JEAN-PHILIPPE TESSONNIER

Department of Chemical and Biological Engineering
Iowa State University, Ames, Iowa 50011
Ph: 515-294-4595 / Email: tesso@iastate.edu / Web: TessonnierGroup.org

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

Associate Professor 2018 – present
Richard C. Seagrave Professor of Chemical and Biological Engineering
Department of Chemical and Biological Engineering, Iowa State University

Assistant Professor 2012 – 2018
Carol and Jack Johnson Faculty Fellow
Department of Chemical and Biological Engineering, Iowa State University

Affiliated Member 2012 – present
Center for Biorenewable Chemicals (CBiRC)
Office of Biotechnology, Iowa State University
U.S. Department of Energy Ames National Laboratory

Visiting Researcher 2011 – 2012
Department of Chemical and Biomolecular Engineering, University of Delaware
Mentor: Prof. Mark Barteau

Project Leader 2008 – 2010
Fritz Haber Institute of the Max Planck Society, Berlin, Germany

Postdoctoral Fellow 2005 – 2007
Fritz Haber Institute of the Max Planck Society, Berlin, Germany
Mentor: Prof. Robert Schlögl

OVERVIEW OF RESEARCH AND EDUCATIONAL IMPACT

- Published **93** peer-reviewed articles with > 6700 citations; current **h-index of 47** (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**); co-founder and co-owner of Sumatra Biorenewables, LLC
- Secured **$11,313,489** of new funding (PI responsible for $6,095,782 of competitive research funds)
- Ranked **14 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.; Tessonnier, 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
Featured as Journal Front Cover

92. Bateni, H.; Prabhu, P. T.; Gebur, H. E.; Tessonnier, 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.; Tessonnier, 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
Featured as Journal Cover

90.* Saraeian, A.; Gupta, G.; Johnson, R.; Dorn, R. W.; Kauffmann, A. M.; Bateni, H.; Tessonnier, 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.; Tessonnier, 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
Featured as Journal Cover

88.* A, L.; Radhakrishnan, H.; Vincent Sahayaraj, D.; Tessonnier, 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 Comononomer 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
Featured as Journal Front Cover

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_2/SiC Supports with Tailored Thermal Conductivity to Reveal the Effect of Surface Temperature on Ru-Catalyzed CO_2 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
Featured as Journal Cover

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.* Chadderdon, X. H.; Chadderdon, 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. http://dx.doi.org/10.1039/C7GC02041D

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

72. Losch, P.; Hoff, T. C.; Kolb, J.; Bernardon, C.; Tessonnier, J.-P.; Louis, B.; Mesoporous ZSM-5 Zeolites in Acid Catalysis: Top-Down vs. Bottom-Up Approach, *Catalysts* **2017**, *7*, 225. http://dx.doi.org/10.3390/catal7080225

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_6-1,4-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
Featured as Journal Front Cover

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. http://dx.doi.org/10.1039/C5GC02548F

62. Carraher, J. M.; Curry, S. M.; Tessonnier, J.-P.; Kinetics, Reaction Orders, Rate Laws, and Their Relation to Mechanisms: A Hands-On Introduction for High School Students Using Portable Spectrophotometry, *J. Chem. Educ.* **2016**, *93*, 172-174. http://dx.doi.org/10.1021/acs.jchemed.5b00640

61. Blume, R.; Rosenthal, D.; Tessonnier, J.-P.; Li, H.; Knop-Gericke, A.; Schlögl, R.; Characterizing Graphitic Carbon with X-ray Photoelectron Spectroscopy: A Step-by-Step Approach, *ChemCatChem* **2015**, *7*, 2871-2881. http://dx.doi.org/10.1002/cctc.201500344

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_2 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

56. Matthiesen, J. E.; Hoff, T.; Liu, C.; Pueschel, C.; Rao, R. G.; Tessonnier, J.-P.; Functional Carbons and Carbon Nanohybrids for the Catalytic Conversion of Biomass to Renewable Chemicals in the Condensed Phase, *Chin. J. Catal.* **2014**, *35*, 842-855. http://dx.doi.org/10.1016/S1872-2067(14)60122-4

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_x 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

51. Tessonnier, J.-P.; Barteau, M. A.; Dispersion of Alkyl-Chain-Functionalized Reduced Graphene Oxide Sheets in Nonpolar Solvents, *Langmuir* **2012**, *28*, 6691-6697. http://dx.doi.org/10.1021/la2051614

50. Neri, G.; Leonardi, S. G.; Donato, N.; Marichy, C.; Tessonnier, J.-P.; Willinger, M.-G.; Lee, K.-H.; Pinna, N.; MO_x/CNTs Hetero-Structures for Gas Sensing Applications: Role of CNTs Defects, *Procedia Eng.* **2012**, *47*, 1259-1262. http://dx.doi.org/10.1016/j.proeng.2012.09.382

49. Mansor, N. B. A.; Tessonnier, J.-P.; Rinaldi, A.; Reiche, S.; Kutty, M. G.; Chemically Modified Multi-walled Carbon Nanotubes (MWCNTs) with Anchored Acidic Groups, *Sains Malays.* **2012**, *41*, 603-609.

48. Mette, K.; Bergmann, A.; Tessonnier, J.-P.; Hävecker, M.; Yao, L.; Ressler, T.; Schlögl, R.; Strasser, P.; Behrens, M.; Nanostructured Manganese Oxide Supported on Carbon Nanotubes for Electrocatalytic Water Splitting, *ChemCatChem* **2012**, *4*, 851-862. http://dx.doi.org/10.1002/cctc.201100434

47. Marichy, C.; Tessonnier, J.-P.; Ferro, M. C.; Lee, K.-H.; Schlögl, R.; Pinna, N.; Willinger, M.-G.; Labeling and Monitoring the Distribution of Anchoring Sites on Functionalized CNTs by Atomic Layer Deposition, *J. Mater. Chem.* **2012**, *22*, 7323-7330. http://dx.doi.org/10.1039/C2JM00088A

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_x/CNT-Based Electrocatalysts Active in the Conversion of CO_2 to Fuels, *ChemSusChem* **2012**, *5*, 577-586. http://dx.doi.org/10.1002/cssc.201100641

45. Sahin, S.; Mäki-Arvela, P.; Tessonnier, J.-P.; Villa, A.; Reiche, S.; Wrabetz, S.; Su, D. S.; Schlögl, R.; Salmi, T.; Murzin, D. Y.; Palladium Catalysts Supported on N-Functionalized Hollow Vapor-Grown Carbon Nanofibers: The Effect of the Basic Support and Catalyst Reduction Temperature, *Appl. Catal. A* **2011**, *408*, 137-147. http://dx.doi.org/10.1016/j.apcata.2011.09.017

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. http://dx.doi.org/10.1016/j.carbon.2011.07.043

43.* Tessonnier, J.-P.; Su, D. S.; Recent Progress on the Growth Mechanism of Carbon Nanotubes: A Review, *ChemSusChem* **2011**, *4*, 824-847. http://dx.doi.org/10.1002/cssc.201100175
Featured as Journal Front Cover

42.* Rinaldi, A.; Tessonnier, J.-P.; Schuster, M. E.; Blume, R.; Girgsdies, F.; Zhang, Q.; Jacob, T.; Abd Hamid, S. B.; Su, D. S.; Schlögl, R.; Dissolved Carbon Controls the Initial Stages of Nanocarbon Growth, *Angew. Chem. Int. Ed.* **2011**, *50*, 3313-3317. http://dx.doi.org/10.1002/anie.201006639

41. Ocampo, F.; Cunha, J. A.; de Lima Santos, M. R.; Tessonnier, J.-P.; Pereira, M. M.; Louis, B.; Synthesis of Zeolite Crystals with Unusual Morphology: Application in Acid Catalysis, *Appl. Catal. A* **2010**, *390*, 102-109. http://dx.doi.org/10.1016/j.apcata.2010.09.037

40. Tessonnier, J.-P.; Becker, M. J.; Xia, W.; Girgsdies, F.; Blume, R.; Yao, L.; Su, D. S.; Muhler, M.; Schlögl, R.; Spinel-Type Cobalt–Manganese-Based Mixed Oxide as Sacrificial Catalyst for the High-Yield Production of Homogeneous Carbon Nanotubes, *ChemCatChem* **2010**, *2*, 1559-1561. http://dx.doi.org/10.1002/cctc.201000278

39. Pinto, F. V.; Escobar, A. S.; de Oliveira, B. G.; Lam, Y. L.; Cerqueira, H. S.; Louis, B.; Tessonnier, J.-P.; Su, D. S.; Pereira, M. M.; The Effect of Alumina on FCC Catalyst in the Presence of Nickel and Vanadium, *Appl. Catal. A* **2010**, *388*, 15-21. http://dx.doi.org/10.1016/j.apcata.2010.07.055

38. Ressler, T.; Walter, A.; Scholz, J.; Tessonnier, J.-P.; Su, D. S.; Structural Characterization of Mo Oxide Catalysts Supported on Hollow Carbon Nanofibers Using X-ray Absorption Spectroscopy, *J. Catal.* **2010**, *271*, 305-314. http://dx.doi.org/10.1016/j.jcat.2010.02.009

37. McGregor, J.; Huang, Z.; Parrott, E. P. J.; Zeitler, J. A.; Nguyen, K. L.; Rawson, J. M.; Carley, A.; Hansen, T. W.; Tessonnier, J.-P.; Su, D. S.; Teschner, D.; Vass, E. M.; Knop-Gericke, A.; Schlögl, R.; Gladden, L. F.; Active Coke: Carbonaceous Materials as Catalysts for Alkane Dehydrogenation, *J. Catal.* **2010**, *269*, 329-339. http://dx.doi.org/10.1016/j.jcat.2009.11.016

36.* Villa, A.; Tessonnier, J.-P.; Majoulet, O.; Su, D. S.; Schlögl, R.; Transesterification of Triglycerides Using Nitrogen-Functionalized Carbon Nanotubes, *ChemSusChem* **2010**, *3*, 241-245. http://dx.doi.org/10.1002/cssc.200900181

35.* Louis, B.; Ocampo, F.; Yun, H.-S.; Tessonnier, J.-P.; Maciel Pereira, M.; Hierarchical Pore ZSM-5 Zeolite Structures: from Micro to Macro-Engineering of Structured Catalysts, *Chem. Eng. J.* **2010**, *161*, 397-402. http://dx.doi.org/10.1016/j.cej.2009.09.041

34. Delgado, J. J.; Chen, X.; Tessonnier, J.-P.; Schuster, M. E.; Del Rio, E.; Schlögl, R.; Su, D. S.; Influence of the Microstructure of Carbon Nanotubes on the Oxidative Dehydrogenation of Ethylbenzene to Styrene, *Catal. Today* **2010**, *150*, 49-54. http://dx.doi.org/10.1016/j.cattod.2009.07.103

33. Sahin, S.; Mäki-Arvela, P.; Tessonnier, J.-P.; Villa, A.; Shao, L.; Su, D. S.; Schlögl, R.; Salmi, T.; Murzin, D. Y.; Effect of the Carbon Nanotube Basicity in Pd/N-CNT Catalysts on the Synthesis of

R-1-Phenyl Ethyl Acetate, *Stud. Surf. Sci. Catal.* **2010**, *175*, 283-287. http://dx.doi.org/10.1016/S0167-2991(10)75043-6

32. Tessonnier, J.-P.; Rosenthal, D.; Girgsdies, F.; Amadou, J.; Begin, D.; Pham-Huu, C.; Su, D. S.; Schlögl, R.; Influence of the Graphitisation of Hollow Carbon Nanofibers on Their Functionalisation and Subsequent Filling with Metal Nanoparticles, *Chem. Commun.* **2009**, 7158-7160. http://dx.doi.org/10.1039/b916150c
31. Centi, G.; Gangeri, M.; Fiorello, M.; Perathoner, S.; Amadou, J.; Bégin, D.; Ledoux, M.-J.; Pham-Huu, C.; Schuster, M. E.; Su, D. S.; Tessonnier, J.-P.; Schlögl, R.; The Role of Mechanically Induced Defects in Carbon Nanotubes to Modify the Properties of Electrodes for PEM Fuel Cell, *Catal. Today* **2009**, *147*, 287-299. http://dx.doi.org/10.1016/j.cattod.2009.07.080
30.* Tessonnier, J.-P.; Ersen, O.; Weinberg, G.; Pham-Huu, C.; Su, D. S.; Schlögl, R.; Selective Deposition of Metal Nanoparticles Inside or Outside Multiwalled Carbon Nanotubes, *ACS Nano* **2009**, *3*, 2081-2089. http://dx.doi.org/10.1021/nn900647q
29. Ocampo, F.; Yun, H.-S.; Maciel Pereira, M.; Tessonnier, J.-P.; Louis, B.; Design of MFI Zeolite-Based Composites with Hierarchical Pore Structure: A New Generation of Structured Catalysts, *Cryst. Growth Des.* **2009**, *9*, 3721-3729. http://dx.doi.org/10.1021/cg900425r
28. Villa, A.; Tessonnier, J.-P.; Majoulet, O.; Su, D. S.; Schlögl, R.; Amino-Functionalized Carbon Nanotubes as Solid Basic Catalysts for the Transesterification of Triglycerides, *Chem. Commun.* **2009**, 4405-4407. http://dx.doi.org/10.1039/b906123a
27.* Tessonnier, J.-P.; Villa, A.; Majoulet, O.; Su, D. S.; Schlögl, R.; Defect-Mediated Functionalization of Carbon Nanotubes as a Route to Design Single-Site Basic Heterogeneous Catalysts for Biomass Conversion, *Angew. Chem. Int. Ed.* **2009**, *48*, 6543-6546. http://dx.doi.org/10.1002/anie.200901658
26.* Parrott, E. P. J.; Zeitler, J. A.; McGregor, J.; Shu-Pei, O.; Milne, W. I.; Tessonnier, J.-P.; Su, D. S.; Schlögl, R.; Gladden, L. F.; The Use of Terahertz Spectroscopy as a Sensitive Probe in Discriminating the Electronic Properties of Structurally Similar Multi-Walled Carbon Nanotubes, *Adv. Mater.* **2009**, *21*, 3953-3957. http://dx.doi.org/10.1002/adma.200900941
25. Parrott, E. P. J.; Zeitler, J. A.; McGregor, J.; Oei, S.-P.; Unalan, H. E.; Tan, S.-C.; Milne, W. I.; Tessonnier, J.-P.; Schlögl, R.; Gladden, L. F.; Understanding the Dielectric Properties of Heat-Treated Carbon Nanofibers at Terahertz Frequencies: A New Perspective on the Catalytic Activity of Structured Carbonaceous Materials, *J. Phys. Chem. C* **2009**, *113*, 10554-10559. http://dx.doi.org/10.1021/jp811226d
24.* Tessonnier, J.-P.; Rosenthal, D.; Hansen, T. W.; Hess, C.; Schuster, M. E.; Blume, R.; Girgsdies, F.; Pfänder, N.; Timpe, O.; Su, D. S.; Schlögl, R.; Analysis of the Structure and Chemical Properties of Some Commercial Carbon Nanostructures, *Carbon* **2009**, *47*, 1779-1798. http://dx.doi.org/10.1016/j.carbon.2009.02.032
23. Gangeri, M.; Perathoner, S.; Caudo, S.; Centi, G.; Amadou, J.; Bégin, D.; Pham-Huu, C.; Ledoux, M.-J.; Tessonnier, J.-P.; Su, D. S.; Schlögl, R.; Fe and Pt Carbon Nanotubes for the Electrocatalytic Conversion of Carbon Dioxide to Oxygenates, *Catal. Today* **2009**, *143*, 57-63. http://dx.doi.org/10.1016/j.cattod.2008.11.001
22. Parrott, E. P. J.; Zeitler, J. A.; McGregor, J.; Shu-Pei, O.; Milne, W. I.; Tessonnier, J.-P.; Su, D. S.; Schlögl, R.; Gladden, L. F., Untangling the Electronic Properties in Highly Similar Multi-Walled Carbon Nanotubes by Terahertz Spectroscopy. In *Proceedings of the 34th International Conference on Infrared, Millimeter, and Terahertz Waves (IRMMW-THz 2009)*, Busan, 2009. http://dx.doi.org/10.1109/ICIMW.2009.5324621
21. Tessonnier, J.-P.; Louis, B.; Rigolet, S.; Ledoux, M.-J.; Pham-Huu, C.; Methane Dehydro-Aromatization on Mo/ZSM-5: About the Hidden Role of Brønsted Acid Sites, *Appl. Catal. A* **2008**, *336*, 79-88. http://dx.doi.org/10.1016/j.apcata.2007.08.026

20.* Zhang, J.; Hu, Y.-S.; Tessonnier, J.-P.; Weinberg, G.; Maier, J.; Schlögl, R.; Su, D. S.; CNFs@CNTs: Superior Carbon for Electrochemical Energy Storage, *Adv. Mater.* **2008**, *20*, 1450-1455. http://dx.doi.org/10.1002/adma.200701685

19. Parrott, E. P. J.; Zeitler, J. A.; McGregor, J.; Shu-Pei, O.; Unalan, H. E.; Swee-Ching, T.; Milne, W. I.; Tessonnier, J.-P.; Schlögl, R.; Gladden, L. F., Understanding the Catalytic Activity of Heat Treated Carbon Nanofibres: Investigation of Their Dielectric Properties at THz Frequencies In *Proceedings of the 33rd International Conference on Infrared, Millimeter and Terahertz Waves (IRMMW-THz 2008)*, Pasadena, CA, 2008. http://dx.doi.org/10.1109/ICIMW.2008.4665755

18. Tessonnier, J.-P.; Louis, B.; Ledoux, M.-J.; Pham-Huu, C.; Green Catalysis for Production of Chemicals and CO-Free Hydrogen, *Catal. Commun.* **2007**, *8*, 1787-1792. http://dx.doi.org/10.1016/j.catcom.2007.02.012

17. Ivanova, S.; Louis, B.; Madani, B.; Tessonnier, J.-P.; Ledoux, M.-J.; Pham-Huu, C.; ZSM-5 Coatings on Beta-SiC Monoliths: A Possible New Structured Catalyst for the Methanol-to-Olefins Process, *J. Phys. Chem. C* **2007**, *111*, 4368-4374. http://dx.doi.org/10.1021/jp067535k

16. El Berrichi, Z.; Louis, B.; Tessonnier, J.-P.; Ersen, O.; Cherif, L.; Ledoux, M.-J.; Pham-Huu, C.; One-Pot Synthesis of Ga-SBA-15: Activity Comparison with Ga-Post-Treated SBA-15 Catalysts, *Appl. Catal. A* **2007**, *316*, 219-225. http://dx.doi.org/10.1016/j.apcata.2006.09.033

15.* Amadou, J.; Bégin, D.; Nguyen, P.; Tessonnier, J.-P.; Dintzer, T.; Vanhaecke, E.; Ledoux, M.-J.; Pham-Huu, C.; Synthesis of a Carbon Nanotube Monolith with Controlled Macroscopic Shape, *Carbon* **2006**, *44*, 2587-2589. http://dx.doi.org/10.1016/j.carbon.2006.05.042

14. Tessonnier, J.-P.; Louis, B.; Walspurger, S.; Sommer, J.; Ledoux, M.-J.; Pham-Huu, C.; Quantitative Measurement of the Bronsted Acid Sites in Solid Acids: Toward a Single-Site Design of Mo-Modified ZSM-5 Zeolite, *J. Phys. Chem. B* **2006**, *110*, 10390-10395. http://dx.doi.org/10.1021/jp0602629

13. Winé, G.; Tessonnier, J.-P.; Rigolet, S.; Marichal, C.; Ledoux, M.-J.; Pham-Huu, C.; Beta Zeolite Supported on a β-SiC Foam Monolith: A Diffusionless Catalyst for Fixed-Bed Friedel-Crafts Reactions, *J. Mol. Catal. A: Chem.* **2006**, *248*, 113-120. http://dx.doi.org/10.1016/j.molcata.2005.12.010

12. Sun, Y.; Walspurger, S.; Tessonnier, J.-P.; Louis, B.; Sommer, J.; Highly Dispersed Iron Oxide Nanoclusters Supported on Ordered Mesoporous SBA-15: A Very Active Catalyst for Friedel-Crafts Alkylations, *Appl. Catal. A* **2006**, *300*, 1-7. http://dx.doi.org/10.1016/j.apcata.2005.10.029

11. El Berrichi, Z.; Cherif, L.; Orsen, O.; Fraissard, J.; Tessonnier, J.-P.; Vanhaecke, E.; Louis, B.; Ledoux, M.-J.; Pham-Huu, C.; Ga Doped SBA-15 as an Active and Stable Catalyst for Friedel-Crafts Liquid-Phase Acylation, *Appl. Catal. A* **2006**, *298*, 194-202. http://dx.doi.org/10.1016/j.apcata.2005.10.005

10. Tessonnier, J.-P.; Pesant, L.; Ehret, G.; Ledoux, M.-J.; Pham-Huu, C.; Pd Nanoparticles Introduced Inside Multi-Walled Carbon Nanotubes for Selective Hydrogenation of Cinnamaldehyde into Hydrocinnamaldehyde, *Appl. Catal. A* **2005**, *288*, 203-210. http://dx.doi.org/10.1016/j.apcata.2005.04.034

9. Tessonnier, J.-P.; Winé, G.; Estournès, C.; Leuvrey, C.; Ledoux, M.-J.; Pham-Huu, C.; Carbon Nanotubes as a 1D Template for the Synthesis of Air Sensitive Materials: About the Confinement Effect, *Catal. Today* **2005**, *102-103*, 29-33. http://dx.doi.org/10.1016/j.cattod.2005.02.032

8. Louis, B.; Tessonnier, J.-P.; Walspurger, S.; Pham-Huu, C.; Sommer, J.; Ledoux, M.-J.; Innovative Tool for Determining the Number of Brönsted Acid Sites in Solid Acids: Towards the Chemical Composition of Zeolites, *Stud. Surf. Sci. Catal.* **2005**, *158, Part 1*, 711-716. http://dx.doi.org/10.1016/S0167-2991(05)80404-5

7. El Berrichi, Z.; Cherif, L.; Tessonnier, J.-P.; Louis, B.; Fraissard, J.; Ledoux, M.-J.; Pham-Huu, C.; GaSBA-15: a New and Active Friedel-Crafts Acylation Catalyst, *Stud. Surf. Sci. Catal.* **2005**, *158, Part 2*, 1413-1420. http://dx.doi.org/10.1016/S0167-2991(05)80492-6

6.* Pham-Huu, C.; Winé, G.; Tessonnier, J.-P.; Ledoux, M.-J.; Rigolet, S.; Marichal, C.; BETA Zeolite Nanowire Synthesis under Non-Hydrothermal Conditions Using Carbon Nanotubes as Template, *Carbon* **2004**, *42*, 1941-1946. http://dx.doi.org/10.1016/j.carbon.2004.03.027

5. Nhut, J.-M.; Pesant, L.; Tessonnier, J.-P.; Winé, G.; Guille, J.; Pham-Huu, C.; Ledoux, M.-J.; Mesoporous Carbon Nanotubes for Use as Support in Catalysis and as Nanosized Reactors for One-Dimensional Inorganic Material Synthesis, *Appl. Catal. A* **2003**, *254*, 345-363. http://dx.doi.org/10.1016/S0926-860X(03)00482-4

4. Tessonnier, J.-P.; Pesant, L.; Pham-Huu, C.; Ehret, G.; Ledoux, M.-J.; Carbon Nanotubes: a Highly Selective Support for the C=C Bond Hydrogenation Reaction, *Stud. Surf. Sci. Catal.* **2002**, *143*, 697-704. http://dx.doi.org/10.1016/S0167-2991(00)80712-0

3. Winé, G.; Matta, J.; Tessonnier, J.-P.; Pham-Huu, C.; Ledoux, M.-J.; Beta Zeolite Supported on Silicon Carbide for Friedel-Crafts Fixed-Bed Reactions, *Chem. Commun.* **2003**, 530-531. http://dx.doi.org/10.1039/b209858j

2. Winé, G.; Tessonnier, J.-P.; Pham-Huu, C.; Ledoux, M.-J.; Beta Zeolite Supported on a Macroscopic Pre-Shaped SiC as a High-Performance Catalyst for Liquid-Phase Benzoylation, *Chem. Commun.* **2002**, 2418-2419. http://dx.doi.org/10.1039/b206805m

1. Nhut, J.-M.; Vieira, R.; Pesant, L.; Tessonnier, J.-P.; Keller, N.; Ehret, G.; Pham-Huu, C.; Ledoux, M.-J.; Synthesis and Catalytic Uses of Carbon and Silicon Carbide Nanostructures, *Catal. Today* **2002**, *76*, 11-32. http://dx.doi.org/10.1016/S0920-5861(02)00206-7

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

3. Tessonnier, J.-P.; Rao, R. G.; Giambastiani, G.; Tuci, G., Covalent Methods for Functional Carbons' Synthesis. In *Metal-Free Functionalized Carbons in Catalysis*, Villa, A.; Dimitratos, N., Eds. Royal Society of Chemistry: Cambridge, 2018; pp 1-28. http://dx.doi.org/10.1039/9781788013116-00001

2. Duong-Viet, C.; Housseinou, B.; Truong-Phuoc, L.; Liu, Y.; Tessonnier, J.-P.; Nhut, J.-M.; Granger, P.; Pham-Huu, C., Nitrogen-Doped Carbon Composites as Metal-Free Catalysts. In *New Materials for Catalytic Applications*, Parvulescu, V. I.; Kemnitz, E., Eds. Elsevier: Amsterdam, 2016; pp 273-312.

1. Tessonnier, J.-P., Carbon Nanomaterials: Synthetic Approaches. In *Nanomaterials for the Life Sciences Vol.9: Carbon Nanomaterials*, Kumar, C. S. S. R., Ed. Wiley-VCH Verlag: Weinheim, 2011; pp 3-33.

PATENTS

20. Vincent Sahayaraj, D.; A, L.; Bateni, H.; Saraeian, A.; Shanks, B. H.; Bai, X.; Tessonnier, J.-P. Method to Produce Highly Amenable Cellulose and Enhance Lignin Upgrading to Aromatic and Olefinic Hydrocarbons. ISURF #05515 (Filed January 24, 2023).

19. Hernandez, N.; Yan, M.; Cochran, E. W.; Matthiesen, J. E.; Tessonnier, J.-P. Bioadvantaged Nylon: Polycondensation of 3-Hexenedioic Acid with Hexamethylenediamine. U.S. Non-Provisional Patent Application US 2022/0315700 A1, (Published October 6, 2022).
18. Hernandez, N.; Yan, M.; Cochran, E. W.; Matthiesen, J. E.; Tessonnier, J.-P. Bioadvantaged Nylon: Polycondensation of 3-Hexenedioic Acid with Hexamethylenediamine. U.S. Patent 11,401,377 (Granted August 2, 2022).
17. Tessonnier, J.-P.; Cochran, E. W.; Shanks, B. H.; Gansebom, D.; Abdolmohammadi, S.; Forrester, M. J. Polyesters and Polyamides and Their Preparation through In Situ Hydration of *trans*-3-Hexenedioic Acid. U.S. Provisional Patent Application 63/232,045 (Filed August 11, 2021).
16. Tessonnier, J.-P.; Hadel, J. E.; Dell'Anna, M. N.; Carter, P.; Shanks, B. H.; Cochran, E. W. Isomerization of Cyclohexenedicarboxylic Acid and Its Derivatives. U.S. Provisional Patent Application 63/080,964 (Filed September 21, 2020).
15. Tessonnier, J.-P.; Hadel, J. E.; Dell'Anna, M. N.; Carter, P.; Shanks, B. H.; Cochran, E. W. Base-Catalyzed Isomerization of Muconic Acid Derivatives. U.S. Provisional Patent Application 63/080,959 (Filed September 21, 2020).
14. Tessonnier, J.-P.; Rao, R. G. Method for Tailoring the Performance of Carbon-Supported Metal Catalysts. ISURF #04817 (Filed August 7, 2018).
13. Tessonnier, J.-P.; Abdolmohammadi, S.; Hernandez, N.; Cochran, E. W. Chemically Resistant Nylon 6,6 for Fluid Handling Applications. ISURF #04780 (Filed May 15, 2018).
12. Tessonnier, J.-P.; Matthiesen, J. E.; Nelson, J. W.; Cochran, E. W.; Abdolmohammadi, S.; Hernandez, N. Functionalization of *trans*-3-Hexenedioic Acid for the Production of Hydrophobic Polyamides and Chemical Resistance Thereof. PCT/US2018/061410 (Filed November 16, 2018).
11. Tessonnier, J.-P.; Carraher, J. M.; Pfennig, T.; Shanks, B. H. Catalyst-Free Isomerization of Muconic Acid for the Production of Bio-Advantaged Monomers. ISURF #04556 (Filed August 31, 2016).
10. Tessonnier, J.-P.; Carraher, J. M. pH Mediated Base-Catalyzed Glucose to Fructose Isomerization. ISURF #04567 (Filed September 28, 2016).
9. Hernandez, N.; Yan, M.; Cochran, E. W.; Matthiesen, J. E.; Tessonnier, J.-P. Bioadvantaged Nylon: Polycondensation of 3-Hexenedioic Acid with Hexamethylenediamine. U.S. Patent 10,793,673 (Granted October 6, 2020).
8. Tessonnier, J.-P.; Carraher, J. M.; Pfennig, T.; Shanks, B. H. Isomerization of Muconic Acid. U.S. Patent 9,957,218 (Granted May 1, 2018).
7. Tessonnier, J.-P.; Matthiesen, J. E.; Pfennig, T.; Shanks, B. H.; Carraher, J. M. Electrochemical Isomerization of Muconic Acid. U.S. Patent 10,465,043 (Granted May 11, 2019).
6. Tessonnier, J.-P.; Matthiesen, J. E.; Hernandez, N.; Cochran, E. W. Electrocatalytic Hydrogenation of Muconic Acid. U.S. Patent 10,633,750 (Granted April 28, 2020).
5. Tessonnier, J.-P.; Liu, C.; Carraher, J. M. Method for the Isomerization of Glucose to Fructose. U.S. Non-Provisional Patent Application US 2017/0066793 (Filed March 9, 2017).
4. Behrens, M.; Mette, K.; Bergmann, A.; Tessonnier, J.-P.; Strasser, P.; Schlögl, R. Electrolytic Water Splitting Using a Carbon-Supported MnO_x-Composite. U.S. Patent 9,797,052 (Granted October 24, 2017).
3. Pham-Huu, C.; Ledoux, M.-J.; Bégin, D.; Nguyen, P.; Amadou, J.; Tessonnier, J.-P. Materials Based on Tangled Nanotubes or Nanofibres, Preparation Method Thereof and Use of Same. U.S. Patent 7,988,861 (Granted August 2, 2011).
2. Basso, S.; Tessonnier, J.-P.; Winé, G.; Pham-Huu, C.; Ledoux, M.-J. Zeolite/SiC Composites and Their Use in Catalysis. U.S. Patent 7,179,764 (Granted February 20, 2007).

1. Ledoux, M.-J.; Pham-Huu, C.; Bégin, D.; Ulrich, G.; Ziessel, R.; Nguyen, P.; Amadou, J.; Tessonnier, J.-P.; Vieira, R. Use of a Nanostructure Material Containing Carbon, to Retain Hydrophobic Species Present in a Liquid Medium and to Ensure the Isolation of the Hydrophobic Species. France Patent 2881362 (Granted August 4, 2006).

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).

HONORS AND AWARDS

- 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*
Fall 2022	CH E 382	Chemical Reaction Engineering	3	28	4.83/4.11[a]
Spring 2022	CH E 688	Catalysis and Catalytic Processes	3	17	4.80/4.05[a]
Spring 2021	CH E 382	Chemical Reaction Engineering	3	94	4.36/3.87[c]
Fall 2020	CH E 382	Chemical Reaction Engineering	3	49	4.53/4.23[b]
Spring 2020	CH E 382	Chemical Reaction Engineering	3	40	4.32/---[#]
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[b]
Fall 2018	CH E 583	Advanced Thermodynamics	3	22	4.23/3.89[b]
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[a]
Fall 2017	CH E 583	Advanced Thermodynamics	3	22	4.59/3.94[a]
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[b]
Fall 2015	CHE 601	Seminar	3	63	---
Fall 2015	CHE 583	Advanced Thermodynamics	3	18	4.89/4.16[a]
Fall 2014	CHE 381	Chemical Engineering Thermodynamics	3	69	4.60/4.40[a]
Fall 2014	CHE 583	Advanced Thermodynamics	3	16	4.69/3.98[b]
Spring 2014	CHE 381	Chemical Engineering Thermodynamics	3	55	4.43/3.92[c]
Fall 2013	CHE 583	Advanced Thermodynamics	3	18	3.83/4.34
Fall 2012	CHE 583	Advanced Thermodynamics	3	6	4.33/3.90[b]

* 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.
[a,b,c] (a) 1st, (b) 2nd, and (c) 3rd highest instructor rating of the department that semester.

Postdoctoral Researchers and Student Advising

Postdoctoral Researchers

1. Jack M. Carraher, 2014 – 2017, now at MedPharm Iowa.

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 – present.
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 Verbio.
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

47. Kaitlyn Holtz Undergraduate Research Assistant, Spring 23, "ChE 490: Electrochemical Reactor Technology for the Continuous Hydrogenation of Biologically-Produced *cis,cis*-Muconic 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_2 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

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 Albloushi, 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., In Progress, Chemical and Biological Engineering
46. Yifu Chen, Ph.D., In Progress, 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

5. Member, Research Directors Committee, 2022 – present
4. Reviewer, Exploratory Research Projects program, 2022 – present
3. Member of the Strategic Plan Committee: Energy Systems, 2018 – present
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

- Guest Editor for *Green Chemistry*, Themed Collection on "Advances in Electrosynthesis for Greener Chemical Manufacturing", 2023 (scheduled to be announced in November 2022)
- 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 – present
- Great Plains Catalysis Society, Director and Member of the Executive Committee, 2018 – 2022
- 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-convener, "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

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.