

UMENWEKE, CHUKWUDALU GREAT

Graduate Research Assistant

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[Personal Website](#) | [LinkedIn](#) | [Google scholar](#) | [ResearchGate](#) | [ORCID](#) | [Publons](#)

EDUCATION

University of Kentucky, Lexington, Kentucky **Aug 2020 – Present**

PhD Student, Department of Chemistry

Research Project: *Catalytic conversion of fats, oils, and greases to green diesel and sustainable aviation fuel via decarboxylation/decarbonylation and isomerization.* Advisor: Dr. Eduardo Santillan-Jimenez

Federal University of Technology, Owerri (FUTO) **2012-2017**

Bachelor of Engineering (B.Eng.), Chemical Engineering

Research Project: *Kinetics of alkali catalyzed transesterification of palm kernel oil and physicochemical characterization of the biodiesel product.*

RESEARCH AND WORK EXPERIENCE

Graduate Research Assistant, Biofuels and Environmental Catalysis Laboratory, Center for Applied Energy Research (CAER), University of Kentucky **Jan 2021-Present**

Graduate Teaching Assistant (GTA), Department of Chemistry, University of Kentucky, Lexington, Kentucky **Jan 2021-Present**

Visiting Graduate Researcher – In-situ X-ray Photoelectron Spectroscopy (XPS), Laboratoire Interdisciplinaire Carnot de Bourgogne (ICB) at the University of Burgundy (uB), in Dijon, France **Summer 2022**

HONORS AND AWARDS

1. *American Chemical Society (ACS) Student Exchange Award* - in recognition for a combination of achievements, including the NOBCCHE abstract submission, peer-reviewed publication record, and campus/community involvement. **(2022)**
2. *2nd Place Award – Three Minute Rundown*; Research Thesis Oral Presentation at the National Organization for the Professional Advancement of Black Chemists and Chemical Engineers (NOBCCHE) 49th Meeting **(2022)**
3. *Advancing Science Conference Grant Awardee* - National Organization for the Professional Advancement of Black Chemists and Chemical Engineers (NOBCCHE) **(2022)**
4. *'Best Poster Award'* - Presented at the 26th Annual ACS Green Chemistry and Engineering conference, at Reston, Virginia, USA **(2022)**
5. *'Fast Start Award'* - Presented to a graduate student in his or her first or second year in the Department of Chemistry, who has made outstanding initial overall progress towards his or her

degree. Factors to be considered are performance in courses, initiative in research, and success in cumulative exams (2022)

6. Awardee/Nominee of [American Chemical Society](#) (ACS) summer school for graduate and postgraduates in Americas on Green Chemistry and Sustainable Energy, at School of Mines, Golden, Colorado (2022)
7. 1st place University of Kentucky [Sustainability Poster Presentation](#): Conversion of waste oils to renewable fuels over inexpensive catalysts. (2021)
8. University of Kentucky Graduate Student Congress (UKGSC) '[Pillars Award](#)' in recognition for the contribution towards creating a sense of community for graduate and professional students in the University of Kentucky (2021)
9. University of Kentucky National Science Foundation Graduate Research Trainee In the Nexus of Food, Energy and Water Systems ([INFEWS](#)) (2020)
10. National *award of excellence* for "invaluable contribution and uplifting chemical engineering students in Nigeria". By Nigeria Society of Chemical Engineers, Students Body. (2017)

SELECTED RESEARCH PUBLICATIONS | [Google scholar](#)

1. **Great C. Umenweke**, Jude Okolie, Robert B. Pace, Eduardo Santillan-Jimenez. "Techno-economic and Life-cycle Analyses of Sustainable Aviation Fuel production via integrated catalytic deoxygenation and hydrothermal gasification." *Chemical Engineering Journal*, 2023, 452, 2, 139215. <https://doi.org/10.1016/j.cej.2022.139215>
2. Iwuzor, K.O., Emenike, E.C., Gbadamosi, F.A. J.O Ighalo, **G.C Umenweke et al.** Adsorption of organophosphate pesticides from aqueous solution: a review of recent advances. *Int. J. Environ. Sci. Technol.* (2022). <https://doi.org/10.1007/s13762-022-04410-6>
3. Max Rowan, **Great C. Umenweke**, Emmanuel I. Epelle, Inioluwa C. Afolabi, Patrick U. Okoye, Burcu Gunes and Jude Okolie. An-aerobic co-digestion of food waste and agricultural residues. An overview of feedstock properties and impact of biochar addition. *Digital Chemical Engineering Journal*. 100046. <https://doi.org/10.1016/j.dche.2022.100046>
4. **Great Umenweke**, Inioluwa Christianah Afolabi, Emmanuel I. Epelle, Jude A. Okolie, (2022). Machine learning methods for modeling conventional and hydrothermal gasification of waste biomass: A review. *Bioresource Technology Reports*, 100976. <https://doi.org/10.1016/j.biteb.2022.100976>
5. Jude A. Okolie, Jorge Ivan Escobar, **Great Umenweke**, Waheed Khanday, Patrick U. Okoye (2022). Continuous biodiesel production: A review of advances in catalysis, microfluidic and cavitation reactors. *Fuel*, 307, 121821. <https://doi.org/10.1016/j.fuel.2021.121821>
6. Ighalo, J. O., Sagboye, P. A., **Umenweke, G.**, Ajala, O. J., et al. (2021). CuO nanoparticles (CuO NPs) for water treatment: A review of recent advances. *Environmental Nanotechnology, Monitoring & Management*, 15, 100443. doi: <https://doi.org/10.1016/j.enmm.2021.100443>
7. **Umenweke, G.***, Adesanya, Z., Onyeaka, H. et al. Modular bio-refinery simulation of *Nesogordonia papaverifera* by fast pyrolysis (FP): a focus on bio-oil enhancement. *Biomass Conv. Bioref.* (2021). <https://doi.org/10.1007/s13399-021-01430-z>

BOOK CHAPTER

1. Oluwaseun J. Ajala, A. Khadir, Joshua O. Ighalo, **Great Umenweke**. "Cellulose-based nanobiosorbents in water purification." *Nano-biosorbents for Decontamination of Water, Air, and Soil Pollution* (2022). <https://doi.org/10.1016/B978-0-323-90912-9.00017-4>

PATENT

1. Catalytic decarboxylation/decarbonylation of rosin to sustainable aviation fuel (U.S Provisional Patent Application Number: 63410879) (2022) | [Link](#)
University of Kentucky Center for Applied Energy Research
Inventors: Eduardo Santillan-Jimenez, Robert B. Pace and **Great C. Umenweke**

PRESENTATIONS

1. 2nd University of Kentucky Food, Energy and Water (FEW) Symposium (2022). Presenters: **Great Umenweke**, Robert Pace, and Eduardo Santillan-Jimenez “Catalytic conversion of oleaginous biomass to sustainable aviation fuel via one-pot decarboxylation/decarbonylation.”
2. National Organization for the Professional Advancement of Black Chemists and Chemical Engineers (NOBCCHE) 49th Meeting (2022) Presenters: **Great Umenweke**, Eduardo Santillan-Jimenez and Mark Crocker “Catalytic conversion of fats, oils and greases to sustainable aviation fuel via one-pot decarboxylation/decarbonylation and isomerization” (Oral Presentation)
3. 26th Annual ACS Green Chemistry and Engineering conference, at Reston, Virginia, USA (2022) Presenters: **Great Umenweke**, Eduardo Santillan-Jimenez and Mark Crocker “Support effects of Ni-catalysts promoted with Fe or Cu in the catalytic deoxygenation of tristearin to fuel-like hydrocarbons.” – [Best Poster Award](#)
4. 2022 ACS Summer School on Green Chemistry and Sustainable Energy, Colorado. Presenters: **Great Umenweke**, Robert Pace and Eduardo Santillan-Jimenez “Catalytic conversion of fats, oils and greases to sustainable aviation fuel via one-pot decarboxylation/decarbonylation”
5. 1st University of Kentucky Food, Energy and Water (FEW) Symposium (2021). Presenters: **Great Umenweke**, Eduardo Santillan-Jimenez and Mark Crocker “Support effects of Ni-catalysts promoted with Fe or Cu in the catalytic deoxygenation of tristearin to fuel-like hydrocarbons.”
6. University of Kentucky Sustainability Poster Competition (2021). Presenters: **Great Umenweke** and Eduardo Santillan-Jimenez “Conversion of waste oils to renewable fuels over inexpensive catalysts” – [1st Place Award](#)

RESEARCH GRANT AWARD

1. University of Kentucky National Science Foundation Graduate Research Traineeship (UK NRT) In the Nexus of Food Energy and Water Systems (INFEWS): Co-PI of \$16,000 award grants on the valorization of forest residues to improve economic viability for Biorefineries. (2021)

REFEREES

Dr. Eduardo Santillan-Jimenez

Program Manager, Biofuels and Environmental Catalysis Laboratory, Center for Applied Energy Research (CAER) and Adjunct Assistant Professor, Department of Chemistry, University of Kentucky, Lexington, Kentucky (esant3@uky.edu)

Dr. Mark Crocker

Professor of Chemistry (Emeritus) and Former Associate Director, Center for Applied Energy Research, University of Kentucky, Lexington, Kentucky (mark.crocker@uky.edu)

Dr. Gilles Caboche

Professor and Head, Process of Metallurgy, Durability Materials (PMDM), Laboratoire Interdisciplinaire Carnot de Bourgogne (ICB) – University of Bourgogne, in Dijon, France (gilles.caboche@u-bourgogne.fr)