Abiodun (Abi) Adeniyi.

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Education

• Ph.D. in Energy Science & Engr.	University of Tennessee (UTK)	(In Progress)
• M.Sc. in Nuclear Engineering	Georgia Institute of Technology (GaTech)	2013
• M.Sc. in Systems Engineering	Kennesaw State University	2007
• AS. in Biomedical Engineering	Chattahoochee Technical College	2005
• M.Sc. in Mechanical Engineering	University of Ibadan, Nigeria	2002
• B.Sc. in Mechanical Engineering	Lagos State University, Nigeria	1998
• AS. in Mechanical Engineering	Volkswagen Training School, Nigeria	1993

Some Key Research Experience and Roles

- Oct. 2023 – present: safety and security vulnerability assessment for nuclear power plant siting using geographic information systems.
- Jan. 2014 – Present: lab lead and developer of DOE IWM 3D printed models used in stakeholder public engagement and for communicating spent nuclear fuel handling and management operations.
- Jan. 2022 – Present: lab lead for DOE IWM digital tools development for communicating and visualization of spent nuclear fuel handling and management operations.
- Jan. 2022 – Present: Test Director, Packaging Evaluation Laboratory, ORNL
- Jan. 2021 – Present: Work Package Manager, DOE Integrated Waste Management Systems Analysis, ORNL Work Account, ORNL
- Aug. 2018 – Present: Nuclear Systems Safety & Security Engineer, Nuclear Material Packaging, Transportation and Systems Analysis Group, ORNL
- Aug. 2014 – Aug. 2018: Postmaster Research, Used Fuel Systems Group, ORNL
- Aug. 2010 – Aug. 2014: Adjunct Instructor, University System of Georgia, Atlanta, GA
- Aug. 2011 – Nov. 2011: Research Aide, Engineering Department, ANL, IL
- Oct. 2010 – July. 2012: Research Assistant, Nuclear & Radiological Engineering Department, Georgia Tech, Atlanta, GA
- Feb. 2007 – Sept. 2010: Research Associate, Center for Nuclear Studies (CNS), Kennesaw State University, Marietta, GA
- Jan. 1999 – Dec. 2000: Maintenance Engineer, ExxonMobil Oil, QIT-Eket, Nigeria
- Jan. 1990 – Dec. 1993: Technician, Volkswagen Automobile of Nigeria, Nigeria

Roles

DOE Integrated Waste Management's ORNL lead developer of digital (virtual reality, augmented reality, digital twin) models and 3D printed materials for spent nuclear fuel handling systems.

ORNL Package Testing Laboratory, Test Campaign Lead and Test Director

- Conducting regulatory test campaigns for radioactive material packaging, developing test plans, test schedules, writing test reports, designing, and fabricating packaging support

equipment when needed, conducting QA/QC procedures on test equipment and instruments.

Advanced Modeling and Systems Analysis Supports

- I developed simulation model for Centrifuge Operations Logistic analysis in the proposed ORNL Stable Isotope production center (Model developed under UCNI requirement).
- I evaluated modeling platforms to determine suitability for NA-233 surplus plutonium disposition modeling. I developed radiation tracking model for a glovebox room operation.

DOE-NA International Nuclear Security Advanced Reactor Deployment Logistic Analysis

- Developing GIS-based nuclear plant site safety and security vulnerability assessment tool
- Developing advanced dynamic modeling tools to study advanced nuclear reactors deployment logistics in international nuclear energy systems.

DOE-NE Fuel Cycle Options Campaign Systems Analysis

- Developing models for tracking nuclear fuel materials in nuclear fuel cycles using multi-platform simulation technology – Anylogic (Agent Based, Discrete Event, System Dynamic), VISION, ORION, IAEA's MESSAGE & NFCSS

DOE-NE Used Fuel Disposition & Integrated Waste Management Systems Analysis Campaigns

- Providing systems analysis (modeling and simulation) and engineering design (CREO, Solidworks, AutoCAD, and MicroStation) support within teams evaluating integration of standardized waste management systems (hardware and software) in the back end of the nuclear fuel cycle.
- Providing CAD/CAE analysis for special nuclear material package design, fabrication, thermal & structural testing in support of regulatory requirement.

Adjunct Instructor

Physics, School of Science and Technology, Georgia Gwinnett College, Lawrenceville, GA

- Developed laboratory instruction and teaching materials and taught undergraduate physics classes.

Engineering, Division of Engineering, Kennesaw State University, Marietta, GA

- Developed laboratory instruction and teaching materials, and taught undergraduate classes in Engineering Materials and Engineering Statics

Maintenance Engineer

- Assisted in maintenance support planning using electronic warehousing systems: ORACLE, MS Access, and M.S. Excel software. Worked within a team that reduced

maintenance over-head cost by over $30 million, and reduced equipment downtime using the developed eWarehousing.

Manufacturing Technician (Machinist)

- Designed and fabricated automobile parts using manufacturing processes such as: milling, turning (lathe), casting, molding, forging, certified welder (Oxyfuel & Electric)

Research Aide, Engineering Department, Argonne National Laboratory, IL

- Performed transition analysis in advanced nuclear fuel cycle in support of nuclear fuel option development using VISION nuclear fuel cycle code.

Nuclear & Radiological Engineering Department, Georgia Tech, Atlanta, GA

- Performed transition analysis in advanced nuclear fuel cycle in support of Nuclear Waste Management using nuclear fuel cycle simulation codes such as: VISTA/NFCSS, VISION, MESSAGE, ENPEP-BALANCE, SCALE, and ORIGIN.

Special Training

- Participated in Comprehensive Training on Nondestructive Assay Applications for International Safeguard, at Safeguard Laboratory- ORNL, TN. (March 21 -25, 2011)
    - Uranium Enrichment & Holdup Measurements
    - Special Nuclear Material Detection & Measurements
- Participated in VISION NFC Simulation Code Training, at George Westinghouse Research and Technology Park. PA (January 06 - 07, 2011)

Selected Research Publications

1. O. A. Martinez, **A. I. Adeniyi**, P. S. Nogradi. "Recent Radioactive Material Package Testing Experiences at Oak Ridge National Laboratory". Proceedings of the 20th International Symposium on the Packaging and Transportation of Radioactive Materials (PATRAM 2022), Paper # 124 (June 2023).
2. O. A. Martinez, D. Giuliano, W. Tang, P. S. Nogradi, **A. I. Adeniyi**, L. Lowe, "Additive Manufacturing and Regulatory Testing and of Canisters for Spent Nuclear Fuel Management". Proceedings of the ASME 2023 Pressure Vessels & Piping Conference PVP2023-105981 (Jul 16 – 21, 2023).
3. P. S. Nogradi, O. A. Martinez, **A. I. Adeniyi**, L. Lowe, R. Wittenbarger, R. Fisher, A. McLaurine "3D Metrology Analysis of Structural Damages on Type B Shipping Container Compared to Predicted FEA Results after Completion of NCT and HAC Regulatory Testing". Proceedings of the ASME 2023 Pressure Vessels & Piping Conference PVP2023-105981 (Jul 16 – 21, 2023).
4. **A. I. Adeniyi**, O. A. Martinez, P. S. Nogradi, Ross Wittenbarger, Ryan Fisher, Austin McLaurine. "3D Metrology of Structural Damages on Type B Shipping Container after Completion of Normal Conditions of Transportation and Hypothetical Accident Conditions Regulatory Testing". Proceedings of the International High-Level Radioactive Waste Management Conference, Phoenix, AZ, November 13-17, 2022, Pages 764 – 766.

5. **A. I. Adeniyi**, Paul Cantonwine, Bruce Bevard, Kevin Connolly. "Visualization of an Integrated Waste Management Concept of Operations in a Virtual Environment". Proceedings of the International High-Level Radioactive Waste Management Conference, Phoenix, AZ, November 13-17, 2022, Pages 684 – 687.
6. O. A. Martinez, **A. I. Adeniyi**, P. S. Nogradi, B. Loftin, C. E. Martinez, B. Van Hoy. "Regulatory Testing and Post Test Analysis of the DPP-3 Type B Shipping Container for NCT and HAC Tests". Proceedings of the ASME 2021 Pressure Vessels & Piping Conference PVP2021-62434 (Jul 12 – 16, 2021).
7. **I. A. Adeniyi, A**. O. Omitaomu, R. Joseph III, L. Qualls. "Multi-Logics Analysis of Large-scale Deployment Strategies of Advanced Reactors and Implications on Infrastructure, Cost, and Security" 2020 IISE Annual Conference, June 2, 2020, New Orleans, New Orleans, Louisiana. Accepted for presentation.
8. O. A. Martinez, M. R. Feldman, **A. I. Adeniyi**, P. S. Nogradi. "Regulatory Testing of a Type B Shipping Container for NCT and HAC". Proceedings of the 19th International Symposium on the Packaging and Transportation of Radioactive Materials (PATRAM 2019), Pg. 1393 (Aug. 2019).
9. G.G. Davidson, S.R. Johnson, S. Chatzidakis, **A.I. Adeniyi**, and K. Banerjee, "Development of Terrenus, a Multiphysics Code for Spent Nuclear Fuel Cask Criticality Analysis". 11th International Conference on Nuclear Criticality safety (ICNC), September 15 – 20, 2019, Paris France.
10. J.M. Scaglione, S. Chatzidakis, **A. I. Adeniyi**, T. F. Severynse, R. H. Jones, J. J. Jarrell, "Mobile Examination and Remediation Facility". NEI Used Fuel Management Conference, May 2018, Savanah, GA, USA.
11. S. Chatzidakis, **A. I. Adeniyi**, J.M. Scaglione, T. F. Severynse, R. H. Jones, J. J. Jarrell, "A Novel Mobile Examination and Remediation Facility for On-Site Remediation of Dry Storage Systems". WM2018 Conference, March 2018, Phoenix, Arizona, USA.
12. **A. I. Adeniyi**, B. Akker, Alsaed Abdelhalim, B. James, J. Carter, T. Severynse, R. Jones et al., "Spent Nuclear Fuel Dry Packaging Facility – Modular Design, Dry Transfer Concept and Cost Estimate". International High-Level Radioactive Waste Management, April 9 – 13, 2017, Charlotte, NC, USA.
13. B. Akker, **A. I. Adeniyi**, Alsaed Abdelhalim, B. James, J. Carter, T. Severynse, R. Jones, "Wet Repackaging Facility Design Concept and Cost and Throughput Analysis". International High-Level Radioactive Waste Management, April 9 – 13, 2017, Charlotte, NC, USA.
14. F. Peretz, **A. I. Adeniyi**, E. Hardin, P. Nogradi, "Conceptual Design of the Package Handling System for the Deep Borehole Engineering Demonstration". WM2017 Conference, March 5-9, 2017, Phoenix, Arizona, USA.
15. R. Cumberland, **A. I. Adeniyi**, R. Howard, R. Joseph, J. Jarrell, M. Nutt, "Preliminary Concept of Operations for the Spent Fuel Management Systems". WM2017 Conference, March 5-9, 2017, Phoenix, Arizona, USA.
16. J. Jarrell, **A. I. Adeniyi**, M. Oscar, G. Radulescu, K. Robb, J. Scaglione, "Design of a Universal Canister System for U.S. High-Level Waste". ASME Pressure Vessels and Piping Conference, September 18 – 23, 2016, Kobe, Japan.
17. **A. I. Adeniyi**, B. Petrovic, "Nuclear Resources Utilization in Full Recycling Nuclear Fuel Cycle with Limited Separation Capacity". Trans. Am. Nucl. Soc., 108, 134 - 136 (2013).
18. **A. I. Adeniyi**, B. Petrovic, B. Feng, T.K. Kim, "Impact of Limited Reprocessing Capacity on Nuclear Material Utilization in Advanced Fuel Cycle". 9th International Conference on Nuclear Option in Countries with Small and Medium Electricity Grids. June 2012. Presented by Prof. Petrovic.

Synergistic Activities

1. **Professional Membership:** ANS (Member) and INCOSE (Member)

Research Collaborators (past 48 months)

- **Co-Authors:** Oscar Martinez (ORNL); Bradley Loftin (ORNL); Femi Omitaomu (ORNL/UTK); Kevin Connolly (ORNL); Ryan Fisher (Y-12); Paul Cantonwine (ORNL); Stylianos Chatzidakis (Perdue)

Graduate Advisors

- **Ph.D. Advisor:** Srijib Mukherjee (ORNL/UTK)
- **M.Sc. Advisor:** Pro. Bon Petrovic (GaTech, Atlanta GA)