Curriculum vitae

Full name: **Hossein Jahromi**
Email: hossein.jahromi@auburn.edu
Office: 215 Tom E. Corley Building, Auburn University, Auburn, AL 36849, USA

Appointments

Assistant Professor
Biosystems Engineering Department, Auburn University (10/2023-present)
Assistant Research Professor
Biosystems Engineering Department, Auburn University (5/2022-9/2023)
Post-Doctoral Fellow
Biosystems Engineering Department, Auburn University (4/2019-4/2022)

Education

PhD in Biological Engineering, Utah State University (2014-2019)
MS in Chemical Engineering, University of Kerman, Iran (2010-2013)
BS in Chemical Engineering, Shiraz University, Iran (2005-2010)

Area of expertise

Heterogeneous catalysis
Hydrotreatment and hydrodeoxygenation
Thermochemical conversion processes (pyrolysis, gasification, hydrothermal liquefaction)
Bio-lubricants and tribology
Enhanced oil recovery (EOR)
Life cycle assessment

Commercialized patents

Title: Red Mud Compositions and Methods Related Thereto.
Patent Application No. 16/376,972 (filed on April 5, 2019).
Investigators: Foster Agblevor, **Hossein Jahromi**, Shereen Hassan, Oleksandr Hietsoi

Utah State University's Technology Transfer Services office has sold the above patent to Draco Energy (Midland, TX) for **$8.5 million** plus ongoing royalties.

Patent applications

- Title: Bio-Lubricant Compositions and Methods Thereof
  Investigators: Sushil Adhikari, Hossein Jahromi
  US Patent App. No. 17/939,427 / AU IP No. 2019-055-06
  Filing date: 09/07/2022
  Auburn University

Funded projects

1) Eco-Friendly Biolubricant Production from Waste Cooking Oil Using Integrated Catalytic Processes. Hossein Jahromi (PI), Sushil Adhikari, Brendan Higgins, Robert Jackson. *USDA-NIFA*. Total award amount: $650,000. Project period: 2023-2025. Credit: 40%, effort: 17%.

2) Reimagining controlled environment agriculture in a low carbon world. Brendan Higgins (PI), Hossein Jahromi (Co-PI), et al. *USDA-NIFA*. Total award amount: $10,000,000. Project period: 2023-2027. Credit: 5%, effort: 8%.

3) TRIPARTITE: Dual-Function Engineered Biochar for excess soil phosphorus sorption with subsequent slow release for cost-effective and sustainable crop production. Sushil Adhikari (PI), Hossein Jahromi (Co-PI), et al. *USDA-NIFA (SAS)*. Total award amount: $1,000,000. Project period: 2023-2027. Credit: 20%, effort: 2%.

4) Production of compostable horticulture plant containers using biochar from downed timber. Sushil Adhikari (PI), Hossein Jahromi (Co-PI), et al. *U.S. Endowment for Forestry and Communities*. Total award amount: $500,000. Project period: 2023-2025. Credit: 5%, effort: 1.3%.

5) Use of biochar in agricultural systems. Sushil Adhikari (PI), Hossein Jahromi (Co-PI), et al. *USDA-ARS*. Total award amount: $1,806,000. Project period: 2023-2025. Credit: 35%, effort: 19%.

6) Development of gasification technology for improving syngas composition using catalytic reformer. Sushil Adhikari (PI), Hossein Jahromi (Co-PI), Tae-Sik Oh (Co-PI) and Yifen Wang (Co-PI). *SK Innovation*. Support amount: $282,000. Project period: 2023-2025. Credit: 15%, effort: 8.3%.

7) RII Track-2 FEC: Developing effective adaptation strategies to enhance the resilience of farmers under changing climate. Jasmeet Lamba (PI), Hossein Jahromi (Co-PI), et al. *NSF*. Requested funds: $5,946,374. Year: 2023. (*recommended for funding*) Credit: 10%, effort: 8%.

Selected Publications

1) R. Jokar, H. Jahromi A. Bhattarai, S. Adhikari. “Biocarbon-catalyzed methane decomposition towards clean hydrogen and enhanced biocarbon production”. International Journal of Hydrogen Energy (2024) 70, 105-117.

2) B. Biswas, S. Adhikari, H. Jahromi, A. Ammar, A Torbert, er al. “Magnesium doped biochar for simultaneous adsorption of phosphate and nitrogen ions from aqueous solution”. Chemosphere (2024) 358, 142130.

3) F. Feysbar-Khalkhali Nejad, SMT. Kouzehkanan, E. Hassani, B. Hassani, H. Jahromi, S. Adhikari, T.S Oh. “ZSM-5@ MOF-199 core-shell composite adsorbent: Rapid ambient synthesis and CO/CO2 adsorption”. Chemical Engineering Science (2024) 292, 119969.

4) T. Rahman, H. Jahromi, P. Roy, S. Adhikari, et al. “Influence of Red Mud Catalyst and Reaction Atmosphere on Hydrothermal Liquefaction of Algae”. Energies (2023) 16(1), 491.

5) P. Roy, H. Jahromi, T. Rahman, S. Adhikari, et al. “Hydrotreatment of pyrolysis bio-oil with non-edible Carinata oil and poultry fat for producing transportation fuels”. Fuel Processing Technology (2023) 245, 107753.

6) P. Roy, T. Rahman, R. Jackson, H. Jahromi, S. Adhikari. “Hydrocarbon biolubricants from hydrotreated renewable and waste derived liquid intermediates”. Journal of Cleaner Production (2023) 409, 137120.

7) H. Jahromi, T. Rahman, P. Roy, S. Adhikari. “Hydrotreatment of solvent-extracted biocrude from hydrothermal liquefaction of municipal sewage sludge”. Energy Conversion and Management, (2022), 263, 115719.

8) P. Roy, H. Jahromi, T. Rahman, S. Adhikari, F. Feyzbar, T.S. Oh.” Understanding the effects of feedstock blending and catalyst support on hydrotreatment of algae HTL biocrude with non-edible vegetable oil”. Energy Conversion and Management (2022), 268, 115998.

9) P. Roy, H. Jahromi, S. Ad.ikari, Y. Z. Finfrock, T. Rahman, Z. Ahmadi, M. Mahjouri-Samani, F. Feyzbar, T. S. Oh, “Performance of biochar assisted catalysts during hydroprocessing of non-edible vegetable oil: Effect of transition metal source on catalytic activity”. Energy Conversion and Management. (2022), 252, 115131.

10) P. Wang, S. Tyndall, T. Rahman, P. Roy, H. Jahromi, S. Adhikari, M. Boersma. "Sorption and recovery of phenolic compounds from aqueous phase from sewage sludge hydrothermal liquefaction using bio-char". Chemosphere, (2022), 287, 131934.

8) H. Jahromi, S. Adhikari, P. Roy, M. Shelley, E. Hassani, T.S. Oh, Y. Karki. "Synthesis of Novel Biolubricants from Waste Cooking Oil and Cyclic Oxygenates through an Integrated Catalytic Process". ACS Sustainable Chemistry and Engineering, (2021), 9, 40, 13424.

11) H. Jahromi, S. Adhikari, P. Roy, E. Hassani, C. Pope, T.S. Oh, Y. Karki. "Production of green transportation fuels from Brassica carinata oil: A comparative study of noble and transition metal catalysts". Fuel Processing Technology, (2021), 251, 106737.

12) T. Rahman, H. Jahromi, P. Roy, S. Adhikari, E. Hassani, T.S. Oh. "Hydrothermal liquefaction of municipal sewage sludge: Effect of red mud catalyst in ethylene and inert ambiences". Energy Conversion and Management, (2021), 245, 114615.

13) R. Jahromi, M. Rezaei, S.H. Samadi, H. Jahromi. "Biomass gasification in a downdraft fixed-bed gasifier: Optimization of operating conditions". Chemical Engineering Science, (2021), 231, 116249.

14) K. Harun, S. Adhikari, H. Jahromi. "Hydrogen production via thermocatalytic decomposition of methane using carbon-based catalysts". Royal Society of Chemistry, (2020), 10, 40882.

15) V. Patil, S. Adhikari, P. Cross, H. Jahromi. "Progress in the solvent depolymerization of lignin". Renewable and Sustainable Energy Reviews, (2020), 133, 110359.

16) H. Jahromi, F. A. Agblevor. "Hydrodeoxygenation of pinyon-juniper catalytic pyrolysis oil using red mud-supported nickel catalysts". Applied Catalysis B: Environmental, (2018), 236, 1-12.

17) H. Jahromi, F. A. Agblevor. "Hydrodeoxygenation of guaiacol: A comparative study of red mud-supported nickel and commercial Ni/SiO_2-Al_2O_3 catalysts". Applied Catalysis A: General, (2018), 558, 109-121.

18) H. Jahromi, F. A. Agblevor. "Hydrodeoxygenation of aqueous phase catalytic pyrolysis oil to liquid hydrocarbons using multi-functional nickel catalyst". Industrial & Engineering Chemistry Research, (2018), 57, 13257-13268.

19) F. A. Agblevor, H. Jahromi. "Aqueous phase synthesis of hydrocarbons from furfural reactions with low molecular weight biomass oxygenates". Energy & Fuels, (2018), 32, 8552.

20) F. A. Agblevor, H. Jahromi. "Aqueous phase synthesis of hydrocarbons from reactions of guaiacol and low molecular weight oxygenates". ChemCatChem, (2018), 10, 5201.

Conference presentations

1) Delivered invited talks and served in professional development panels – The International Conference on Energy and Environment (ICEE) (July 15-19 2024), Lexington, Kentucky –Organized by the University of Kentucky College of Engineering Institute for Decarbonization and Energy Advancement (UK COE IDEA), Southeast University, Zhejiang University, China University of Mining and Technology, and Jiangsu Energy Research Society.

2) V. Usha, H. Jahromi, S. Adhikari. Application of Mg-doped biochar for optimal nutrient capture from farmhouse wastewater. Tri-Society (ASA, CSSA, SSSA) International Annual Meeting, San Antonio, Texas. Oral presentation. 2024.

3) P. Adhikari, N. Kasera, H. Jahromi, S. Adhikari. Biochar modification for enhancing adsorption sites to accelerate nutrition retention rate and slow release of nutrients. Tri-Society (ASA, CSSA, SSSA) International Annual Meeting, San Antonio, Texas. Oral presentation. 2024.

4) H. Jahromi, R. Jokar, A. Manandhar, S. Adhikari, P. Nepal, R. Bergman, N. Rajendiran, A. Shah.

Biochar-Catalyzed Methane Decomposition Towards Green Hydrogen Production: Role of Biochar Properties and Its Environmental Impacts. The American Institute of Chemical Engineers (AIChE) annual conference. Poster presentation. 2024.

5) R. Jokar, H. Jahromi, A. Manandhar, S. Adhikari, P. Nepal, R. Bergman, N. Rajendiran, A. Shah. Sustainable hydrogen production: Assessing the environmetnal impact of methane decomposition using biochar catalysts. R. Jokar, H. Jahromi, A. Manandhar, S. Adhikari, P. Nepal, R. Bergman, N. Rajendiran, A. Shah. American Society of Agriculture and Biosystems Engineers (ASABE) annual conference. Anaheim, California. Oral presentation. 2024.
6) N. Fatima, H. Jahromi, S. Adhikari. A comparative investigation of bio-lubricants synthesized via (trans)esterification, epoxidation, and Friedel-Crafts reaction using cooking oil and oleic acid as feedstocks. American Society of Agriculture and Biosystems Engineers (ASABE) annual conference. Anaheim, California. Oral presentation. 2024.
7) V. Usha, H. Jahromi, D. Hartman, B. Biswas. S. Adhikari. Evaluation of loblolly pine wood biochar properties derived from slow-pyrolysis process for the synergetic benefit of carbon sequestration and soil conditioning. American Society of Agriculture and Biosystems Engineers (ASABE) annual conference. Anaheim, California. Oral presentation. 2024.
8) B. Dhungana, B. Biswas, M. Sakhakarmy, H. Jahromi, Sushil Adhikari. Hydrothermal liquefaction to of tomato waste residue: effect of reaction temperature solvents and catalysts on product yield and bio-oil characterization. American Society of Agricultural and Biological Engineers (ASABE), Anaheim, California. Oral presentation. 2024.
9) V. Usha, H. Jahromi, S. Adhikari. Quantifying phosphorous adsorption mechanism of magnesium-doped biochar for slow-release phosphorous fertilizer. Alabama Water Resource Conference. Oral Presentation. 2024.
10) P. Adhikari, N. Kasera, H. Jahromi, S. Adhikari. Engineered biochar to improve nitrogen use efficiency and decrease nitrous oxide emissions from the agriculture sector. Alabama Water Resources Conference. Oral presentation. 2024.
11) N. Kasera, S. Adhikari, H. Jahromi. Calcium-modified biochar for efficient removal of aqueous phosphate ions. Alabama Water Resource Conference. Oral presentation. 2024.
12) H. Jahromi. S. Adhikari. Ecofriendly biolubricant production from waste cooking oil and lignocellulosic biomass-derived oxygenates. American Institute of Chemical Engineers (AIChE) annual conference. Orlando, Florida. Oral presentation. 2023.
13) H. Jahromi, R. Jokar, S. Adhikari, A. Bhattarai. Catalytic methane decomposition (CMD) using biochar for hydrogen and high-value carbon production. American Society of Agriculture and Biosystems Engineers (ASABE) annual conference. Omaha, Nebraska. Oral presentation. 2023.
14) F. Agblevor. H. Jahromi. Facile conversion of aqueous phase biomass catalytic pyrolysis liquids into hydrocarbons as a wastewater treatment solution. American Institute of Chemical Engineers (AIChE) annual conference. Orlando, Florida. Oral presentation. 2023.
15) S. Adhikari, P. Roy, H. Jahromi. Hydrotreatment of pyrolysis bio-oil and poultry fat blends for the production of transportation fuels. European Biomass conference EUBCE, Italy. 2023.

LinkedIn

https://www.linkedin.com/in/hossein-jahromi-091a4b98/

Google scholar

https://scholar.google.com/citations?user=x1XgFIUAAAAJ&hl=en

Membership

- American Institute of Chemical Engineers (AIChE) – 2018-present
- American Society of Agricultural and Biological Engineers (ASABE) – 2020-present.
- Member of the Reviewer Board, journal of Processes – 2019-present.

Peer review service

Reviewed more than 100 manuscripts for high-profile journals for well-known publishers:
- Elsevier: Applied Catalysis (A&B), Energy Conversion and Management, Journal of Hazardous Material, Fuel Processing Technology, Bioresource Technology Reports, Journal of Analytical & Applied Pyrolysis, International Journal of chemical Reactor Engineering
- American Chemical Society (ACS): Energy & Fuels, Industrial & Engineering Chemistry Research, Sustainable Chemistry and Engineering
- MDPI: Catalysts, Sustainability, Energies, Resources, Applied Sciences, Materials

Awards

1) Outstanding Biosystems Engineering Faculty Award- 2024.

Courses taught

1) BSEN 5540/6540 – Biomass and Biofuel Engineering – Auburn University
2) BSEN 5260/6260 – Renewable Energy in Biosystems Process Operations- Auburn University
3) FABENG 5540 – Biomass Conversion to Bioenergy – Ohio State University (Guest lectures)

Graduate/undergraduate student mentorship

As major advisor

1) Hanieh Najafi (PhD) (Since 2025), Auburn University
2) Raziyeh Jokar (PhD) (Since 2023), Auburn University
3) Vivian Chimezie Usha (PhD) (Since 2023), Auburn University
4) Noor Fatima (PhD) (Since 2023), Auburn University

As PhD committee member

1) Ashish Bhattarai (PhD, graduated), Auburn University
2) Manish Sakhakarmi (PhD, graduated), Auburn University
3) Farshad Feyzbar, (PhD, graduated), Auburn University
4) Alireza Fallahi (MS, graduated), Auburn University
5) Rachel Day (PhD) (Since 2023), Auburn University
6) Navid Farahmandfar (PhD) (Since 2023), Auburn University

As post-doc mentor

1) Poulami Roy (PhD) (2019-2022), Auburn University
2) Tawsif Rahman (PhD) (2019-2022), Auburn University
3) Vivek Patil (PhD) (2019-2021), Auburn University
4) Temitope Soneye (MS) (2019-2020), Auburn University
6) Madison Shelley (BS) (2019-2021), Auburn University
7) Camille Colter (BS) (Spring 2021), Auburn University
8) Ayden Kemp (BS) (2021-present), Auburn University
9) Sarah Tyndall (BS) (2019-2020), Auburn University
10) Blake Startton (BS) (2020-2021), Auburn University
11) Ethan Woods (BS) (2020-2021), Auburn University

As graduate RA mentor

1) Garret Smiths (BS), (2015-2017), Utah State University

2) Autumn Slade (BS), (2016-2018), Utah State University

3) Kyle Christian (BS), (2015-2017), Utah State University

4) Brandon Sargent (BS), (2016-2018), Utah State University

Service

University-level services

1) Faculty Advisor- Iranian Students Association (IRSA), Auburn University, (Since 2022).

1) Judged Three-minute Thesis Competition, Auburn University. 2024.

2) Judged Three-minute Thesis Competition, Auburn University. 2023.

College- level service

1) Participated in organizing the E-Day from 2019-2024, Auburn University.

2) Judged Student Research Presentations multiple times (2019-2024) at the: (a) Graduate Engineering Research Showcase, (b) College of Agriculture Graduate Student Poster Showcase, and (c) Undergraduate Student Poster Presentations in College of Agriculture and College of Engineering.

Department-level service

1) Served as a panelist in a professional development workshop for post-docs and early career professionals at Auburn University (Event date: April 30th 2024). Organizer: Dr. Meena Raju.

2) Served in the search committee for Assistant Research Professor- Biocarbon.

3) Member of Graduate Admission Committee since May 2023.

4) Represented BSEN Department at CI2E + NSBE Faculty Engagement Night – 2023 and 2025.