

Kingsley Tochukwu Amatanweze

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Education

Missouri University of Science and Technology, Rolla, MO	November 2024
Ph.D. Materials Science and Engineering (Thesis: Complex Metallurgical Processes for Cast Advanced High Strength Steel)	
University of Nigeria, Nsukka	August 2014
B.S. Metallurgical and Materials Engineering	

Other Certifications

Online Courses	
Introduction to High-Throughput Materials Development by Georgia Institute of Technology (completed on Coursera)	December 2019
Novelle Center (NEBOSH Training Center)	December 2016
Health, Safety and Environment (HSE) Levels 1, 2, 3 Certificates	

Experience

Missouri University of Science and Technology Peaslee Steel Manufacturing Research Center (PSMRC)	Rolla, MO
Graduate Research/Teaching Assistant	January 2021-Present
<ul style="list-style-type: none">Materials characterization using optical microscope, X-ray Diffraction, and scanning electron microscopes (SEM) utilizing energy dispersive spectroscopy (EDS) such as ASPEX, TESCAN and Helios.Responsible for the troubleshooting SEM machines in the PSMRC microscopy laboratory and training of graduate student users.Chemical analysis of samples utilizing optical emission spectroscopy (OES) and LECO machines.Thermodynamic and kinetic modeling using FACTSage, JmatPro, and ThermoCalc.Applied design of experiment (DOE) to determine the most significant factor(s) during materials processingConducted various heat treatment experiments for properties modifications of different steel grades.Performed dilatometric experiments to determine phase transformations of materials at various heating/cooling conditions.Finite element modeling of the heat treatment of low alloy steel using DANTE and ANSYS.Carried out intensive quenching of steel components to produce high performance parts.Automated feature analysis (AFA) of inclusions, porosity, and carbides in advanced high strength low alloy steels,Studied the effect of various gating designs on inclusion formation and mechanical properties of steel.Performed melting and pouring/casting of alloy steel, and non-ferrous alloys.Operated 200 lbs. and 60 lbs. induction furnaces for the melting of ferrous and non-ferrous metals respectively.Conducted mechanical tests such as hardness, tensile, and impact toughness tests on steel samples.Prepared technical reports/presentations/posters.Developed six research papers for publication.Taught two classes of about 18 undergraduate students each metal processing laboratory as a graduate teaching assistant.Taught a class of 15 undergraduate students microstructure development laboratory as a graduate teaching assistant.Instructed undergraduate research students on the use of no-bake sand mold making machine, cutting, spot welding, and polishing machines, and heat treatment facilities.Co-facilitated routine materials camps and Jackling camps demonstrations for grade school students.	

Amber Scholars
Science Tutor

Enugu, Nigeria
January 2015- December 2020

- Instructed high school students the core principles of science subjects (physics and chemistry) at 0th levels.
- Prepared students for external examinations.
- Instructed high school general mathematics.

Scientific Equipment Development Institute
Metallurgical and Materials Engineer Intern

Enugu, Nigeria
April- October 2013

- Worked in the metallurgical and materials R&D section (development of motorcycle top cylinder spare parts).
- Operated the milling, lathe, grinding and engraving machines for training projects.
- Produced prototypes of spur gear, lathe machine cutting tools, tapered shapes, etc.
- Engraved names on parts using the engraving machine.

Scientific Equipment Development Institute
Metallurgical and Materials Engineer Intern

Enugu, Nigeria
September- October 2011

- Melted and poured aluminum alloy and cast-iron castings.
- Made sand molds and wooden patterns for different machine parts.

Skills

MS Office Suite | FactSage | ThermoCalc | JmatPro | DANTE | ANSYS | Dilatometry | Electron Microscopy (SEM) | Metallography | Fractography | Mechanical Properties/Tests | Design of Experiment (DOE) | Statistical Process Control (SCP) | AutoCAD | Heat Treatment | Metal Processing | Material Characterization | Casting
Language: English | Igbo

Publications

1. **Kingsley T. Amatanweze**, Soumava Chakraborty, Viraj Athavale, Mario Buchely, Laura Bartlett, Ronald O'Malley, Krista Limmer, Dan Field, Katherine Sebeck. "*Effect of Gating Design on Inclusion Control in an Al-Killed Cr-Mo-Ni Steel*". Intended for International Journal of Metal Casting (Internal Review)
2. **Kingsley T. Amatanweze**, Mario Buchely, Viraj A. Athavale, Laura Bartlett, Ronald O'Malley "*Controlling Nitrogen Pick-Up during Induction Melting of Ultra-High Strength Cr-Ni-Mo Steels.*" AFS Metalcasting Congress 2025 (Submitted)
3. **Kingsley T. Amatanweze**, Mario Buchely, Viraj A. Athavale, Laura Bartlett, Ronald O'Malley, Toshi Suzuki. *Residual Stress Distribution, Distortion and Crack Initiation in Conventional and Intensive Quench Practices*. Journal of Materials Engineering and Performance (2023).
4. Viraj Athavale, **Kingsley Amatanweze**, Soumava Chakraborty, Mario Buchely, Laura Bartlett, Ronald O'Malley, Krista Limmer, Dan Field, Katherine Sebeck. "*Effect of Thermomechanical Processing and Heat Treatment on Mechanical Properties and Fracture Behavior of a Cr-Ni-Mo-V Ultra-High-Strength Steel*". DOD Steel Summit, November 2022
5. **Kingsley Amatanweze**, Mario Buchely, Laura Bartlett, Ronald O'Malley, Krista Limmer, Dan Field, Katherine Sebeck. "*Effect of Section Size and Heat Treatment on Mechanical Properties of High Strength Low Alloy Steel*". Intended for Journal of Iron and Steel Research International (Internal Review)
6. L. Bartlett, R. O'Malley, M. Buchely, K. **Amatanweze**, "*Intensive Quenching to Produce High Performance Cast Parts.*" Innovative Casting Technologies (ICT), American Metalcasting Consortium -AMC Technology Review 2022. (Project Report) <https://www.sfsa.org/wp-content/uploads/2022/09/AMC-22-21-MST-Intensive-Quench-Final.pdf>

Presentations

1. **Kingsley Amatanweze**, Viraj Athavale, Soumava Chakraborty, Mario Buchely, Laura Bartlett, Ronald O'Malley, Krista Limmer, Dan Field, Katherine Sebeck "*Effect of Gating Design on Inclusion Population and Size Distribution in an Al-Killed Cr-Mo-Ni Steel*" AISTech 2022 Conference Poster Presentation

2. **Kingsley Amatanweze**, Viraj Athavale, Soumava Chakraborty, Mario Buchely, Laura Bartlett, Ronald O'Malley, Krista Limmer, Dan Field, Katherine Sebeck. "*Effect of Heat Treatment and Section Size on Mechanical Properties of High Strength Low Alloy Steel*". AFS conference 2023 Talk Presentation.
3. **Kingsley T. Amatanweze**, Mario Buchely, Viraj A. Athavale, Laura Bartlett, Ronald O'Malley. "*Effect of Intensive Quenching on the Microstructure and Mechanical Properties of Cr-Ni-Mo Steel*." IMAT/Heat Treat Conference 2023 Talk Presentation.
4. **Kingsley T. Amatanweze** and Goodness U. Okoh. "*The Metal Industry: Solution to Unemployment and Economic Crisis*" Nigerian Metallurgical Society Conference, 2016 Talk Presentation.

Awards

Winner, ASM Student Paper Contest Award 2024

Volunteerism

- Initiated and pioneered presentation of "The Readers Square," a book-discussion program on Radio Benue 95.0Fm, Makurdi (2016).
- End-Process supervisor for World Health Organization's polio immunization program, Igboeze North LGA, Enugu State (April 2015).
- Campus Correspondent for The Nation Newspaper, Nigeria (October 2011- February 2016)

Honors & Activities

- Missouri Governor's Student Leadership Forum 2024- **Representative**, Missouri University of Science and Technology
- ASM International's Board of Trustees- **Student Board Member** (2023-2024)
- Society of Manufacturing Engineers- **Member**
- IMAT/Heat Treat Conference Strong Bar Competition-**Missouri S&T Team** (2022 and 2023)
- ASM International Domesday Geodesic Design Competition 2023- **Organizer**
- International Students Club, Missouri University of Science and Technology – **President** (February-December 2023)
- ASM International IDEA Committee (2022-Present)
- ASM International Retention Sub-Committee (2023-Present)
- Material Advantage - **Member**
- Nigeria Metallurgical Society – **Corporate Member**
- St. Patrick's School, Rolla *Science Fair* 2021 & 2024- **Judge**
- National Association of Metallurgical and Materials Engineering Students -**Interim National President** (2014)
- University of Nigeria, Nsukka's Association of Metallurgical and Materials Engineering Students – **President** (2014)