

Nelson K. Akafuah

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CERTIFICATES

Lean Systems Certificate, University of Kentucky, 2013

EDUCATION

B.Sc., Mechanical Engineering, First Class Honors, Kwame Nkrumah University of Science and Technology, Kumasi, Ghana, 1999

M.S., Mechanical Engineering, University of New Orleans, 2003

MBA., Executive, Jack Welch Management Institute, Strayer University, 2017.

PhD., Mechanical Engineering, University of Kentucky, 2009

Professional Positions Held

University of Kentucky:

Department Chair, Department of Engineering Technology, 2021 - Present

Associate Professor, Department of Engineering Technology, 2021 - Present

Director, Institute of Research for Technology Development (IR4TD), 2021 - Present

Director, Undergraduate Production Engineering Certificate, 2018 – Present

Faculty Fellow in the College of Engineering and Chair of the Engineering Technology

Implementation Committee, 2019 – 2021

Associate Director, Institute of Research for Technology Development (IR4TD), 2017-2021

Lecturer, Mechanical Engineering, 2019 – 2021

R&D Program Manager, Institute of Research for Technology Development (IR4TD), 2013-2017

Assistant Research Professor, Department of Mechanical Engineering, February 2011–2019

Post-Doctoral Research Scholar, Department of Mechanical Engineering, 2010 –, 2011

Other Related Experience

General Electric Power Systems, Schenectady, NY

Mechanical Engineer, , June, 2002 – May, 2003

Selected Recent Publications

1. Adnan Darwish Ahmad, Ahmad M Abubaker, Ahmad Salaimh, **Nelson K. Akafuah**, Mark Finney, Jason M. Forthofer, Kozo Saito. Ignition and Burning Mechanisms of Live Spruce Needles, *Fuel* 304 (2021) 121371
2. Poozesh S, Karam M, **Akafuah N**, Wang Y. Integrating a model predictive control into a spray dryer simulator for a closed-loop control strategy. *International Journal of Heat and Mass Transfer*, 2021 May 1; 170:121010
3. Poozesh, S., Jafari, S. M., & **Akafuah, N. K.** (2020). Interrogation of a new inline multi-bin cyclone for sorting of produced powders of a lab-scale spray dryer. *Powder Technology*. Vol. 373, 590-598
4. **Akafuah, N.K.**; Poozesh, S.; Salaimh, A.; Patrick, G.; Lawler, K.; Saito, K. (2016) Evolution of the Automotive Body Coating Process—A Review. *Coatings* 6(2), 24.
5. Poozesh, S., **Akafuah, N. K.**, Graña-Otero, J., and Saito, K. (2016). Comprehensive Examination of a New Mechanism to Produce Small Droplets in Droplet-On-Demand Inkjet Technology. *Applied Physics A*. 122 (2), 1-12.
6. Arabghahestani M., **Akafuah N.K.**, Saito K., Computational Fluid Dynamics and Scaling Study On Ultrasonic Pulsation Atomizer For Waterborne Paint. *Atomization and Sprays* **2021**; 31(3).
7. Poozesh, S., **Akafuah, N. K.**, and Saito, K. (2016). NO formation analysis of turbulent non-premixed coaxial methane/air diffusion flame. *International Journal of Environmental Science and Technology* 13 (2), 513-518.

8. Gustenyov, N., **Akafuah, N. K.**, Salaimeh, A., Finney, M., and McAllister, S., Saito, K. Scaling Nonreactive Cross Flow over a Heated Plate to Simulate Forest Fires. *Combustion and Flames*, 197 (2018): 340-354
9. Finney, M. A., Cohen, J. D., Forthofer, J. M., McAllister, S. S., Gollner, M. J., Gorham, D. J., Saito, K., **Akafuah, N. K.**, Adam, B. A., English, J. D. (2015). The role of buoyant flame dynamics in wildfire spread. *Proceedings of the National Academy of Sciences of the United States of America*, 112 (32), 9833–9838
10. Lei, J., Liu, N., Zhang, L., Deng, Z., **Akafuah, N. K.**, Li, T., Saito, K., Satoh, K., (2012). Burning rates of liquid fuels in fire whirls. *Combustion and Flame*, 159 (6), 2104-2114

Patents

1. Alloo, R., Saito, K., Gharaibeh, B., Chuah, K., **Akafuah, N. K.**, Salaimeh, A., SYSTEMS AND METHODS FOR DETECTING DEFECTS IN COATINGS UTILIZING COLOR-BASED THERMAL MISMATCH, US Patent 8,204,294

PROFESSIONAL AFFILIATIONS AND SERVICES

Affiliations

- Member, American Society of Engineering Education (ASEE)
- Member, American Society of Mechanical Engineers (ASME)
- Member, Society of Automotive Engineers (SAE)
- Member, American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE)
- Member, American Society of Nondestructive Testing (ASNT)
- Member, The Combustion Institute

Synergistic Activities:

- NSF Grant Review (2020 -present)
- Associate Editor, Progress in Scale Modeling, an International Journal (PSMIJ) ISSN:2693-969X (2020 - present)
- Guest Editor, Fluids, Special Issue: Trends in Spray Atomization (2020 -present)
- Guest Editor, Coatings, Special Issue: Innovative Coatings for Automotive Industry (2015 – 2017)
- Executive Committee, International Symposium on Scale Modeling. (2011 – to present)
- Executive Committee, Painting Technology Workshop. (2011 – to present)
- Reviewer, Infrared Physics, and Technology. (2011 – to present)
- Reviewer, Atomization and Sprays. (2011 – to present)
- Reviewer, Coatings. (2015 – to present)
- Reviewer, SAE International: Advances in Alternative Energy and Fuels for the Transportation Sector. (2014 – to present)
- Reviewer, Applied Sciences. (2016 – to present)
- Reviewer, Micromachines. (2017 – to present)

Collaborators:

- Mark Finney, Jason Forthofer, and Bret Butler (USDA Forest Service, Missoula, MT)
- Michael J. Gollner (University of Maryland, College Park, MA),
- Reza Rock (PPG Industries, Spray Application Research, Allison Park, PA)
- Gabriela Patrick, Kevin Lawler (Production Engineering – Paint Application Research Laboratory, Toyota Motor Engineering & Manufacturing North America, Inc., Enlarger KY)

Former Students: Sadegh Poozesh; Brittany Adam; Mark Doerre; Ahmad Abubaker; Adnan Darwish Ahmad; Soham Basu; William Linnig; Mohamed Keneway; Peiding Wang; Justin English; Jeremy Fugate; Anthony Adornato; Nikolay Gustenyov; Qiang Qi; Omkar S. Bhosale; Mfon-Abasi Itama; Jake Trimpe