Minliang Yang, Ph.D.

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Current office address: 339F Schaub Hall, 400 Dan Allen Dr., Raleigh, NC 27606

PROFESSIONAL EXPERIENCE

Assistant Professor, Food Sustainability Jan 2023 - Current

Department of Food, Bioprocessing and Nutrition Sciences, North Carolina State University, NC, USA

Affiliate Mar 2023 - Current

Lawrence Berkeley National Laboratory, CA, USA

Postdoctoral Scholar Jul 2018 – Jan 2023

- Lawrence Berkeley National Laboratory

Biological Systems and Engineering Division / Energy Analysis and Environmental Impacts Division

- Joint BioEnergy Institute (JBEI)

Life cycle, Economics, and Agronomy Division (LEAD)

RESEARCH INTERESTS

- Sustainability analysis of global food system and bioprocessing
- Technoeconomic analysis (TEA) of renewable fuel and bioproducts
- Life-cycle assessment (LCA) of biofuel, bioproducts, and bioprocesses

EDUCATION

Ph.D. in Agricultural and Biosystems Engineering

Iowa State University, Ames, IA, USA Aug 2018

M.S. in Agricultural and Biosystems Engineering

Minor in Statistics

Iowa State University, Ames, IA, USA Dec 2014

B.S. in Food Science and Technology / Grain Engineering

Henan University of Technology, Zhengzhou, Henan Province, China Jul 2012

PUBLICATIONS

Google scholar: https://scholar.google.com/citations?hl=en&user=356YvYgAAAAJ&view_op=list_works

1. **Yang, M.**, Liu, D., Baral, N., Lin, C., Gladden, Simmons, B. A., J., Eudes, A., Scown, C. D. 2022. Comparing *in planta* accumulation with microbial routes to set targets for a cost-competitive bioeconomy. *Proc. Natl. Acad. Sci. U. S. A.* 119 (30), 1-10. DOI: 10.1073/pnas.2122309119

2. **Yang, M.,** Baral, N., Simmons, B. A., Mortimer, J. C., Shih, P. M., Scown, C. D. 2020. Accumulation of high-value bioproducts *in planta* can improve the economics of advanced biofuels. *Proc. Natl. Acad. Sci. U. S. A.* 117(14), 8639-8648. DOI:10.1073/pnas.2000053117
3. Wang, Y., Baral, N., **Yang, M.,** Scown, C. D. 2023. Co-processing agricultural residues and wet organic waste can produce lower-cost carbon-negative fuels and bioplastics. *Environ. Sci. Technol.* 57, 7, 2958-2969. DOI: 10.1021/acs.est.2c06674
4. Huntington, T., Baral, N., **Yang, M.,** Sundstrom, E., Scown, C.D. 2023. Machine learning for surrogate process models of bioproduction pathways. *Bioresour. Technol.* 370, 128528. DOI: 10.1016/j.biortech.2022.128528
5. Liu, P., **Yang, M.,*** Hermanowicz, S. W., Huang, Y*. 2022. Efficacy associated cost analysis on copper-based nanopesticides for tomato disease control. *ACS Agric. Sci. Technol.* 2(4), 796-804. DOI: 10.1021/acsagscitech.2c00098
   *co-corresponding author
6. Achinivu, E. C., Cabrera, M., Umar, A., **Yang, M.,** Baral, N., Scown, C. D., Simmons, B. A., Gladden, J. 2022. In situ synthesis of protic ionic liquid for biomass pretreatment. *ACS Sustainable Chemistry and Engineering.* 10(37), 12090-12098. DOI: 10.1021/acssuschemeng.2c01211
7. Tian, Y., **Yang, M.,** Lin, C-Y., Park, J-H., Wu, C-Y., Kakumanu, R., De Ben, C. M., Dalton, J., V, K. M., Shih, P.M., Baidoo, E. E. K., Temple, S., Putnam, D. H., Scheller, H. V., Scown, C. D., Eudes, A. 2022. Expression of dehydroshikimate dehydratase in sorghum improves biomass yields, accumulation of protocatechuate, and biorefinery economics. *ACS Sustain. Chem. Eng.* DOI: 10.1021/acssuschemeng.2c01160
8. **Yang, M.**, Dahlberg, J., Baral, N., Daniel, P., Scown, C. D., 2021. Identifying forage sorghum ideotype used in biorefineries from techno-economic perspective. *ACS Sustain. Chem. Eng.* 9(23), 7873-7881. DOI: 10.1021/acssuschemeng.1c01706
9. **Yang, M.**, Rosentrater, K. A. 2021. Cradle to gate life cycle assessment of structural bio-adh esives derived from glycerol. *Int. J. Life Cycle Assess.* DOI: 10.1007/s11367-020-01733-9
10. Scown, C. D., Baral, N., **Yang, M.**, Nova, N., Huntington, T. 2021. Technoeconomic analysi s of biofuels and bioproducts. *Curr. Opin. Biotechnol.* 67, 58-64. DOI: 10.1016/j.copbio.202 1.01.002
11. Baral, N., **Yang, M.**, Harvey, B. G., Simmons, B. A., Mukhopadhyay, A., Lee, T. S., Scown, C. D. 2021. Production cost and carbon footprint of biomass-derived dimethylcyclooctane as a high performance jet fuel blendstock. *ACS Sustain. Chem. Eng.* DOI: 10.1021/acssuscheme ng.1c03772
12. **Yang, M.**, Baral, N., Anastasopoulou, A., Breunig, H. M., Scown, C. D. 2020. Cost and life-c ycle greenhouse gas implications of integrating biogas upgrading and carbon capture technol ogies in cellulosic biorefineries. *Environ. Sci. Technol.* 54(50), 12180-12819. DOI: 10.1021/a cs.est.0c02816
13. **Yang, M.**, Rosentrater, K. A., 2020. Economic feasibility analysis of traditional formaldehyd e-based adhesives. *SN Appl. Sci.* 2(7), 1309. DOI: 10.1007/s42452-020-3108-2

14. **Yang, M.**, Rosentrater, K. A. 2020. Life cycle assessment of urea-formaldehyde adhesives an d phenol-formaldehyde adhesives. *Environ. Process*. 7(2), 553-561. DOI:10.1007/s40710-02 0-00432-9
15. **Yang, M.,** Rosentrater, K. A. 2019. Life cycle assessment and techno-economic analysis of pressure sensitive bio-adhesive production. *Energies* 12(23), 4502. DOI: 10.3390/en12234502
16. **Yang, M.,** Rosentrater, K. A. 2019. Techno-economic analysis of the production process of structural bio-adhesive derived from glycerol. *J. Clean. Prod.* 228(10), 388-398. DOI: 10.1016/j.jclepro.2019.04.288
17. **Yang, M.,** Zhang, W., Rosentrater, K. A. 2017. Anhydrous ammonia pretreatment of corn stover and enzymatic hydrolysis of glucan from pretreated corn stover. *Fermentation*, 3(1), 9. DOI: 10.3390/fermentation3010009
18. **Yang, M.**, Rosentrater, K. A. 2017. Small scale low-moisture anhydrous ammonia (LMAA) pretreatment of corn stover. *Biomass Bioenergy* 97, 38-42. DOI: 10.1016/j.biombioe.2016.12.013
19. Cheng, M., **Yang, M.**, Wang, Y. 2016. American's energy future: an analysis of the proposed energy policy plans in presidential election. *Energies* 9(12),1000. DOI: 10.3390/en9121000
20. **Yang, M.**, Rosentrater, K. A. 2016. Comparison of sealing and open conditions for long term storage of corn stover using low-moisture anhydrous ammonia (LMAA) pretreatment method. *Ind. Crops Prod.* 91, 377-381. DOI: 10.1016/j.indcrop.2016.07.028
21. **Yang, M.**, Rosentrater, K. A. 2015. Techno-economic analysis (TEA) of low-moisture anhydrous ammonia (LMAA) pretreatment method for corn stover. *Ind. Crops Prod.* 76, 55-61. DOI: 10.1016/j.indcrop.2015.06.023

MEDIA COVERAGE

Full list available upon request.

1. 'Making biofuels cheaper by putting plants to work', Renewable Energy Magazine, 2020. https://www.renewableenergymagazine.com/biofuels/making-biofuels-cheaper-by-putting-plants-to-20200407
2. 'Berkeley lab researchers quantify how accumulation of high-value bioproducts in plants improv es economics of biofuels', Green Car Congress, 2020. https://www.greencarcongress.com/2020/04/20200407-lbl.html
3. 'Researchers describe how biofuels can reach cost parity of petroleum fuels', Phys.org, 2020. https://phys.org/news/2020-04-biofuels-parity-petroleum-fuels.html
4. 'Researchers assess the environmental impact of bio-based adhesives', BioMarket Insights, 2020. https://biomarketinsights.com/researchers-assess-the-environmental-impact-of-bio-based-adhesives/
5. 'UC researchers discover amount of biofuel needed to match price with gasoline', The Daily Californian, 2020. https://www.dailycal.org/2020/04/09/uc-researchers-discover-amount-of-biofuel-needed-to-match-price-with-gasoline/

6. ‘Harnessing the power of plants for cheaper production of biofuels’, AZO CLEANTECH, 2020. https://www.azocleantech.com/news.aspx?newsID=27153
7. ‘Are copper-based nanopesticides for tomato crops worth it?’ AZO NANO, 2022 https://www.azonano.com/news.aspx?newsID=39448

INVITED TALK & CONFERENCE PRESENTATIONS

Invited Talk

University of Idaho Nov 2022

- Life-cycle assessment and technoeconomic analysis of sustainable fuels and products

44th *Symposium on Biomaterials, Fuels and Chemicals*, New Orleans, LA May 2022

- Engineering bioenergy crops session: Comparing *in planta* accumulation with microbial routes to set targets for a cost-competitive bioeconomy

University of California, Berkeley, CA Feb 2021

- Separation Design and Economics of Bioprocess

Lawrence Livermore National Laboratory, Livermore, CA Nov 2020

- System Analysis Working Group: Life-cycle assessment and technoeconomic analysis of cellulosic biorefineries

Oral Presentations

Yang, M., Baral, N., Simmons, B. A., Mortimer, J. C., Shih, P. M., Scown, C. D. 2020. Accumulation of high-value bioproducts *in planta* can improve the economics of advanced biofuels. 42nd *Symposium on Biomaterials, Fuels & Chemicals. New Orleans, LA, USA.* (Canceled due to COVID)

Baral, N. R., **Yang, M.,** Scown, C. D. 2019. Lifecycle assessment of biologically derived medium-chain methyl ketones as a diesel blendstock. (Presenter) *LCA XIX, Tucson, AZ, USA.*

Yang, M., Rosentrater, K. A. 2017. Techno-economic analysis (TEA) and life cycle assessment (LCA) of bio-adhesives derived from glycerol. *AAIC 29th Annual Meeting, Ames, IA, USA.*

Yang, M., Rosentrater, K. A. 2017. Cradle to gate life cycle assessment of glycerol-based structural bio-adhesives. 2017 *ASABE annual meeting, Spokane, WA, USA.*

Yang, M., Rosentrater, K. A. 2017. Techno-Economic Analysis of glycerol-based structural bio-adhesives. 2017 ASABE *annual meeting, Spokane, WA, USA.*

Yang, M., Rosentrater, K. A. 2015. Comparison of sealing and open conditions for long term storage of corn stover using low-moisture anhydrous ammonia pretreatment method. 2015 *ASABE annual meeting, New Orleans, LA, USA.*

Yang, M., Rosentrater, K. A. 2014. Techno-economic analysis (TEA) of low-moisture anhydrous ammonia (LMAA) pretreatment method for corn stover. 2014 *ASABE annual meeting, Quebec, Canada.*

Yang, M., Rosentrater, K. A. 2014. Optimization of low-moisture anhydrous ammonia (LMAA) pretreatment of corn stover. 2014 *ASABE annual meeting, Quebec, Canada.*

Zhang, W., **Yang, M.**, Rosentrater, K. A. 2013. Literature review: pretreatment methods of lignocellulosic biomass to ethanol. (Presenter) 2013 *ASABE annual meeting, Kansas City, MO, USA.*

Poster Presentations

Yang, M., Liu, D., Baral, N., Lin, C., Gladden, Simmons, B. A., J., Eudes, A., Scown, C. D. 2022. Comparing *in planta* and microbial production of bioproducts. *2022 DOE Genomic Sciences Program (GSP) Annual Principal Investigator (PI) meeting.*

Yang, M., Anastasopoulou, A., Baral, N., Breunig, H. M., Scown, C. D. 2020. Carbon footprint and economics of integrating biogas upgrading process and carbon capture technologies in cellulosic biorefineries. *2020 Genomic Sciences Program (GSP) Annual Principal Investigator (PI) meeting. Washington, DC, USA.*

Yang, M., Baral, N., Scown, C. D. 2019. Techno-economic analysis of different forage sorghum varieties in bioethanol production. *AlCHE Bioenergy Sustainability Conference, Nashville, TX, USA.*

Yang, M., Rosentrater, K. A. 2016. Cradle to gate life cycle assessment of traditional adhesives used in wood sheet production. 2016 *ASABE annual meeting, Orlando, FL, USA.*

Yang, M., Rosentrater, K. A. 2016. Techno-Economic Analysis of traditional adhesives used in wood sheet production. 2016 ASABE *annual meeting, Orlando, FL, USA.*

Yang, M., Rosentrater, K. A. 2015. Environmental effects and economic analysis of adhesives: a review of life cycle assessment (LCA) and techno-economic analysis (TEA). 2015 *ASABE annual meeting, New Orleans, LA, USA.*

TEACHING EXPERIENCE

Teaching Assistant, AE 480/580 Engineering Analysis of Biological Systems 2017

Department of Agricultural and Biosystems Engineering, Iowa State University

- Graded course assignments and quizzes to ensure students stayed on track
- Held office hours to assist students with assignments and projects
- Prepared lectures and class activities focusing on life-cycle assessment for senior undergraduates and graduate students
- Guided students with the LCA software, such as EIO-LCA, Sustainable Minds and GREET

HONORS AND AWARDS

- Outstanding Publication Award, Joint BioEnergy Institute (2022)
- Recognition of Excellence Award, Joint BioEnergy Institute (2022)
- Outstanding service award, Association of Overseas Chinese Agricultural & Food Engineers (2019)
- Graduate leadership award, Association of Overseas Chinese Agricultural & Food Engineers (2018)

- Outstanding service award, Association of Overseas Chinese Agricultural & Food Engineers (2017)
- Graduate leadership and service award, Association of Overseas Chinese Agricultural & Food Engineers (2015)
- The Honor Society of Agriculture, Gamma Sigma Delta (2015)
- 2nd place in Creativity Competition sponsored by Novozymes Investment Company (2011)
- Distinguished team of the 3rd Google Cup Chinese Students' Creativity Competition (2010)
- University scholarship in 2010 & 2011
- Excellent volunteer teacher in Baibang Village, Guizhou Province, China (2009)

PEER REVIEW ACTIVITIES

ACS Sustainable Chemistry and Engineering; Agronomy; Biotechnology for Biofuels; Buildings; Data; Energies; Environmental Research Letter; Environmental Science & Technology; Frontiers in Energy Research Bioenergy and Biofuels; GCB Bioenergy; Green Chemistry; Journal of Cleaner Production; *Journal of Environmental Management; Journal of Marine Science and Engineering; Nature Communication; Processes; Resource, Conservation and Recycling; Sustainability; Sustainable Energy & Fuels; Toxics*

PROFESSIONAL AFFILIATIONS

American Society of Agricultural and Biological Engineers (ASABE)
International Food Technology (IFT)

LEADERSHIP EXPERIENCE

Mentor

Biotech Partners 2021 high school bioinformatics/research summer internship 2021
- Project: Introduction of bioseparation process

Master student from ETH Zürich, Switzerland 2021 – 2022
- Project: County level estimation of fat, oil, and grease potential in the US

Ph.D. candidate from Tsinghua University, China 2021 – 2022
- Projects: Sustainability analysis of copper-based nanopesticides in tomato production

Events subcommittee 2022
Early career employees resource group, Berkeley lab

Associate Editor 2014 – 2019
Association of Overseas Chinese Agricultural, Biological and Food Engineers IMPACT newsletter

Treasure 2016 – 2017
Agricultural and Biosystems Engineering Graduate Organization (ABEGO), Iowa State University

Secretary 2015 – 2016
Agricultural and Biosystems Engineering Graduate Organization, Iowa State University

TECHNICAL SKILLS

- Statistical: SAS, R
- Programming: Python, Java
- Selected modeling software: SuperPro Designer, GaBi, openLCA, GREET
- Others: QGIS, SQL, AutoCAD, HPLC, UV/Vis spectrophotometer