




Jude Okolie, Ph.D.

Department of Chemical and Biological Engineering
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EDUCATION

University of Saskatchewan Ph.D. Chemical Engineering Thesis: <i>Supercritical water gasification for hydrogen production; catalysis, process optimization and techno- economic analysis.</i>	June 2021
Tallinn University of Technology, Estonia Master of Engineering, Materials and Sustainable Energy	July 2018
Imperial College London Master of Engineering, Petroleum Engineering	Aug 2016
University of Benin- City, Nigeria Bachelor of Engineering, Chemical Engineering	Nov 2013

PROFESSIONAL APPOINTMENTS

Postdoctoral Research Fellow , University of Saskatchewan Department of Chemical and Biological Engineering University of Saskatchewan, Canada.	July 2021 – Present
Research Analytical Technologist /Lecturer Department of Chemical and Materials Technology Tallinn University of Technology, Tallinn, Estonia	Aug 2016 – Aug 2017
Lecturer/Laboratory manager Department of Chemical Engineering Michael Okpara University of Agriculture, Nigeria	Jan 2014 – July 2015

TEACHING EXPERIENCE

Lab instructor, University of Saskatchewan Fall 2019, Winter 2020

Course: Chemical Engineering Laboratory

Responsibilities: Developed experimental protocols, Graded lab assignments 40 students

Graduate Teaching Assistant, University of Saskatchewan Fall 2019

Course: Petrochemical Engineering

Responsibilities: Designed and delivered course materials for third year undergraduate Chemical

Graduate Teaching Assistant, University of Saskatchewan Fall 2019, Fall 2020,

Course: Integrity and Ethics Winter 2020

Responsibilities: Responds to student concerns and questions, graded students' assignments. 300 students

Graduate Teaching Assistant, University of Saskatchewan Fall 2018

Course: Introduction to statistics for Engineers

Responsibilities: Developed and delivered weekly lectures on design of experiments and basic statistics

Lecturer, Tallinn University of Technology Winter 2017

Course: Process Engineering and Citation software instructor . 120 students.

Responsibilities: Developed and delivered weekly lectures on ASPEN Plus simulation software and the use of plagiarism software. 120 students.

Lecturer, Michael Okpara University of Agriculture, Nigeria Fall 2014

Course: Heat and Mass transfer, Engineering Mechanics

Course: Designed and delivered a term lecture on heat and mass transfer.70 students.

RESEARCH EXPERIENCE

Graduate Student, University of Saskatchewan 2017 – Present

Department of Chemical and Biological Engineering

Advisors: Dr. Ajay Dalai and Dr. Janusz Kozinski

- Developed and modified a novel high-pressure equipment for hydrogen production.
- Synthesized and characterized novel heterogeneous catalysts to improve hydrogen yield.
- Gained industrial field experience in development of a pilot scale biomass processing plants.

- Analyzed the economic feasibility of hydrothermal gasification and proposed key decisions to industry experts.
- Directly advised three master's degree students in a leadership position and coordinated all their experimental activities.

This work resulted in 13 publications and 3 manuscript currently under review and 2 conference papers. This work was funded through the Canada Research Chair funds and the University of Saskatchewan Devolved Scholarship.

Research Analytical Technologist /Lecturer

2016 – 2017

Department of Chemical and Materials Technology
Tallinn University of Technology, Tallinn, Estonia

- Effectively utilized interpersonal skills to collaborate with Health & Safety Representatives, Science Engineering and Computer science Professors to ensure the safety of students while following Universities safety protocols.
- Prepared lab materials and supervised undergraduate students working on the development of hybrid solar cells,
- Co – founded the GreenTech energy club. The club initiated the planting of trees program in Estonia.
- Assisted in preparing funding proposals.

This work resulted in 2 publications and 3 conference presentation. This work was funded through the Estonian Government Scholarship and Tallinn University of Technology discovery grants

Lecturer/Laboratory manager

2014 – 2015

Department of Chemical Engineering
Michael Okpara University of Agriculture, Nigeria

- Developed a novel Anaerobic Digestion system and assess the technical and economic feasibility of the project.
- Assisted in all research work and laboratory activities.
- Reviewed all undergraduate research project and provide detailed performance improvement response.

This work was funded through the Federal government of Nigeria. This work resulted in 1 publication and 3 undergraduate thesis supervision.

MENTORSHIP EXPERIENCE

Mentor for Chika Ogumka, Michael Okpara University of Agriculture
Current status: Junior Quality Engineer, Veriff Tallinn Estonia.

Mentor for John Oyinbo
Current status: Graduate Engineer, Sterling oil exploration and Energy production.

Mentor for Ramani Tyagi, University of Saskatchewan
Current status: Computer science undergraduate student, University of Michigan.

Mentor for Ravi Patel
Current status: Recent graduate, University of Saskatchewan.

Mentor for Henry Nwachukwu
Current status: Mastercard foundation scholar at McGill University.

Mentor for Brianna Vaagen
Current status: Undergraduate student at the University of Saskatchewan.

SCHOLARSHIPS, AWARDS & FELLOWSHIPS

George Ira Hanson Energy Research Award, \$1,000	2021
George Ira Hanson Energy Research Award, \$1,000	2020
Engineering Devolved Scholarship, University of Saskatchewan, \$20,000	2020
Engineering Devolved Scholarship, University of Saskatchewan, \$20,000	2019
Graduate service fellowship, University of Saskatchewan, \$5,400	2018
Engineering Graduate Research Scholarship, University of Saskatchewan, \$20,000	2018
International Student and Study Abroad Centre Travel Award, \$350	2018
College of Engineering Travel Award, University of Saskatchewan, \$500	2018
Best Masters student presentation , Estonian Government, \$150	2017
Dora Plus Travel Scholarship, Estonian Government, \$1,500	2016
Dora Plus Scholarship, Estonian Government, \$8,500	2016
Performance scholarship, Tallinn University of Technology, \$700	2016
Tuition waiver scholarship, Tallinn University of Technology, \$12,000	2016
Shell Petroleum Development Company of Nigeria (SPDC) Scholarship, \$85,000	2015
Top graduating student Award, University of Benin, \$150	2013
Top graduating student Award, University of Benin, \$150	2013
Petroleum Technology Development Fund (PTDF) Award, \$8000	2010

SELECTED PUBLICATIONS

Published in peer - reviewed journals

1. **Okolie, J. A.**, Nanda, S., Dalai, A. K., & Kozinski, J. A. (2020). Hydrothermal gasification of soybean straw and flax straw for hydrogen-rich syngas production: Experimental and thermodynamic modeling. *Energy Conversion and Management*, 208, 112545.
2. **Okolie, J. A.**, Nanda, S., Dalai, A. K., & Kozinski, J. A. (2020). Optimization and modeling of process parameters during hydrothermal gasification of biomass model compounds to generate hydrogen-rich gas products. *International Journal of Hydrogen Energy*, 45(36), 18275-18288.
3. **Okolie, J. A.**, Nanda, S., Dalai, A. K., & Kozinski, J. A. (2020). Optimization and modeling of process parameters during hydrothermal gasification of biomass model compounds to generate hydrogen-rich gas products. *International Journal of Hydrogen Energy*, 45(36), 18275-18288.
4. **Okolie, J. A.**, Nanda, S., Dalai, A. K., & Kozinski, J. A. (2020). Chemistry and specialty industrial applications of lignocellulosic biomass. *Waste and Biomass Valorization*, 1-25.
5. **Okolie, J. A.**, Nanda, S., Dalai, A. K., Berruti, F., & Kozinski, J. A. (2020). A review on subcritical and supercritical water gasification of biogenic, polymeric and petroleum wastes to hydrogen-rich synthesis gas. *Renewable and Sustainable Energy Reviews*, 119, 109546.
6. Mukherjee, A., **Okolie, J. A.**, Abdelrasoul, A., Niu, C., & Dalai, A. K. (2019). Review of post-combustion carbon dioxide capture technologies using activated carbon. *Journal of Environmental Sciences*, 83, 46-63.
7. **Okolie, J. A.**, Rana, R., Nanda, S., Dalai, A. K., & Kozinski, J. A. (2019). Supercritical water gasification of biomass: a state-of-the-art review of process parameters, reaction mechanisms and catalysis. *Sustainable energy & fuels*, 3(3), 578-598.
8. **Okolie, J. A.**, Henry, O. E., & Epelle, E. I. (2016). Determination of the antioxidant potentials of two different varieties of banana peels in two different solvents. *Food and Nutrition Sciences*, 7(13), 1253.
9. Adekunle, K. F., & **Okolie, J. A.** (2015). A review of biochemical process of anaerobic digestion. *Advances in Bioscience and Biotechnology*, 6(03), 205

Accepted manuscript

1. Epelle, E.I., Oyinbo, J.O., **Okolie, J.A.** and Gerogiorgis, D.I., A Comparative Performance Evaluation of Cubic Equations of State for Predicting the Compositional Distribution of Hydrate Inhibitors in Reservoir Fluid Systems. Accepted in Fluid Phase Equilibria Journal.
2. Mukherjee, A., **Okolie, J. A.**, Tyagi, R., Niu, C., & Dalai, A. K. Pyrolysis kinetics and activation thermodynamic parameters of exhausted coffee residue and coffee husk using thermogravimetric analysis. Accepted in the Canadian Journal of Chemical Engineering.
3. **Okolie, J. A.**, Patra, B.R., Mukherjee, A., Nanda, S., Dalai, A. K., & Kozinski, J. A. Futuristic applications of hydrogen in energy, biorefining, aerospace, pharmaceuticals, and metallurgy. Published in the International Journal of Hydrogen Energy.
4. **Okolie, J. A.**, Mukherjee., A Nanda, S., Dalai, A. K., & Kozinski, J. A. Catalytic supercritical water gasification of soybean straw: Effects of catalyst supports and promoters. Industrial & Engineering Chemistry Research (ACS) Journal.
5. **Okolie, J. A.**, Nanda, S., Dalai, A. K., & Kozinski, J. A. Modeling and process optimization of hydrothermal gasification for hydrogen production: A comprehensive review. Under review in the Journal of Supercritical fluids.

SELECTED PRESENTATIONS

Oral Presentations

1. **Okolie, J. A.**, Nanda, S., Dalai, A. K., & Kozinski, J. A. Subcritical and Supercritical Water Gasification of Soybean Straw and Flax Straw for Hydrogen Production: Experimental and Thermodynamic Modeling. AIChE Annual Meeting. AIChE, 2019.
2. **Okolie, J. A.**, Nanda, S., Dalai, A. K., & Kozinski, J. A. Optimization and modeling of process parameters during hydrothermal gasification of biomass model compounds to generate hydrogen-rich gas products. In CsChE Conference, 2018.
3. **Okolie, J. A.** and Adekunle, K.F. Mathematical model to evaluate biogas yield from bio-degradable waste Materials. MSc student conference at Estonian University of Life Sciences, 2017.

4. **Okolie, J. A.**, Nanda, S., Dalai, A. K., & Kozinski, J. A. Subcritical and Supercritical Water Gasification of Soybean Straw and Flax Straw for Hydrogen Production: Experimental and Thermodynamic Modeling. University of Saskatchewan, Engineering student conference, 2019

Poster Presentations

1. **Okolie, J. A.** and Adekunle, K.F. "Biogas from biowaste and municipal waste. the International Conference "Progress in Biogas IV.", 2017.
2. **Okolie, J.A** and Morataya, C. Study of Organic precipitation that affects flowlines and pipelines. Imperial College London, MSc thesis Poster presentation conference, 2016

SERVICE & OUTREACH

Graduate Peer mentor, University of Saskatchewan	Since 2018
Co-founded, GreenTech club Tallinn Estonia	Since 2016
Floor volunteer Saskatoon friendship inn	2020
Journal reviewer International Journal of Hydrogen Energy Chemical Engineer science Renewable and Sustainable Energy reviews Journal	Since 2017

PROFESSIONAL MEMBERSHIP

Association of Professional Engineers and Geoscientists of Saskatchewan (APEGS)	Since 2018
Canadian Society of Chemical Engineering (CSChE)	Since 2019
American Chemical Society (ACS)	Since 2021
Nigerian Society of Engineers	Since 2014

REFERENCES

Dr. Ajay K. Dalai

Distinguished Professor of Chemical Engineering and Canada Research Chair in Bio-Energy and Environmentally Friendly Chemical Processing,
Department of Chemical and Biological Engineering,
College of Engineering, University of Saskatchewan
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