

## OLADIRAN FASINA, Ph.D., P.Eng

Professor and Head

Department of Biosystems Engineering

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### EDUCATION

Ph.D.	Agricultural & Bioresource Engineering, University of Saskatchewan, Canada	1994
MS	Agricultural Engineering, Obafemi Awolowo University, Ile-Ife, Nigeria	1988
BS	Agricultural Engineering, Obafemi Awolowo University, Ile-Ife, Nigeria	1985

### PROFESSIONAL EXPERIENCE

2017 - present	Head, Department of Biosystems Engineering, Auburn University
2016 - 2016	Interim Associate Dean for Research, College of Agriculture and Interim Associate Director, Alabama Agricultural Experiment Station, Auburn University
2012- present	Professor, Dept. of Biosystems Engineering, Auburn University
2007-2012	Associate Professor, Dept. of Biosystems Engineering, Auburn University
2002-2007	Assistant Professor, Dept. of Biosystems Engineering, Auburn University
1998-2001	Food Process Engineer, USDA-ARS Food Science Research Unit, Raleigh, NC
1994-1998	Postdoctoral Fellow, University of Saskatchewan, Canada
1990-1994	Graduate Research Assistant, Agricultural and Bioresource Engineering, University of Saskatchewan, Canada
1988-1990	Assistant Professor, Obafemi Awolowo University, Ile-Ife, Nigeria

### LEADERSHIP/ADMINISTRATIVE APPOINTMENTS/DEVELOPMENT PROGRAMS

2018	Emergenetics Leadership Training, Auburn University
2017-2018	Leadership for 21 <sup>st</sup> Century (LEAD 21), Class XIII
2016	Academic Leadership - A Systems Approach. ASABE Annual Meeting, Orlando, F

### HONORS AND AWARDS

<u>Award for Excellence in Writing Across the Curriculum.</u> Led the department in receiving this award in recognition of its ongoing commitment to writing in the discipline and its strong support of Auburn University writing programs and initiatives.	2023
<u>Selected in the Stanford's list of 2% scientists in the world.</u> The list was assembled by the researchers at Stanford University and was published in PLOS Biology. The entire list can be accessed <a href="#">here</a> .	2022 & 2020
<u>Selected in the Stanford's list of 2% scientists in the world.</u> The list was assembled by the researchers at Stanford University and was published in PLOS Biology. The entire list can be accessed <a href="#">here</a> .	2020
<u>Auburn University ePortfolio Faculty Cohort Award:</u> One of five BSEN faculty recognized for exemplary leadership in promoting the implementation of ePortfolio, but also led the implementation and embedding of ePortfolio in BSEN.	2017
<u>Outstanding Faculty Member, Biosystems Engineering Department:</u> Annual award selected by BSEN students.	2017
<u>Alumni Professor:</u> Recognizes tenured faculty members for their exceptionally meritorious contributions to the institutional missions of Auburn University.	2015

<u>Auburn University Excellence in Education Award for Biosystems Engineering:</u> Fasina was one of three BSEN faculty that prepared the documentation for the award.	2015
<u>Outstanding Reviewer Award:</u> ASABE Processing Systems Technical Community.	2015
<u>Fellow, ASABE:</u> The rank of Fellow is awarded to less than 2% of ASABE members (national and international) with unusual professional distinction, outstanding and extraordinary qualifications and experience in the field of agricultural, food, or biological systems engineering.	2014
<u>ASABE Evelyn E. Rosentreter Standards Award:</u> Award recognizes individuals who have contributed exemplary leadership and service toward the generation, maintenance and administration of ASABE standards activities.	2014
<u>Auburn University College Agriculture Academy of Fellows:</u> Recognize faculty and staff who have achieved the highest honor of fellow in their field.	2014
<u>Outstanding Faculty Member, Biosystems Engineering Department:</u> Annual award selected by BSEN students.	2014
<u>Auburn University College of Agriculture Project Team Award:</u> To recognize superior accomplishments through collaboration effort between faculty and staff in the college. Award is for being part of the Center for Bioenergy and Bioproducts Team.	2014
<u>Auburn University College of Agriculture Senior Faculty Research Award:</u> Annual award to recognize faculty members with accumulated high merit of scholarship and exemplary research performance over time at associate/full professor level.	2013
<u>ASABE Standard's Developer Award:</u> Award presented in recognition of outstanding service for leadership during the revision of ANSI/ASABE S593.1 - Terminology and Definitions for Biomass Production, Harvesting and Collection, Storage, Processing, Conversion and Utilization.	2012
<u>Auburn University College of Agriculture Grantsmanship Award.</u>	2012
<u>Auburn University President's Outstanding Collaborative Award:</u> For being part of a bioenergy team whose collaborative efforts resulted in unique exemplary service and academic excellence within the university and the community.	2012
<u>Winner (Faculty Category); Transatlantic Climate Bridge Network Competition.</u> Sponsored by Auburn University and German Embassy. Award is for developing education and teaching materials and for promoting renewable energy and sustainability on Auburn University campus.	2010
<u>Outstanding Reviewer Award:</u> ASABE Food and Process Engineering Division.	2010
<u>President Leadership Citation Award:</u> For leadership concerning the development of ANSI/ASABE S593 May 2006, Terminology and Definitions for Biomass Production, Harvesting and Collection, Storage, Processing, Conversion and Utilization.	2007
<u>ASABE Standard's Developer Award:</u> For leadership concerning the development of ANSI/ASABE S593 May 2006, Terminology and Definitions for Biomass Production, Harvesting and Collection, Storage, Processing, Conversion and Utilization.	2007
<u>Outstanding Faculty Member, Biosystems Engineering Department:</u> Annual award selected by BSEN students.	2004
<u>Junior Faculty Research Award:</u> College of Agriculture, Auburn University.	2004
<u>Adjunct Professor:</u> Department of Food and Nutritional Sciences, Tuskegee University, Tuskegee, AL.	2003 - 2008

<u>USDA-ARS Cash Award</u> : Superior Performance in individual and team research in the application of food process engineering to vegetable processing and fermentation.	2000 & 1999
<u>Canadian Government Commonwealth Scholar</u> : University of Saskatchewan, Saskatoon, Canada.	1990-1994
<u>Postgraduate Scholarship</u> : Obafemi Awolowo University, Ile-Ife, Nigeria.	1986-1989

### PROFESSIONAL AFFILIATIONS

- Member, American Society of Agricultural & Biological Engineers (ASABE). 1991-present.
- Professional Engineer, Association of Professional Engineer and Geoscientists of Saskatchewan, Province of Saskatchewan, Canada, 1996-present.
- Member, American Society of Engineering Education, 2019-present.
- Member, Order of Engineer (Canada: 1994-present, U.S.: 2011-present).
- Member, Institute of Food Technologist (IFT). 1996-present.
- Member, Alabama Section of ASABE. 2002-present.

### INSTRUCTION - CURRENT COURSES

BSEN 7240*	Bulk Solids Storage, Handling and Transportation
BSEN 4240*	Bulk Biological Solids Behavior and Processing
BSEN 3310*	Hydraulic Transport in Biological Systems
BATM 2110*	Digital Analytics in Agriculture and Technology

### INSTRUCTION - PREVIOUS COURSES TAUGHT AT AUBURN UNIVERSITY

BSEN 7220*	Renewable Energy Systems Design, Analysis and Applications
BSEN 5260/6260*	Renewable Energy in Biosystems Process Operations
BSEN 5550/6550	Principles of Food Processing Technology
BSEN 4310	Engineering Design (Capstone) for Biosystems (as Co-Instructor)
BSEN 4300	Professional Practice in Biosystems Engineering
BSEN 4240	Mechanical and Electrical Operations in Biosystems (sunset)
BSEN 3240*	Process Engineering in Biosystems

\*courses created/significantly modified by Fasina

### GRADUATE STUDENTS (graduated)

- Major Advisor: 1 PhD, 10 M.S.
- Committee Member: 13 PhD, 21 M.S

### UNDERGRADUATE STUDENTS RESEARCH MENTORING

- 7 NSF-REU Students (Biomass/Bioenergy REU; Nanotechnology REU)
- 4 USDA-NIFA SEEDS Fellow
- 16 Student Internships

### RESEARCH

#### Grants and Extramural Funds (total \$51.5 million)

- Funded as PI/co-PI: \$27.6
- Funded as Senior Investigator: \$23.9 million

### Research Interests and Expertise

- Biomass and Bioenergy
- Food Engineering
- Processing, Properties and Value-added Utilization of Biological Materials
- Mathematical Modeling of Bioprocess Operations
- Renewable Energy

### Book Chapters

1. Fasina, O.O. 2010. Evaporator Types. In Encyclopedia of Agricultural and Food Engineering. Heldman D.R. (ed). 2<sup>nd</sup> edition. Marcel Dekker Inc., New York, NY. 424-426.
2. Hui, Y.H. (Editor), Clary, C. (Associate Editor), Farid, M. (Associate Editor), Fasina, O.O. (Associate Editor), Noomhorm, A. (Associate Editor), and Welte-Chanes, J. (Associate Editor) 2005. Food Drying: Science and Technology. Destech Publications, Lancaster, PA. Responsible for finding authors for five chapters and for finding reviewers for these chapters.
3. Fasina, O.O. 2003. Evaporator Types. In Encyclopedia of Agricultural and Food Engineering. Heldman D.R. (ed). Marcel Dekker Inc., New York, NY. 275-277.
4. Fasina, O.O. and Tyler, R.T. 2001. Infrared Heating of Biological Materials. In: Food Process Operations Modeling: Design and Analysis. Irudayaraj, J. (ed). Chapter 7. Marcel Dekker Inc., New York, NY. 189-224.

### Recent Refereed Journal Articles (names of students and postdoctoral fellows are in asterisk, total of 107, Complete list in [Google Scholar](#))

1. Annaji, M., Mita, N., Heard, J., Kang, X., Poudel, I., Fasina, O., Baskarna, P., Boddu, S., Tiwari, A., Chen, P., and Babu, J. 2023. Preparation and characterization of 3D Printed Capsaicin-loaded injectable implant for targeted delivery in obese patients. AAPS PharmaSciTech. Accepted.
2. Poudel, I., Annaji, M., Wibowo, F., Arnold, R., Fasina, O., Via, B., Rangari, V., Peresin, M., Smith, F., Dhanasekaran, M., Tiwari, A., and Babu, J. 2022. Hispolon cyclodextrin complexes and their inclusion in liposomes for enhanced delivery in melanoma cell lines. International Journal of Molecular Sciences. International Journal of Molecular Sciences. 23:22, 144878, doi: 10.3390/ijms232214487.
3. Annaji, M., Mita, N., Rangari, S., Aldawsari, M., Saqr, A., Poudel, I., Fasina, O., and Babu, J. 2022. Enhanced topical co-delivery of acyclovir and lidocaine gel formulation across dermatomed human skin. AAPS PharmaSciTech. AAPS PharmaSciTech, 23(8): 305. doi: 10.1208/s12249-022-02458-8.
4. Oginni, O. and Fasina, O. 2022. Physical and frictional properties of loblolly pine residues. Biofuels. 13:8, 975-981.
5. Shelley\*, H., Anaji, M., Grant, M., Fasina, O. and Babu, R.J. 2022. Sustained release biodegradable microneedles of difluprednate for delivery to posterior eye. Journal of Ocular Pharmacology and Therapeutics. doi.org/10.1089/jop/2021/0089.
6. Thaper\*, R., Fulton, J., McDonald, T. and Fasina, O. 2022. Potential of fertilizer segregation during application using spinner disc spreader. Precision Agriculture 23: 83-100. doi.org/10.1007/s11119-021-09828-5.
7. Mahadevan\*, R., Adhikari, S., Shakya, R. and Fasina, O. 2021. Influence of biomass organics on the functionality of H+ZSM-5 catalyst during in-situ catalytic fast pyrolysis. Catalysts, 11, 124. doi.org/10.3390/catal11010124.
8. Thaper\* R., Fulton, J., Virk, S., McDonald, T. and Fasina, O. 2020. Effect of vane-shape on fertilizer distribution for a dual-disc spinner spreader. Applied Engng Agriculture 36: 743-751.

9. Petingco\*, M., Casada, M., Ronaldo, M., Ambrose, K., Fasina, O., and Chen. Y. 2020. Influence of particle shape and contact parameters on DEM-simulated bulk density of wheat. *Transactions of ASABE*. 63: 1657-1672.
10. Wang, P., Feng, J., Guo, L., Fasina, O., Wang, Y. 2019. Engineering *Clostridium Saccaroperbutylaceticum* for high level isopropanol-butanol-ethanol (IBE) production from acetic acid pretreated switchgrass using CRISPR-Cas9 system. *ACS Sustainable Chemistry and Engineering*. 7: 18153-18164.
11. Olatunde\*, G. and Fasina, O. 2019. Modified Ergun equation for airflow through packed bed of loblolly pine grinds. *KONA Power and Particle Journal* 36: 232-240. <https://doi.org/10.14356/kona.2019003>. **Feature article of 2019 for KONA journal.**
12. Olatunde, G. and Fasina, O. 2019. Influence of drag equations on computational fluid dynamic modeling of fluidization behavior of loblolly pine wood grinds. *Renewable Energy*. 139: 651-660.
13. Edmunds, C.W., Molina, E.R., Andre, N., Hamilton, C., Park, S., Fasina, O., Adhikari, S., Kelley, S.S., Tumuluru, J.S., Rials, T.G. and Labbe, N. 2018. Blended feedstocks for thermochemical conversion: biomass characterization and bio-oil production from switchgrass-pine residues blends. *Frontiers in Energy Research*. Volume 8, Article 79.
14. Acquah\*, G.E, Via, B.K., Billor, N., Fasina, O. and Eckhardt, L.G. 2018. High throughput screening of elite loblolly pine families for chemical and bioenergy traits with near infrared spectroscopy. *Forest* 9, 418.
15. Oginni\*, O., and Fasina, O. 2018. Theoretical estimation of silo design parameters for fractionated loblolly pine grinds – moisture content and particle size effects. *Industrial Crops and Products*. 123: 379-385.
16. Cross\*, P., Kulkarni, A., Adhikari, S., Nam, H. and Fasina, O. 2018. Fluidized bed gasification of short rotation Eucalyptus: effect of harvesting age and bark presence. *Biomass and Bioenergy* 110: 98-104.
17. Pradhan\*, U., Adhikari, S., Fasina, O., Nam, H. 2018. Effect of soil on pine (*Pinus Taeda*) biomass fast pyrolysis products. *Trans. ASABE* 61: 355-366.
18. Egbu, C.P., Simonyan, K.J. and Fasina, O. 2018. Some energy properties of non-timber forest tree shell residues for fuel. *CIGR Journal* 20: 103-108.

### **Grant Review Examples**

Auburn University Intramural Grants Program, DOE (SBIR/STTR Phases 1 & 2, DOE-TCF), NSERC (Canada), USDA-NIFA (several programs), NASA.

### **Manuscript Review Examples**

Biological Engineering. (ASABE); Biomass & Bioenergy; Bioresource Technology.; BioResources; Biosystems Engineering; Canadian Biosystems Engineering J.; Cereal Chemistry; Chemical Engng & Technology; CIGR Journal; Encyclopedia of Agric., Food & Biological Engng.; European J. Lipid Sci. & Technol.; Frontiers Energy Research – Bioenergy and Biofuels, Food Chemistry; Food Science & Technol. International; Fuel; Industrial Crops & Products; International J. Agric. Biological Engng.; International J. Food Properties; International J. Food Science & Technol.; J. Air & Waste Management; J. Anal. Appl. Pyrolysis; J. ASTM International; J. Food Engng; J. Food Process Engng.; J. Food Sci.; J. Mechanical Sci. Technol.; J. Microwave Power & Electromagnetic Energy; Lebensmittel-Wissenschaft und – Technologie (Food Science and Technology); Trans. ASABE/Applied Engng Agric.; Thermo. Acta; Waste Management, Wood Science and Technology.