

## JEAN-PHILIPPE TESSONNIER

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### EDUCATION

Ph.D., Chemistry - Catalysis, University of Strasbourg, France, 2005

Thesis: *Methane Dehydro-Aromatization Over Mo/ZSM-5-Based Catalysts*

M.S., Analytical Chemistry - Materials Chemistry, University of Strasbourg, France, 2001

Licence (B.S.), Chemistry, University of Strasbourg, France, 1999

### PROFESSIONAL EXPERIENCE

<b>Professor</b> Richard C. Seagrave Professor of Chemical and Biological Engineering Department of Chemical and Biological Engineering, Iowa State University	2023 – present
<b>Associate Professor</b> Richard C. Seagrave Professor of Chemical and Biological Engineering Department of Chemical and Biological Engineering, Iowa State University	2018 – 2023
<b>Assistant Professor</b> Carol and Jack Johnson Faculty Fellow Department of Chemical and Biological Engineering, Iowa State University	2012 – 2018
<b>Affiliated Member</b> Center for Biorenewable Chemicals (CBiRC) Office of Biotechnology, Iowa State University U.S. Department of Energy Ames National Laboratory	2012 – present
<b>Visiting Researcher</b> Department of Chemical and Biomolecular Engineering, University of Delaware Mentor: Prof. Mark Barteau	2011 – 2012
<b>Project Leader</b> Fritz Haber Institute of the Max Planck Society, Berlin, Germany	2008 – 2010
<b>Postdoctoral Fellow</b> Fritz Haber Institute of the Max Planck Society, Berlin, Germany Mentor: Prof. Robert Schlögl	2005 – 2007

### OVERVIEW OF RESEARCH AND EDUCATIONAL IMPACT

- Published **93** peer-reviewed articles with > 7000 citations; current **h-index of 49** (Google Scholar)
- **90% of the 20 most recent articles** appeared in journals with an **impact factor > 9**
- Co-inventor on 20 invention disclosures (**8 granted patents, 6 pending, 3 exclusive licenses**)

- Secured **\$11,313,489** of new funding (PI responsible for \$6,095,782 of competitive research funds)
- Ranked **15 times in the top 3** of the department's **best instructors** based on student evaluations (70% of the chemical engineering courses I have taught at Iowa State University)

## PUBLICATIONS

### Journal Covers by Our Research Group



### Peer-Reviewed Publications

\* Publication in a journal with an impact factor > 9

- 93.\* Vincent Sahayaraj, D.; A, L.; Kohler, A. J.; Bateni, H.; Radhakrishnan, H.; Saraeian, A.; Shanks, B. H.; Bai, X.; Tessonier, J.-P.; An Effective Strategy to Produce Highly Amenable Cellulose and Enhance Lignin Upgrading to Aromatic and Olefinic Hydrocarbons, *Energy & Environmental Science* **2023**, *16*, 97-112. <http://dx.doi.org/10.1039/D2EE02304K>

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92. Bateni, H.; Prabhu, P. T.; Gebur, H. E.; Tessonier, J.-P.; Bottom-Up Synthesis Strategies Enabling the Investigation of Metal Catalyst-Carbon Support Interactions, *C* **2022**, *8*, 37. <http://dx.doi.org/10.3390/c8030037>

- 91.\* Rao, R. G.; Blume, R.; Greiner, M. T.; Liu, P.; Hansen, T. W.; Dreyer, K. S.; Hibbitts, D. D.; Tessonier, J.-P.; Oxygen-Doped Carbon Supports Modulate the Hydrogenation Activity of Palladium Nanoparticles through Electronic Metal-Support Interactions, *ACS Catal.* **2022**, *12*, 7344-7356. <http://dx.doi.org/10.1021/acscatal.2c01063>

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- 90.\* Saraeian, A.; Gupta, G.; Johnson, R.; Dorn, R. W.; Kauffmann, A. M.; Bateni, H.; Tessonier, J.-P.; Roling, L. T.; Rossini, A. J.; Shanks, B. H.; Hydrogenation/Hydrodeoxygenation Selectivity Modulation by Cometal Addition to Palladium on Carbon-Coated Supports, *ACS Sustainable Chem. Eng.* **2022**, *20*, 7759-7771. <http://dx.doi.org/10.1021/acssuschemeng.2c02399>

- 89.\* Carter, P.; Trettin, J. L.; Lee, T.-H.; Chalgren, N. L.; Forrester, M. J.; Shanks, B. H.; Tessonier, J.-P.; Cochran, E. W.; Bioenabled Platform to Access Polyamides with Built-In Target Properties, *J. Am. Chem. Soc.* **2022**, *144*, 9548-9553. <http://dx.doi.org/10.1021/jacs.2c01397>

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- 88.\* A, L.; Radhakrishnan, H.; Vincent Sahayaraj, D.; Tessonier, J.-P.; Hu, H.; Bai, X.; One-Pot Production of Oxygenated Monomers and Selectively Oxidized Lignin from Biomass Based on Plasma Electrolysis, *Green Chem.* **2021**, *23*, 9109-9125. <http://dx.doi.org/10.1039/D1GC03315H>

- 87.\* Vincent Sahayaraj, D.; A, L.; Mitchell, E. M.; Bai, X.; Tessonnier, J.-P.; Comparative Study of the Solvolytic Deconstruction of Corn Stover Lignin in Batch and Flow-Through Reactors, *Green Chem.* **2021**, *23*, 7731-7742. <http://dx.doi.org/10.1039/D1GC02420E>
86. Abdolmohammadi, S.; Gansebom, D.; Goyal, S.; Lee, T.-H.; Kuehl, B.; Forrester, M. J.; Lin, F.-Y.; Hernández, N.; Shanks, B. H.; Tessonnier, J.-P.; Cochran, E. W.; Analysis of the Amorphous and Interphase Influence of Comonomer Loading on Polymer Properties toward Forwarding Bioadvantaged Copolyamides, *Macromolecules* **2021**, *54*, 7910-7924. <http://dx.doi.org/10.1021/acs.macromol.1c00651>
- 85.\* Dell'Anna, M. N.; Laureano, M.; Bateni, H.; Matthiesen, J. E.; Zaza, L.; Zembrzuski, M. P.; Paskach, T. J.; Tessonnier, J.-P.; Electrochemical Hydrogenation of Bioprivileged *cis,cis*-Muconic Acid to *trans*-3-Hexenedioic Acid: From Lab Synthesis to Bench-Scale Production and Beyond, *Green Chem.* **2021**, *23*, 6456-6468. <http://dx.doi.org/10.1039/d1gc02225c>
- 84.\* Wirtanen, T.; Prenzel, T.; Tessonnier, J.-P.; Waldvogel, S. R.; Cathodic Corrosion of Metal Electrodes—How to Prevent It in Electroorganic Synthesis, *Chem. Rev.* **2021**, *121*, 10241-10270. <http://dx.doi.org/10.1021/acs.chemrev.1c00148>  
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- 83.\* Huo, J.; Tessonnier, J.-P.; Shanks, B. H.; Improving Hydrothermal Stability of Supported Metal Catalysts for Biomass Conversions: A Review, *ACS Catal.* **2021**, *11*, 5248-5270. <http://dx.doi.org/10.1021/acscatal.1c00197>
- 82.\* Petersen, E. M.; Rao, R. G.; Vance, B. C.; Tessonnier, J.-P.; SiO<sub>2</sub>/SiC Supports with Tailored Thermal Conductivity to Reveal the Effect of Surface Temperature on Ru-Catalyzed CO<sub>2</sub> Methanation, *Appl. Catal. B* **2021**, *286*, 119904. <http://dx.doi.org/10.1016/j.apcatb.2021.119904>
- 81.\* Carraher, J. M.; Carter, P.; Rao, R. G.; Forrester, M. J.; Pfennig, T.; Shanks, B. H.; Cochran, E. W.; Tessonnier, J.-P.; Solvent-Driven Isomerization of *cis,cis*-Muconic Acid for the Production of Specialty and Performance-Advantaged Cyclic Biobased Monomers, *Green Chem.* **2020**, *22*, 6444-6454. <http://dx.doi.org/10.1039/d0gc02108c>
- 80.\* Chen, S. S.; Cao, Y.; Tsang, D. C. W.; Tessonnier, J.-P.; Shang, J.; Hou, D.; Shen, Z.; Zhang, S.; Ok, Y. S.; Wu, K. C. W.; Effective Dispersion of MgO Nanostructure on Biochar Support as a Basic Catalyst for Glucose Isomerization, *ACS Sustainable Chem. Eng.* **2020**, *8*, 6990-7001. <http://dx.doi.org/10.1021/acssuschemeng.0c00278>  
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- 79.\* Chen, S. S.; Tsang, D. C. W.; Tessonnier, J.-P.; Comparative Investigation of Homogeneous and Heterogeneous Brønsted Base Catalysts for the Isomerization of Glucose to Fructose in Aqueous Media, *Appl. Catal. B* **2020**, *261*, 118126. <http://dx.doi.org/10.1016/j.apcatb.2019.118126>
- 78.\* Chen, S. S.; Carraher, J. M.; Tuci, G.; Rossin, A.; Raman, C. A.; Luconi, L.; Tsang, D. C. W.; Giambastiani, G.; Tessonnier, J.-P.; Engineered Nitrogen-Decorated Carbon Networks for the Metal-Free Catalytic Isomerization of Glucose to Fructose, *ACS Sustainable Chem. Eng.* **2019**, *7*, 16959-16963. <http://dx.doi.org/10.1021/acssuschemeng.9b04067>
- 77.\* Chen, S. S.; Yu, I. K. M.; Cho, D.-W.; Song, H.; Tsang, D. C. W.; Tessonnier, J.-P.; Ok, Y. S.; Poon, C. S.; Selective Glucose Isomerization to Fructose via a Nitrogen-Doped Solid Base Catalyst Derived from Spent Coffee Grounds, *ACS Sustainable Chem. Eng.* **2018**, *6*, 16113-16120. <http://dx.doi.org/10.1021/acssuschemeng.8b02752>
- 76.\* Chadderton, X. H.; Chadderton, D. J.; Matthiesen, J. E.; Qiu, Y.; Carraher, J. M.; Tessonnier, J.-P.; Li, W.; Mechanisms of Furfural Reduction on Metal Electrodes: Distinguishing Pathways for Selective Hydrogenation of Bioderived Oxygenates, *J. Am. Chem. Soc.* **2017**, *139*, 14120-14128. <http://dx.doi.org/10.1021/jacs.7b06331>
- 75.\* Pfennig, T.; Carraher, J. M.; Chemburkar, A.; Johnson, R. L.; Anderson, A. T.; Tessonnier, J.-P.; Neurock, M.; Shanks, B. H.; A New Selective Route Towards Benzoic Acid and Derivatives from

- Biomass-Derived Coumalic Acid, *Green Chem.* **2017**, *19*, 4879-4888.  
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- 74.\* Hoff, T. C.; Holmes, M. J.; Proano-Aviles, J.; Emdadi, L.; Liu, D.; Brown, R. C.; Tessonnier, J.-P.; Decoupling the Role of External Mass Transfer and Intracrystalline Pore Diffusion on the Selectivity of HZSM-5 for the Catalytic Fast Pyrolysis of Biomass, *ACS Sustainable Chem. Eng.* **2017**, *5*, 8766-8776. <http://dx.doi.org/10.1021/acssuschemeng.7b01578>
- 73.\* Rao, R. G.; Blume, R.; Hansen, T. W.; Fuentes, E.; Dreyer, K.; Moldovan, S.; Ersen, O.; Hibbitts, D. D.; Chabal, Y. J.; Schlögl, R.; Tessonnier, J.-P.; Interfacial Charge Distributions in Carbon-Supported Palladium Catalysts, *Nat. Commun.* **2017**, *8*, 340. <http://dx.doi.org/10.1038/s41467-017-00421-x>
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- 71.\* Carraher, J. M.; Pfennig, T.; Rao, R. G.; Shanks, B. H.; Tessonnier, J.-P.; *cis,cis*-Muconic Acid Isomerization and Catalytic Conversion to Biobased Cyclic-C<sub>6</sub>-1,4-Diacid Monomers, *Green Chem.* **2017**, *19*, 3042-3050. <http://dx.doi.org/10.1039/C7GC00658F>
70. Hoff, T. C.; Gardner, D. W.; Thilakaratne, R.; Proano-Aviles, J.; Brown, R. C.; Tessonnier, J.-P.; Elucidating the Effect of Desilication on Aluminum-Rich ZSM-5 Zeolite and its Consequences on Biomass Catalytic Fast Pyrolysis, *Appl. Catal. A* **2017**, *529*, 68-78.  
<http://dx.doi.org/10.1016/j.apcata.2016.10.009>
69. Carraher, J. M.; Matthiesen, J. E.; Tessonnier, J.-P.; Comments on “Thermodynamics of *cis,cis*-Muconic Acid Solubility in Various Polar Solvents at Low Temperature Range”, *J. Mol. Liq.* **2016**, *224*, 420-422. <http://dx.doi.org/10.1016/j.molliq.2016.09.125>
- 68.\* Matthiesen, J. E.; Suástegui, M.; Wu, Y.; Viswanathan, M.; Qu, Y.; Cao, M.; Rodriguez Quiroz, N.; Okerlund, A.; Kraus, G.; Raman, D. R.; Shao, Z.; Tessonnier, J.-P.; Electrochemical Conversion of Biologically Produced Muconic Acid: Key Considerations for Scale-Up and Corresponding Technoeconomic Analysis, *ACS Sustainable Chem. Eng.* **2016**, *4*, 7098-7109.  
<http://dx.doi.org/10.1021/acssuschemeng.6b01981>
67. Hoff, T. C.; Thilakaratne, R.; Gardner, D. W.; Brown, R. C.; Tessonnier, J.-P.; Thermal Stability of Aluminum-Rich ZSM-5 Zeolites and Consequences on Aromatization Reactions, *J. Phys. Chem. C* **2016**, *120*, 20103-20113. <http://dx.doi.org/10.1021/acs.jpcc.6b04671>
- 66.\* Matthiesen, J. E.; Carraher, J. M.; Vasiliu, M.; Dixon, D. A.; Tessonnier, J.-P.; Electrochemical Conversion of Muconic Acid to Biobased Diacid Monomers, *ACS Sustainable Chem. Eng.* **2016**, *4*, 3575-3585. <http://dx.doi.org/10.1021/acssuschemeng.6b00679>
- 65.\* Hoff, T. C.; Gardner, D. W.; Thilakaratne, R.; Wang, K.; Hansen, T. W.; Brown, R. C.; Tessonnier, J.-P.; Tailoring ZSM-5 Zeolites for the Fast Pyrolysis of Biomass to Aromatic Hydrocarbons, *ChemSusChem* **2016**, *9*, 1473-1482. <http://dx.doi.org/10.1002/cssc.201600186>
- 64.\* Suástegui, M.; Matthiesen, J. E.; Carraher, J. M.; Hernandez, N.; Rodriguez Quiroz, N.; Okerlund, A.; Cochran, E. W.; Shao, Z.; Tessonnier, J.-P.; Combining Metabolic Engineering and Electrocatalysis: Application to the Production of Polyamides from Sugar, *Angew. Chem. Int. Ed.* **2016**, *55*, 2368-2373. <http://dx.doi.org/10.1002/anie.201509653>  
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- 63.\* Thilakaratne, R.; Tessonnier, J.-P.; Brown, R. C.; Conversion of Methoxy and Hydroxyl Functionalities of Phenolic Monomers over Zeolites, *Green Chem.* **2016**, *18*, 2231-2239.  
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- Spectrophotometry, *J. Chem. Educ.* **2016**, *93*, 172-174.  
<http://dx.doi.org/10.1021/acs.jchemed.5b00640>
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  - 60.\* Gardner, D. W.; Huo, J.; Hoff, T. C.; Johnson, R. L.; Shanks, B. H.; Tessonnier, J.-P.; Insights into the Hydrothermal Stability of ZSM-5 under Relevant Biomass Conversion Reaction Conditions, *ACS Catal.* **2015**, *5*, 4418-4422. <http://dx.doi.org/10.1021/acscatal.5b00888>
  - 59.\* Carraher, J. M.; Fleitman, C. N.; Tessonnier, J.-P.; Kinetic and Mechanistic Study of Glucose Isomerization Using Homogeneous Organic Brønsted Base Catalysts in Water, *ACS Catal.* **2015**, *5*, 3162-3173. <http://dx.doi.org/10.1021/acscatal.5b00316>
  58. Marichy, C.; Donato, N.; Latino, M.; Willinger, M.-G.; Tessonnier, J.-P.; Neri, G.; Pinna, N.; Gas Sensing Properties and p-Type Response of ALD TiO<sub>2</sub> Coated Carbon Nanotubes, *Nanotechnology* **2015**, *26*, 024004. <http://dx.doi.org/10.1088/0957-4484/26/2/024004>
  - 57.\* Liu, C.; Carraher, J. M.; Swedberg, J. L.; Herndon, C. R.; Fleitman, C. N.; Tessonnier, J.-P.; Selective Base-Catalyzed Isomerization of Glucose to Fructose, *ACS Catal.* **2014**, *4*, 4295-4298. <http://dx.doi.org/10.1021/cs501197w>
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  55. Marichy, C.; Russo, P. A.; Latino, M.; Tessonnier, J.-P.; Willinger, M.-G.; Donato, N.; Neri, G.; Pinna, N.; Tin Dioxide-Carbon Heterostructures Applied to Gas Sensing: Structure-Dependent Properties and General Sensing Mechanism, *J. Phys. Chem. C* **2013**, *117*, 19729-19739. <http://dx.doi.org/10.1021/jp406191x>
  54. da Silva, T. C.; Pereira, E. B.; dos Santos, R. P.; Louis, B.; Tessonnier, J.-P.; Pereira, M. M.; Synthesis and Characterization of Vanadium Species Coated on Alumina, Magnesium Oxide and Hydrotalcite Supports to SO<sub>x</sub> Removal, *Appl. Catal. A* **2013**, *462-463*, 46-55. <http://dx.doi.org/10.1016/j.apcata.2013.04.028>
  53. Tessonnier, J.-P.; Goubert-Renaudin, S.; Alia, S.; Yan, Y.; Barteau, M. A.; Structure, Stability, and Electronic Interactions of Polyoxometalates on Functionalized Graphene Sheets, *Langmuir* **2013**, *29*, 393-402. <http://dx.doi.org/10.1021/la303408j>
  52. Tessonnier, J.-P.; Haas, F. M.; Dabbs, D. M.; Dryer, F. L.; Yetter, R. A.; Barteau, M. A.; Polyoxometalate Clusters Supported on Functionalized Graphene Sheets as Nanohybrids for the Catalytic Combustion of Liquid Fuels, *MRS Proceedings* **2012**, *1451*, mrss12-1451-dd18-04. <http://dx.doi.org/10.1557/opl.2012.1457>
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  - 46.\* Arrigo, R.; Schuster, M. E.; Wrabetz, S.; Girgsdies, F.; Tessonnier, J.-P.; Centi, G.; Perathoner, S.; Su, D. S.; Schlögl, R.; New Insights from Microcalorimetry on the FeO<sub>x</sub>/CNT-Based Electrocatalysts Active in the Conversion of CO<sub>2</sub> to Fuels, *ChemSusChem* **2012**, *5*, 577-586.  
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  - 44.\* Becker, M. J.; Xia, W.; Tessonnier, J.-P.; Blume, R.; Yao, L.-D.; Schlögl, R.; Muhler, M.; Optimizing the Synthesis of Cobalt-Based Catalysts for the Selective Growth of Multiwalled Carbon Nanotubes Under Industrially Relevant Conditions, *Carbon* **2011**, *49*, 5253-5264.  
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## Book Chapters

4. Abdolmohammadi, S.; Hernández, N.; Tessonnier, J.-P.; Cochran, E. W., Bioadvantaged Nylon from Renewable Muconic Acid: Synthesis, Characterization, and Properties. In *Green Polymer Chemistry: New Products, Processes, and Applications*, American Chemical Society: Washington, DC, 2018; Vol. 1310, pp 355-367. <http://dx.doi.org/10.1021/bk-2018-1310.ch022>
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## INVITED TALKS

26. “Solvolytic Fractionation of Biomass to Enhance the Upgrading of Lignin to Platform Chemicals”, *2022 Fall Meeting of the American Chemical Society*, Chicago, IL, (2022).
25. “Electrochemical Hydrogenation of Biologically-Produced *cis,cis*-Muconic Acid for the Production of Renewable C6 Diacid Monomers”, *2022 Spring Meeting of the American Chemical Society*, San Diego, CA, (2022).
24. “Creating Synergies Between Microbial and Electrochemical Conversions for the Production of Performance-Advantaged Monomers from Biomass”, *240th Electrochemical Society Meeting*, Virtual Due to the Pandemic, (2021).
23. “Organic Electrosynthesis of Performance-advantaged Monomers from Biomass”, *Department of Chemical Engineering and Materials Science, Michigan State University*, East Lansing, MI, (2020).
22. “Organic Electrosynthesis of Performance-advantaged Monomers from Biomass”, *Biennial Meeting of the GDCh-Division Sustainable Chemistry*, Germany, Virtual Due to the Pandemic, (2020).

### Plenary Presentation

21. “Unsaturated Diacids for the Production of Bio-advantaged Nylon”, *2018 Corn Utilization and Technology Conference*, Saint-Louis, MO, (2018).
20. “Strategies for the Production and Conversion of Bioprivileged Molecules from Biomass”, *Department of Mechanical Engineering, Iowa State University*, Ames, IA, (2018).
19. “Designing Catalysts and Catalytic Processes for the Selective Production of Biorenewable Chemicals”, *Department of Chemical Engineering, Auburn University*, Auburn, AL, (2017).
18. “Catalyst Design for the Production of Fuels and Novel Polymers from Biogenic Feedstocks”, *NASA Kennedy Space Center*, Cape Canaveral, FL, (2017).
17. “Key Considerations for Designing Zeolite Catalysts for Biomass Conversion Reactions”, *254th American Chemical Society National Meeting*, Washington, DC, (2017).
16. “Hydrothermal Stability of Zeolites under Relevant Carbohydrate Conversion Conditions”, *254th American Chemical Society National Meeting*, Washington, DC, (2017).
15. “Designing Heterogeneous Catalysts for the Selective Conversion of Biomass in the Liquid Phase”, *School of Chemical, Biological and Materials Engineering, University of Oklahoma*, Norman, OK, (2016).
14. “Coupling Biological and Chemical Catalysis for the Production of Bio-Based Polyamides”, *252nd American Chemical Society National Meeting*, Philadelphia, PA, (2016).
13. “Bottom-up Design of Metal-Free Carbocatalysts for the Conversion of Biomass under Hydrothermal Conditions”, *Carbon 2016*, State College, PA, (2016).

### Keynote Presentation

12. “Heterogeneous Catalyst Design for Biomass Conversion in the Condensed Phase”, *Department of Chemical and Biological Engineering, University of Iowa, Iowa City, IA*, (2016).
11. “Heterogeneous Catalyst Design for Biomass Conversion in the Condensed Phase”, *Department of Chemical and Biomolecular Engineering, University of Delaware, Newark, DE*, (2015).
10. “Biomass Conversion to Renewable Chemicals: Current Challenges and Future Strategies”, *Archer Daniels Midland (ADM), Decatur, IL*, (2015).
9. “Rational Design of Hydrothermally Stable Single-Site Catalysts for Biomass Conversion Reactions”, *8th International Conference on Materials for Advanced Technologies of the Materials Research Society of Singapore (ICMAT 2015), Singapore, Singapore*, (2015).
8. “Biomass Conversion to Renewable Chemicals: Current Challenges and Future Strategies”, *Institute of Chemistry and Processes for Energy, Environment and Health (ICPEES), Strasbourg, France*, (2015).
7. “Carbocatalysts: A Bottom-up Approach to Catalyst Design”. *Osborn Research Club, Iowa State University, Ames, IA*, (2014).
6. “Challenges and Opportunities for the Conversion of Biomass to Renewable Chemicals using Carbon-based and Carbon-supported Catalysts”, *Laboratory of Industrial Chemistry and Reaction Engineering, Åbo Akademi University, Turku, Finland*, (2014).
5. “Challenges and Opportunities for the Conversion of Biomass to Renewable Chemicals”, *Department of Chemistry, Iowa State University, Ames, IA*, (2013).
4. “Polyoxometalate/Graphene Nanohybrids as a Versatile Material for Energy Production and Storage”, *Department of Chemical and Biological Engineering, Ilhan Aksay Group, Princeton University, Princeton, NJ*, (2011).
3. “Designing Carbon (Nano)materials-Based Catalysts for Biomass Conversion Reactions”, *Center for Catalytic Science and Technology, University of Delaware, Newark, DE*, (2010).
2. “Tailoring Carbon Nanomaterials for Biomass Conversion”, *Ecole de Chimie, Polymères et Matériaux, Strasbourg, France*, (2010).
1. “New Opportunities for Carbon (Nano)materials in Heterogeneous Catalysis”, *CICECO, Aveiro, Portugal*, (2009).

## CONFERENCE PRESENTATIONS

154. Prabhu, P. T.; Patel, D. M.; Kling, S.; Roling, L. T.; Tessonnier, J.-P., Role of Palladium Hydride on the Electrocatalytic Hydrogenation of *cis,cis*-Muconic Acid to Biobased Adipic Acid. *28th North American Catalysis Society Meeting, Providence, RI*, 2023.
153. Bateni, H.; Patel, D. M.; Snyder, L. M.; Prabhu, P. T.; Carter, P.; Roling, L. T.; Tessonnier, J.-P., Tuning the Work Function of Carbon Supports to Enhance the Selectivity of Supported Metal Nanoparticles. *28th North American Catalysis Society Meeting, Providence, RI*, 2023.
152. Patel, D. M.; Prabhu, P. T.; Tessonnier, J.-P.; Roling, L. T., Unraveling the Structure-Sensitive Nature of the Selective Electrocatalytic Hydrogenation of *cis,cis*-Muconic Acid. *28th North American Catalysis Society Meeting, Providence, RI*, 2023.
151. Vincent Sahayaraj, D.; A, L.; Kohler, A. J.; Bateni, H.; Radhakrishnan, H.; Saraeian, A.; Shanks, B. H.; Bai, X.; Tessonnier, J.-P., Enhanced Lignin Upgrading to Aromatic and Olefinic Hydrocarbons by Streamlining Reductive Catalytic Fractionation and Hydrodeoxygenation. *28th North American Catalysis Society Meeting, Providence, RI*, 2023.
150. Vincent Sahayaraj, D.; A, L.; Kohler, A. J.; Ehlers, A. D.; Watts, Q.; Bateni, H.; Saraeian, A.; Shanks, B. H.; Bai, X.; Tessonnier, J.-P., Solvolytic Fractionation of Biomass to Enhance the

- Upgrading of Lignin to Platform Chemicals. *2022 Fall Meeting of the American Chemical Society*, Chicago, IL, 2022.
149. Hadel, J. E.; Noreen, S.; Shanks, B. H.; Cochran, E. W.; Tessonnier, J.-P., Polyamides with Built-In Flame Retardancy Using Biobased Nitrogen-Grafted *trans*-3-Hexenedioic Acid Comonomers. *2022 Fall Meeting of the American Chemical Society*, Chicago, IL, 2022.
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  26. Tessonnier, J.-P.; Hansen, T. W.; Hess, C.; Su, D. S.; Schlögl, R., Mo<sub>x</sub>O<sub>y</sub> Thin Film Supported on Carbon Nanotubes: Benefits of Non-Oxidic Supports for Structure-Activity Correlations for Selective Oxidation Reactions. *41. Jahrestreffen Deutscher Katalytiker*, Weimar, Germany, 2008.
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  19. Tessonnier, J.-P.; Wang, D.; Willinger, M.-G.; Schlögl, R.; Su, D. S., Tuning the Catalytic Properties of V<sub>x</sub>O<sub>y</sub> Supported on Multiwalled Carbon Nanotubes. *E-MRS*, Strasbourg, France, 2007.
  18. Tessonnier, J.-P.; Hansen, T. W.; Jentoft, R. E.; Schlögl, R.; Su, D. S., MoO<sub>x</sub>/Multi-Walled Carbon Nanotubes for Alkanes Selective Oxidation. *40. Jahrestreffen Deutscher Katalytiker*, Weimar, Germany, 2007.

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16. Tessonnier, J.-P.; Ledoux, M.-J.; Pham-Huu, C., Methane Dehydro-Aromatization: Effect of the CO<sub>2</sub> Addition on the Catalyst Stability and on the Nature of the Active Phase. *EuropaCat VII*, Sofia, Bulgaria, 2005.
15. El Berrichi, Z.; Louis, B.; Tessonnier, J.-P.; Aouali, L.; Fraissard, J.; Ledoux, M.-J.; Pham-Huu, C., New Application for GaSBA-15 Mesoporous Materials: Fine Chemicals Synthesis. *EuropaCat VII*, Sofia, Bulgaria, 2005.
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12. Tessonnier, J.-P.; Walspurger, S.; Louis, B.; Pham-Huu, C.; Ledoux, M.-J.; Sommer, J., Quantitative Brønsted Acid Sites Determination on Solid Acids. A New Approach Towards the Chemical Composition of Transition Metal-Containing-Zeolites. *5th World Conference on Acid and Base Catalysts (ABC-5)*, Puerto-Vallarta, Mexico, 2005.
11. El Berrichi, Z.; Tessonnier, J.-P.; Louis, B.; Chérif, L.; Ledoux, M.-J.; Pham-Huu, C., Ga-SBA-15: A Novel and Efficient Friedel-Crafts Acylation Catalyst. *5th World Conference on Acid and Base Catalysts (ABC-5)*, Puerto-Vallarta, Mexico, 2005.
10. Winé, G.; Tessonnier, J.-P.; Pham-Huu, C.; Ledoux, M.-J., Liquid-Phase Acylation of Anisole over H-BEA Coated on Silicon Carbide. *13th International Congress on Catalysis (ICC 2004)*, Paris, France, 2004.
9. Tessonnier, J.-P.; Estournès, C.; Leuvrey, C.; Pham-Huu, C.; Ledoux, M.-J., Carbon Nanotubes as a 1D Template for the Synthesis of Air Sensitive Materials. *1st International Symposium on Carbon for Catalysis (Carbocat)*, Lausanne, Switzerland, 2004.
8. Winé, G.; Tessonnier, J.-P.; Pham-Huu, C.; Ledoux, M.-J., Acétylation De L'anisole Catalysée Par Une Zéolithe Beta / Sic. *GeCat 2004*, Ambleteuse, France, 2004.
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6. Winé, G.; Tessonnier, J.-P.; Matta, J.; Pham-Huu, C.; Ledoux, M.-J., Beta Zeolite Supported on SiC for Use as Catalyst in a Fixed-Bed Friedel-Crafts Reaction. *EuropaCat VI*, Innsbruck, Austria, 2003.
5. Winé, G.; Tessonnier, J.-P.; Matta, J.; Rigolet, S.; Marichal, C.; Pham-Huu, C.; Ledoux, M.-J., Zeolite Supported on SiC as Catalyst for a Fixed-Bed Benzoylation Reaction. *12th Brazilian Congress on Catalysis*, Rio de Janeiro, Brazil, 2003.
4. Vieira, R.; Matta, J.; Nhut, J.-M.; Tessonnier, J.-P.; Pham-Huu, C.; Keller, N.; Ledoux, M.-J., Carbon Nanofibers with Macroscopic Shaping for Use as Catalyst Support. Towards the Design of Catalysts with Minimum Mass Transfer Limitation. *12th Brazilian Congress on Catalysis*, Rio de Janeiro, Brazil, 2003.
3. Winé, G.; Tessonnier, J.-P.; Rigolet, S.; Marichal, C.; Matta, J.; Pham-Huu, C.; Ledoux, M.-J., Synthèse De Zéolithe Bêta, Supportée Sur Carbure De Silicium, Pour L'utilisation Comme Catalyseur De Friedel-Crafts En Lit Fixe. *GeCat - Zéolithe Catalyse 2003*, Autrans, France, 2003.
2. Tessonnier, J.-P.; Pesant, L.; Ehret, G.; Pham-Huu, C.; Ledoux, M.-J., Carbon Nanotubes: A Highly Selective Support for the C=C Bond Hydrogenation Reaction. *8th International Symposium*

“Scientific Bases for the Preparation of Heterogeneous Catalysts” (PREPA 8), Louvain-la-Neuve, Belgium, 2002.

1. Nhut, J.-M.; Vieira, R.; Tessonier, J.-P.; Pesant, L.; Keller, N.; Pham-Huu, C.; Ledoux, M.-J., Potential Applications of Carbon and SiC Nanostructures in Catalysis. *EuropaCat V*, Limerick, Ireland, 2001.

## HONORS AND AWARDS

- Editorial board member of *npj Materials Sustainability*, 2023
- Iowa State University College of Engineering Mid-Career Achievement in Research Award, 2021
- Iowa State University Research Collaboration Catalysts 2020 – 2021 Cohort
- Iowa State University Nominee for the 2018 Camille Dreyfus Teacher-Scholar Award
- Inaugural Member of the *ACS Sustainable Chemistry & Engineering* Early Career Board, 2017–2019
- Invited Participant, U.S. Department of Energy Workshop on Moving Beyond Drop-In Replacements: Performance Advantaged Bio-Based Chemicals, 2017
- Invited Participant, National Academy of Sciences workshop on The Changing Landscape of Hydrocarbon Feedstocks for Chemical Production: Implications for Catalysis, 2016
- Best Instructor, AIChE Student Chapter, 2015, 2016, and 2018
- Featured in the “Movers & Shakers” section of *The Catalyst Review*, November 2012
- Brian Kelly Award, The British Carbon Group, 2010

## OTHER SCHOLARLY AND ENTREPRENEURIAL ACTIVITIES

- Co-founder and co-owner of Sumatra Biorenewables, LLC
- Panelist, Round Table on “Acid Catalysis in Zeolites – Challenges & Opportunities”, 2020 Annual Symposium of the Great Plains Catalysis Society.

## TEACHING

### Courses Taught

Term	Course Number	Course Title	Credits	Number of Students	Evaluations*
Spring 2023	CH E 382	Chemical Reaction Engineering	3	48	4.72/4.07 <sup>c</sup>
Fall 2022	CH E 382	Chemical Reaction Engineering	3	28	4.83/4.11 <sup>a</sup>
Spring 2022	CH E 688	Catalysis and Catalytic Processes	3	17	4.80/4.05 <sup>a</sup>
Spring 2021	CH E 382	Chemical Reaction Engineering	3	94	4.36/3.87 <sup>c</sup>
Fall 2020	CH E 382	Chemical Reaction Engineering	3	49	4.53/4.23 <sup>b</sup>
Spring 2020	CH E 382	Chemical Reaction Engineering	3	40	4.32/--- <sup>#</sup>

Fall 2019	CH E 382	Chemical Reaction Engineering	3	69	4.15/4.13
Fall 2019	CH E 583	Advanced Thermodynamics	3	13	4.46/4.26 <sup>b</sup>
Fall 2018	CH E 583	Advanced Thermodynamics	3	22	4.23/3.89 <sup>b</sup>
Spring 2018	CH E 382	Chemical Reaction Engineering	3	56	4.19/3.97
Fall 2017	CH E 381	Chemical Engineering Thermodynamics	3	60	4.56/4.00 <sup>a</sup>
Fall 2017	CH E 583	Advanced Thermodynamics	3	22	4.59/3.94 <sup>a</sup>
Fall 2016	CH E 695L	Catalysis, Reaction Eng., and Renewable Energy	3	7	4.33/4.19
Fall 2016	CHE 583	Advanced Thermodynamics	3	19	4.11/4.19
Spring 2016	CHE 601	Seminar	3	58	---
Spring 2016	CHE 381	Chemical Engineering Thermodynamics	3	67	4.74/3.96 <sup>b</sup>
Fall 2015	CHE 601	Seminar	3	63	---
Fall 2015	CHE 583	Advanced Thermodynamics	3	18	4.89/4.16 <sup>a</sup>
Fall 2014	CHE 381	Chemical Engineering Thermodynamics	3	69	4.60/4.40 <sup>a</sup>
Fall 2014	CHE 583	Advanced Thermodynamics	3	16	4.69/3.98 <sup>b</sup>
Spring 2014	CHE 381	Chemical Engineering Thermodynamics	3	55	4.43/3.92 <sup>c</sup>
Fall 2013	CHE 583	Advanced Thermodynamics	3	18	3.83/4.34
Fall 2012	CHE 583	Advanced Thermodynamics	3	6	4.33/3.90 <sup>b</sup>

\* Instructor and department average ratings are scores ranging from 1 (lowest) to 5 (highest).

# The department did not provide any average teaching ratings in S20 due to the pandemic.

<sup>a,b,c</sup> (a) 1<sup>st</sup>, (b) 2<sup>nd</sup>, and (c) 3<sup>rd</sup> highest instructor rating of the department that semester.

## Postdoctoral Researchers and Student Advising

### Postdoctoral Researchers

1. Jack M. Carraher, 2014 – 2017, now at Green Compass, Inc.

### Graduate Students

17. Md Mosaddek Hossen, Ph.D., 2022 – present.
16. Devanshi Mistry, Ph.D., 2022 – present.
15. Krishna Sai Koushik Achanta, Ph.D., 2021 – present.
14. Prathamesh Prabhu, Ph.D., 2020 – present.



13. Joseph Hadel, Ph.D., (Brent Shanks and Eric Cochran, co-advisors), 2018 – 2023, “Bioenabled Copolyamides From the Chemical Diversification of Muconic Acid Derivatives”, now at IBM.
12. Prerana Carter, Ph.D., (Brent Shanks and Eric Cochran, co-advisors), 2018 – 2022, “Bio-Advantaged Polyamides from Muconic Acid”, now at BASF.
11. Dustin Gansebom, M.S., (Brent Shanks and Eric Cochran, co-advisors), 2018 – 2021, “A Robust Framework on Leveraging Biomass within the Petrochemical Industry”, now at undisclosed company.
10. Mathew Laureano, M.S., 2018 – 2020, “Scaling Up the Electrochemical Hydrogenation of Muconic Acid to *trans*-3-Hexenedioic Acid”, now at the U.S. Department of Energy Ames National Laboratory.
9. Hamed Bateni, Ph.D., 2017 – 2022, “Tailoring Metal-Support Interactions for the Selective Hydrogenation of Multifunctional Chemicals”, now at Elanco.
8. Daniel V. Vincent Sahayaraj, Ph.D., 2017 – 2022, “Solvolytic Deconstruction of Lignin and Upgrading to Renewable Chemicals”, now at Intel.
7. Marco N. Dell’Anna, Ph.D., 2017 – 2021, “Hybrid Organic Electrosynthesis: Investigation of Reaction Mechanism and Parameters for Enhanced Production of Novel Bio-derived Chemicals”, now at Honeywell UOP.
6. Elspeth M. Petersen, M.S., 2016 – 2019, “Fueling the Mission to Mars and Earth’s Transition to Renewable Energy: Increasing Catalyst Performance for Carbon Dioxide Methanation”, now at NASA Johnson Space Center.
5. Sanaz Abdolmohammadi, Ph.D., (Eric Cochran, co-advisor), 2015 – 2019, “Towards Production of Bio-Advantaged Polyamides”, now at J. M. Huber Corporation.
4. Radhika G. Rao, Ph.D., 2013 – 2018, “Carbon Support Effects on Pd/C Catalysts for the Liquid-phase Hydrogenation of Multifunctional Chemicals”, now at Evonik.
3. Thomas C. Hoff, Ph.D., 2013 – 2017, “ZSM-5 Catalyzed Fast Pyrolysis of Biomass”, now at Intel.
2. John E. Matthiesen, Ph.D., 2012 – 2017, “Electrochemical Hydrogenation of Muconic Acid: Applications to the Production of Biorenewable Polyamides and Polyesters”, now at Intel.
1. Chi (Alex) Liu, M.Eng., 2012 – 2016, “Isomerization of Glucose to Fructose Using Simple Brønsted Base Catalysts”, now at HydrogenWorks.

### Visiting Graduate Students

1. Season Si Chen, 2017 – 2018, now Assistant Professor at Tsinghua SGIS, China.

### Undergraduate Students

52. Macgregor Catanag, Undergraduate Research Assistant, Fall 23, “ChE 490: Regeneration of Poisoned Precious Metal Electrocatalysts”.
51. Pietro Vannini, Undergraduate Research Assistant, Fall 23, “ChE 490: Understanding the Role of Organic Corrosion Inhibitors on Cathode Lifetime and Performance”.
50. Ryan Rasmussen, Undergraduate Research Assistant, Fall 23, “ChE 490: Synthesis of Carbon Nanohybrids”.
49. Elizabeth Teresa-Apolonio, Undergraduate Research Assistant, Summer 23, “Overcoming Electrocatalyst Deactivation by Amino Acids”.
48. Huy Nguyen, Undergraduate Research Assistant, Summer 23, “Understand and Develop Reactor Agility for Muconic Acid Hydrogenation”.

47. Kaitlyn Holtz, Undergraduate Research Assistant, Spring 23, “ChE 490: Electrochemical Reactor Technology for the Continuous Hydrogenation of Biologically-Produced *cis,cis*-Muconic Acid”. Fall 23, “ChE 490: Electrosynthesis of Bio-Adipic Acid”.
46. Samantha Kling, Undergraduate Research Assistant, Fall 22 and Spring 23, “Griswold Internship”.
45. Alexis J. Lambros, Undergraduate Research Assistant, Fall 22, “ChE 490: Purification and Polymerization of Biobased Flame-Retardant Molecules”. Spring 23, “ChE 490: Optimizing the Polymerization of Biobased Phosphorous-Containing Flame-Retardant Monomers”.
44. Matthew Baker, Undergraduate Research Assistant, Spring 22, “ChE 490: Graphene Supported Catalysts”.
43. Ee Jie Tai, Undergraduate Research Assistant, Spring 22, “ChE 490: Synthesis and Evaluation of Graphene-Supported Metal Catalysts for Selective Hydrogenation Reactions”.
42. Infant (Gawin) Nathaniel, Undergraduate Research Assistant, Spring 22, “Electrochemical Reactor Technology for the Continuous Hydrogenation of Biologically-produced *cis,cis*-Muconic Acid”.
41. Qwynn Watts, Undergraduate Research Assistant, Spring 22, “ChE 490: Solvolytic Lignin Deconstruction and Upgrading to Renewable Chemicals”. Fall 22, “ChE 490: Electrochemical Reactor Technology for the Continuous Hydrogenation of Biologically-produced *cis,cis*-Muconic Acid”.
40. Allyson Ehlers, Undergraduate Research Assistant, Fall 21, “ChE 490: Flow-through Fractionation of Biomass Using Supercritical Alcohols”.
39. Dawley, Linnea, Undergraduate Research Assistant, Fall 21, “ChE 490H: Synthesizing Flame-retardant Biobased Monomers for Enhanced Properties in Polyamides”. Spring 22, “ChE 490H: Purification and Polymerization of Biobased Flame-retardant Molecules in Polyamide Backbones”.
38. Noreen, Sohaima, Undergraduate Research Assistant, Summer 21, “ChE 490: Synthesizing Novel Biobased Monomers for Enhanced Polymer Properties”. Fall 21 and Spring 22, “Griswold Internship”.
37. Gebur, Hannah, Undergraduate Research Assistant, Spring 20, “ChE 490: Studying the Effect of Carbon Support on Biomass Conversion Reactions”. Fall 20, “ChE 490: Functional Nanocarbons for Biomass Conversion Reactions”.
36. Chu, Thing-Hung, Undergraduate Research Assistant, Spring 20-Spring 21, “Griswold Internship”. Fall 21, “Electrochemical Characterizations of Carbon Supports and Carbon-Supported Catalysts”.
35. James Trettin, Undergraduate Research Assistant, Spring 20, “ChE 490: Synthesizing Novel Biobased Molecules for Enhanced Polymer Properties”. Fall 20, “ChE 490: Synthesizing Performance-Advantaged Polymers Using Bioprivileged Molecules”.
34. Bailey Voss, Undergraduate Research Assistant, Fall 19, “ChE 490: Lignin Deconstruction and Upgrading to Renewable Chemicals”.
33. Laura Snyder, Undergraduate Research Assistant, Spring 19 and Fall 19, “Griswold Internship: Understanding Metal-Carbon Support Interactions in Hydrogenation Catalysts”. Spring 20, “ChE 490: Tailoring Support Interactions for the Selective Hydrogenation of Multifunctional Chemicals”.
32. Emma Mitchell, Undergraduate Research Assistant, Spring 19, “ChE 490: Solvolytic Lignin Deconstruction in Flow-through reactors”
31. Ludovic Zaza, Undergraduate Research Assistant, Fall 18, “ChE 490: Kinetics of the Electrochemical Hydrogenation of Bioprivileged Molecules”. Spring 19, “ChE 490: Properties of Muconic Acid Isomers”.
30. Elizabeth Grego, Undergraduate Research Assistant, Summer 18, “Synthesis and Polymerization of 3-Hexenedioic Acid for the Production of Bio-advantaged Polyamides”

29. Amar Srivastava, Undergraduate Research Assistant, Summer 18, "ChE 490: Synthesis and Characterization of Carbon Materials for Applications as Catalyst Supports"
28. Davis Arbogast, Undergraduate Research Assistant, Spring 18, "Griswold Internship: Electrochemical Synthesis of Diacid Monomers from Biologically-Produced Muconic Acid"
27. Brandon Vance, Undergraduate Research Assistant, Fall 17 and Spring 18, "McNair Scholar: Effect of Metal-Support Interactions in Heterogeneous Catalysis". Summer 18, "Gas- and Liquid-Phase Reactions in Packed Bed Reactors". Fall 18, "ChE 490: Thermal Gradient Effects on the Deactivation of Supported Catalysts for Methanation Reactions". Spring 19, "ChE 490: Thermal Gradient Effects on the Deactivation of Supported Catalysts for Methanation Reactions."
26. Dustin Gansebom, Undergraduate Research Assistant, Summer 17, "Catalysts and Catalytic Processes for the Production of Biobased Polymers"
25. Jake Nelson, Undergraduate Research Assistant, Spring and Fall 17, "Griswold Internship: Towards Hydrophobic Nylons". Spring 18, "ChE 490: Synthesis of Bio-advantaged Polyamines". Spring 19, "ChE 490: Flame Retardant Bio-advantaged Nylon".
24. Michael Holmes, Undergraduate Research Assistant, Fall 16 and Spring 17, "ChE 490: Diffusion of Phenolic Monomers in Zeolite Catalysts". Fall 17 and Spring 18, "ChE 490: CO<sub>2</sub> Conversion to Fuels"
23. Alana Byrd, Undergraduate Research Assistant, Summer 16, "Lignin Deconstruction and Conversion to Phenolic Monomers"
22. Sultan Alsayegh, Undergraduate Research Assistant, Summer 16, "ChE 490: Isomerization of Glucose to Fructose in a Continuous Flow Reactor"
21. Ploi Lerner, Undergraduate Research Assistant, Summer 16, "ChE 490: Synthesis of Bio-Advantaged Polymers Using Renewable Diacids". Fall 16, "ChE 490: Determination of Muconic Acid and 3-Hexenedioic Acid Solubility Limits in Aqueous Solutions"
20. Rebecca Harmon, Undergraduate Research Assistant, Fall 15, "ChE 490: Influence of Cell Type and Electrolyte on the Hydrogenation of Muconic Acid"
19. Andrew Moon, Undergraduate Research Assistant, Spring 15, "ChE 490: Synthesis of Polymer Alloys from Diacids"
18. Reem Alkhalil, Undergraduate Research Assistant, Spring 15, "ChE 490: Carbon-based High pH Catalyst for Biomass Conversion". Summer 15, "Base-Catalyzed Isomerization of Glucose to Fructose"
17. Amra Softic, Undergraduate Research Assistant, Spring 15, "ChE 490: Hydrothermally Stable Catalysts and Catalyst Supports"
16. Erika Weimer, Undergraduate Research Assistant, Fall 14 and Spring 15, "ChE 490: Design of Hydrothermally Stable Bifunctional Catalysts"
15. Jason Painter, Undergraduate Research Assistant, Summer 14, "Design of Hydrothermally Stable Catalysts for the Liquid-Phase Conversion of Biomass to Chemicals"
14. Clara Tibbetts, Undergraduate Research Assistant, Summer 14 and Summer 15, "Carbon-Based and Carbon-Supported Heterogeneous Catalysts for the Catalytic Conversion of Biomass"
13. Charles Pueschel, Undergraduate Research Assistant, Spring 14, "Hybrid Catalysts"
12. Chelsea Fleitman, Undergraduate Research Assistant, Spring 14, "ChE 490: Kinetics of Glucose Isomerization". Summer 14, "Kinetic Investigation of the Carbohydrate Conversion to Renewable Chemicals". Fall 14, "ChE 490: Kinetics of Glucose Isomerization"
11. Rachel Wiltgen, Undergraduate Research Assistant, Fall 13 and Spring 14, "ChE 490: Co-Polymerization of Sugars and Amines with Carbon Nanotubes". Summer 14 and Spring 14, "Synthesis of Zeolite Catalysts for the Fast Pyrolysis of Cellulose to Aromatics"

10. Sandra Greenwood, Undergraduate Research Assistant, Fall 13, “ChE 490: Purification of Active Sites for Base-Catalyzed Isomerization of Glucose to Fructose”. Spring 14, “ChE 490: Base Catalyzed Isomerization of Glucose to Fructose”
9. Boniface Mkini, Undergraduate Research Assistant, Fall 13 and Spring 14, “ChE 490: Co-Polymerization of Sugars and Amines with Carbon Nanotubes”
8. August (Jude) Larenzie, Undergraduate Research Assistant, Fall 13, “Design of a Benchtop Setup for the Continuous Isomerization of Glucose to Fructose”
7. Kanchana Perera, Undergraduate Research Assistant, Fall 13 and Spring 14, “Synthesis of Zeolite Catalysts for the Fast Pyrolysis of Cellulose to Aromatics”
6. Angelica Iacobucci, Undergraduate Research Assistant, Spring 13, “Selective Functionalization of Nanocarbons for Applications in Catalysis”. Summer 13, “Exploring New Paths for the Selective Functionalization of Carbon Nanomaterials”. Fall 13, “ChE 490: Synthesis of Hydrothermally Stable Catalysts”. Spring 14, “ChE 490: Removal of Amorphous Carbon from Carbon Nanomaterial Surfaces”. Spring 15, “Synthesis of Nanostructured Zeolite Catalysts by Hard Templating”
5. David Gardner, Undergraduate Research Assistant, Spring and Fall 13, “Synthesis of Zeolite Catalysts for the Fast Pyrolysis of Cellulose to Aromatics”. Spring and Summer 14, “Synthesis of Mesoporous Zeolite Catalysts by Controlled Desilication”. Fall 14, “ChE 490: Zeolite ZSM-5 Catalysis Study”
4. Jonathan Ellis, Undergraduate Research Assistant, Spring and Fall 13, “Synthesis of Zeolite Catalysts for the Fast Pyrolysis of Cellulose to Aromatics”
3. Jordan Swedberg, Undergraduate Research Assistant, Fall 12 and Spring 13, “Homogeneous Base-Catalyzed Isomerization of Glucose to Fructose”. Spring and Fall 13, “ChE 490: JMP Assisted Design of Experiment for Glucose Isomerization”. Summer 13, “An Investigation of Basic Catalysts for Glucose Isomerization”. Spring 14, “ChE 490: Homogenous Glucose Isomerization”
2. Caitlyn Herndon, Undergraduate Research Assistant, Fall 12 and Spring 13, “Homogeneous Base-Catalyzed Isomerization of Glucose to Fructose”. Spring 14, “ChE 490: Isomerization of Glucose and Conversion to Chemicals”
1. Holly Meysenburg, Undergraduate Research Assistant, Fall 12, “Selective Conversion of Carbohydrates to Renewable Chemicals”

### **High School Students and Teachers**

5. Jeremy Morrow, science teacher at Hoover High School, Des Moines, IA, Summer 2016
4. Caleb Raman, high school student at Ames High School, Ames, IA, Summer 2016
3. Sarah Curry, science teacher at Newton High School, Newton, IA. Summers 2014 – 2015
2. Shelly Vanyo, science teacher at Boone High School, Boone, IA, Summer 2013
1. Amra Softic, high school student at Hoover High School, Des Moines, IA, Summer 2013

## **SERVICE TO THE INSTITUTION**

### **Service on Graduate Student Committees**

58. Ghazal Shah Abadi, Ph.D., In Progress, Industrial and Manufacturing Systems Engineering
57. Carly Dolgos, Ph.D., In Progress, Chemical and Biological Engineering
56. Tianlei Li, Ph.D., In Progress, Chemical and Biological Engineering
55. Peter Meyer, Ph.D., In Progress, Chemical and Biological Engineering

54. Deep Patel, Ph.D., In Progress, Chemical and Biological Engineering
53. Hyunju Lee, Ph.D., In Progress, Chemical and Biological Engineering
52. Mohammad Abloushi, M.S., In Progress, Chemical and Biological Engineering
51. Andrew Kohler, Ph.D., In Progress, Chemical and Biological Engineering, Committee Member
50. Saad Aftab, Ph.D., In Progress, Chemical and Biological Engineering
49. Garrison Gunter, Ph.D., In Progress, Chemical and Biological Engineering
48. Brittany Hallmark-Haack, Ph.D., In Progress, Chemical and Biological Engineering
47. Basil Rawah, Ph.D., 2023, Chemical and Biological Engineering
46. Yifu Chen, Ph.D., 2022, Chemical and Biological Engineering
45. Hengzhou Liu, Ph.D., 2022, Chemical and Biological Engineering
44. Jaeryul Park, Ph.D., 2022, Chemical and Biological Engineering
43. Hsi-Hsin Lin, Ph.D., 2022, Chemical and Biological Engineering
42. Xiaolin Chen, Ph.D., 2022, Mechanical Engineering
41. Geet Gupta, Ph.D., 2022, Chemical and Biological Engineering
40. Nathaniel Kallmyer, Ph.D., 2021, Chemical and Biological Engineering
39. A Lusi, Ph.D., 2021, Mechanical Engineering
38. Shen Liyang, Ph.D., 2021, Chemical and Biological Engineering
37. Sean Rollag, Ph.D., 2021, Chemical and Biological Engineering
36. Shailja Goyal, M Eng, 2020, Chemical and Biological Engineering
35. Yan Cheng, Ph.D., 2020, Chemical and Biological Engineering
34. Alireza Saraeian, Ph.D., 2020, Chemical and Biological Engineering
33. Chad Peterson, Ph.D., 2020, Mechanical Engineering
32. Jaeryul Park, M.S., 2019, Chemical and Biological Engineering
31. Joseph Watkins, MEng, 2019, Chemical and Biological Engineering
30. Chukwuemeka Mba, M.S., 2019, Chemical and Biological Engineering
29. Kartik Srivastava, M.S., 2019, Chemical and Biological Engineering
28. Mohsen Torabi, M.S., 2019, Chemical and Biological Engineering
27. Hsi-Hsin Lin, M.S., 2018, Chemical and Biological Engineering
26. Sean Gassen, 2018, MEng, Chemical and Biological Engineering
25. Baker Kuehl, 2018, MEng, Chemical and Biological Engineering
24. Sharan Raman, 2018, MEng, Chemical and Biological Engineering
23. Tannon Daugaard, 2018, Ph.D., Mechanical Engineering
22. Xiaotong Chadderdon, 2018, Ph.D., Chemical and Biological Engineering
21. David Chadderdon, 2018, Ph.D., Chemical and Biological Engineering
20. Jiajie Huo, 2018, Ph.D., Chemical and Biological Engineering
19. Yang Qiu, 2018, Ph.D., Chemical and Biological Engineering
18. Dane Erickson, 2018, M.S., Mechanical Engineering
17. Reihaneh Jamshidi, 2018, Ph.D., Mechanical Engineering
16. Toni Pfennig, 2017, Ph.D., Chemical and Biological Engineering
15. Yuerui Huang, 2017, M.S., Chemical and Biological Engineering
14. Santosh Shaw, 2017, Ph.D., Materials Science and Engineering

13. Neeva Benipal, 2017, Ph.D., Chemical and Biological Engineering
12. Chamila (Rajeeva) Thilakaratne, 2016, Ph.D., Mechanical Engineering
11. Michael Nolte, 2016, Ph.D., Chemical and Biological Engineering
10. Ji Qi, 2015, Ph.D., Chemical and Biological Engineering
9. Anita Bejile, 2015, M.S., Chemical and Biological Engineering
8. Yuerui Huang, 2015, MEng, Chemical and Biological Engineering
7. Subramania Venkatachalam, 2015, Ph.D., Chemical and Biological Engineering
6. Yong Choi, 2015, Ph.D., Chemical and Biological Engineering
5. Ullas Pathak, 2014, MEng, Chemical and Biological Engineering
4. Jing Zhang, 2014, Ph.D., Chemical and Biological Engineering
3. Olivia Wilwert, 2014, MEng, Chemical and Biological Engineering
2. Tianfu Wang, 2014, Ph.D., Chemical and Biological Engineering
1. Jason Anderson, 2014, Ph.D., Chemical and Biological Engineering.

### **Department-Level Service**

11. Research Director, 2022 – present
10. Member, Honors & Awards Committee, 2022 – present
9. Member, Strategic Planning & Governance Committee, 2021 – present
8. Director of Graduate Education, 2019 – 2021
7. CEGSO Faculty Mentor, 2019 – 2021
6. Member, CBE Development Committee, 2018 – 2021
5. Member, CBE Lecturer Search Committee, 2017
4. Associate Director of Graduate Education, 2016 – 2019
3. Graduate Seminar Coordinator, Fall 2015 – Spring 2016
2. Member, CBE Faculty Search Committee, 2013
1. Member, CBE Graduate Committee, 2012 – 2022

### **College-Level Service**

11. Reviewer, Catron Center for Solar Energy Research Fellowship Selection Committee, 2023
10. Reviewer, Murray Harpole Chair in Engineering Selection Committee, 2023
9. Reviewer, Stanley Chair in Interdisciplinary Engineering Selection Committee, 2023
8. Reviewer, Bailey Award Selection Committee, 2023
7. Member, College of Engineering Strategic Planning Committee, 2023
6. Chair, Strategic Planning Committee: Engineered Medicine, 2023
5. Member, Research Directors Committee, 2022 – present
4. Reviewer, Exploratory Research Projects program, 2022
3. Member, Strategic Planning Committee: Energy Systems, 2018
2. Member of the Associate Scientist II Search Committee, Materials Analysis and Research Laboratory (MARL), 2014

1. Member of the Advisory Council, Materials Analysis and Research Laboratory (MARL), 2013 – present

### **University-Level Service**

3. Preparing for Future Faculty (PFF) mentor for Andrew Kohler, 2022 – present
2. Preparing for Future Faculty (PFF) mentor for Deep Patel, 2022 – present
1. Preparing for Future Faculty (PFF) mentor for Dr. Arpa Gosh, 2019 – 2020

## **SERVICE TO THE PROFESSION**

### **Editorial and Journal Reviewer Activities**

#### **Editorial Activities**

- Editorial board member of *npj Materials Sustainability (Nature)*, 2023 – present
- Guest Editor for *Green Chemistry*, Themed Collection on “Advances in Electrosynthesis for Greener Chemical Manufacturing”, 2023
- Editorial board member of *Catalysts (MDPI)*, 2019 – 2021
- Member of the *ACS Sustainable Chemistry & Engineering* Early Career Board, 2017 – 2019
- Associate Editor of *Journal of Nanoparticle Research (Springer)*, 2012 – 2013
- Editorial board peer-review member of *ISRN Nanotechnology*, 2011 – 2017

#### **Journal Reviewer Activities (selected list)**

- *ACS Catalysis* (IF = 13.7)
- *ACS Sustainable Chemistry & Engineering* (IF = 9.2)
- *Angewandte Chemie International Edition* (IF = 16.8)
- *Applied Catalysis B: Environmental* (IF = 24.3)
- *ChemSusChem* (IF = 9.1)
- *Energy & Environmental Science* (IF = 39.7)
- *Green Chemistry* (IF = 11.0)
- *Journal of the American Chemical Society* (IF = 16.4)
- *Journal of Catalysis* (IF = 8.0)
- *Nature Catalysis* (IF = 40.7)
- *Nature Communications* (IF = 17.7)
- *Science Advances* (IF = 14.9)

### **Service to Professional Societies**

#### **Leadership Roles in Professional Societies**

- Great Plains Catalysis Society, President-Elect, 2023
- Great Plains Catalysis Society, Director and Member of the Executive Committee, 2018 – present

- North American Catalysis Society, Technical Program Committee Member (Topic area: Biomass Conversion for Chemicals)
- Carbon for Catalysis (Carbocat), Member of the International Scientific Committee for the conferences held in 2012, 2014, 2016, 2018.

### **Conference Organization**

- Great Plains Catalysis Society, Conference Chair, Fall Symposium 2022

### **Session Chair/Co-chair**

- 43rd Symposium on Biomaterials, Fuels and Chemicals (SBFC), Co-convenor, “Advantaged Performance Bioproducts and Separations”
- 26th North American Catalysis Society Meeting (NAM26)  
 Technical Program Committee Member; Programing Chair “Biomass for Chemicals”  
 Session Chair, “Biomass Conversion for Chemical Production: Electrocatalytic Conversion of Biomass”  
 Session Chair, “Hydrodeoxygenation and Vapor Phase Upgrading II”
- Great Plains Catalysis Society Spring Symposium 2018, Session Chair
- 25th North American Catalysis Society Meeting (NAM25), Session Chair, “Green Catalysis”
- ACS Spring Meeting 2017, Session Chair, “Catalytic Conversion of Lignocellulosic Biomass to Fuels, Chemicals & Materials”
- 2016 AIChE Annual Meeting, Session Chair, “Catalytic Processing of Fossil and Biorenewable Feedstocks: Biomass-Derived Aromatics”
- Carbon 2016, Session Chair, “Green Catalysis”
- 24th North American Catalysis Society Meeting (NAM24), Session Chair, “Biomass Conversion with Metals”
- 8th International Conference on Materials for Advanced Technologies of the Materials Research Society of Singapore (ICMAT 2015), Session Chair, “Metal Oxide, Metal Carbide and Integrated Catalysts”
- AIChE Annual Meeting 2015, Session Chair, “Catalytic Processing of Fossil and Biorenewable Feedstocks: Chemicals”
- AIChE Annual Meeting 2014, Session Chair, “Catalytic Processing of Fossil and Biorenewable Feedstocks: Chemicals”
- Carbocat VI, Trondheim, Norway, 2014, Session Chair “Carbon for New Energy Technologies”
- AIChE Annual Meeting 2013  
 Session Chair “Fundamentals of Supported Catalysis”  
 Session Chair, “Catalytic Processing of Fossil and Biorenewable Feedstocks: Chemicals”  
 Session Co-Chair, “Catalytic Biomass Conversion to Chemicals”

### **Membership in Professional Societies**

- American Carbon Society
- American Chemical Society  
 Catalysis Science & Technology Division  
 Energy & Fuels Division
- American Institute of Chemical Engineers  
 Catalysis and Reaction Engineering Division



#### Fuels & Petrochemicals Division

- Electrochemical Society
- Great Plains Catalysis Society
- North American Catalysis Society

#### **Service to Funding Agencies**

- National Science Foundation, CBET-Electrochemical Systems, panel member, 2023
- National Science Foundation, ECO-CBET, ad hoc reviewer, 2022
- National Science Foundation, Science and Technology Centers, ad hoc reviewer, 2022
- National Science Foundation, ECO-CBET, panel member, 2021
- U.S. Department of Energy, Basic Energy Sciences, ad hoc reviewer, Catalysis, 2021
- U.S. Department of Energy, Basic Energy Sciences, ad hoc reviewer, Catalysis, 2020
- National Science Foundation, CBET, Process Systems, Reaction Engineering and Molecular Thermodynamics, panel member, 2020
- National Science Foundation, CBET, Catalysis and Biocatalysis, CAREER panel member, 2019
- National Science Foundation, IIP, Partnership for Innovation, panel member, 2019
- U.S. Department of Agriculture, Bioprocessing and Bioengineering, panel member, 2019
- U.S. Department of Energy, Basic Energy Sciences, ad hoc reviewer, Catalysis, 2018
- National Science Foundation, CBET, Process Systems, Reaction Engineering and Molecular Thermodynamics, panel member, 2018
- American Chemical Society, Petroleum Research Fund, ad hoc reviewer, 2018.
- National Science Foundation, CHE, Catalysis, ad hoc reviewer, 2017
- National Science Foundation, CBET, Catalysis and Biocatalysis, panel member, 2017
- U.S. Department of Energy, Basic Energy Sciences, ad hoc reviewer, Catalysis, 2016.
- National Science Foundation, CBET, Catalysis and Biocatalysis, panel member (2 panels), 2016
- National Science Foundation, CBET, Environmental Engineering, panel member, 2015
- National Science Foundation, DMR, Metals and Metallic Nanostructures, panel member, 2015
- American Chemical Society, Petroleum Research Fund, ad hoc reviewer, 2015
- U.S. Department of Energy, Basic Energy Sciences, ad hoc reviewer, Catalysis, 2012
- French National Research Agency, panel member, Early Career: Biomass Conversion, 2012
- French National Research Agency, panel member, Biomass Conversion, 2012, 2013
- French National Research Agency, panel member, Franco-German Projects, 2011
- French National Research Agency, panel member, International White Papers, 2011
- Research Council of Norway, panel member, Biomass Conversion, 2010

#### **DIVERSITY, EQUITY, AND INCLUSION ACTIVITIES**

- Participates in Iowa State University's Science Bound, a pre-college to college program that empowers students of color to pursue degrees and careers in STEM fields, 2022 – present
- Faculty mentor for the McNair Postbaccalaureate Achievement program that supports students from underrepresented segments of society and prepares them for graduate school, 2017 – present

- Participated in the Safe Zone program of the Center for LGBTQIA+ Student Success, 2012
- Participated in the Margaret Sloss Center for Women and Gender Equity “Who Needs Feminism?” campaign, 2012
- Encourages diversity in the research group by recruiting women and underrepresented students whenever possible. 38% of the students who graduated with Ph.D. were women. Of the 47 undergraduate students mentored, 55% were women (26) and 17% were from underrepresented groups in STEM education (8).
- Promotes a safe, welcoming, and inclusive learning environment in class documented through course evaluations.