Chair of General Materials Properties,*
Department of Materials Science and Engineering, Friedrich-Alexander-Universität Erlangen-Nürnberg
steffen.neumeier@fau.de, +49 9131 85-27502