

CURRICULUM VITAE

Wilson D. Shafer, PhD

Assistant Professor; Asbury University

Education and Training

- PhD in Chemistry, University of Kentucky – Defended 11/04/15 - December 2015
http://uknowledge.uky.edu/chemistry_etds/56/
- MS in Chemistry, Eastern Kentucky University – Defended May 2007
<https://eku.on.worldcat.org/oclc/190847075>
- BA in Chemistry, University of Kentucky – May 2003
Emphasis in materials chemistry

Professional Experience

ASSISTANT PROFESSOR Asbury University	07/03/17 - Current
SENIOR RESEARCH SCIENTIST University of Kentucky Center of Applied Energy Research (CAER)	10/2007 – 06/2017
TEACHING/GRADUATE ASSISTANT Eastern Kentucky University, Richmond, KY	8/2004 - 7/2007
ELECTRO-CHEMISTRY RESEARCHER CAER, Lexington KY	1/2004 - 8/2004
TCLP (Test Control Leaching Process) LAB ANALYST Test America Corporation, Nashville, TN	8/2003 - 1/2004
ORGANIC MATERIALS Researcher CAER, Lexington KY	12/2002 - 10/2003
INFRARED SPECTROMETRY LAB TECHNICIAN CAER, Lexington KY	5/2000 - 8/2000

Past Projects

Polymer Synthesis, Polymer Spinning and Testing, Testing for Conductivity and Strength, Modulus, Elasticity, Polymers with Multiwall Nano-Tubes, Conducting, making and testing Li-capacitors, Carbon Capacitors, Battery Additives, Synthesis- Resorcinarene synthesis and other Novel Compounds, LCMS/GCMS study on Biological Materials, and Method Development on LC-ESI-MSMS.

Past Responsibilities

Manager/co-manager for eight labs, maintain and run thirteen instruments: two SRI GC/FID-TCD, two GC-TCD, two micro GC-TCD, one GC-MS, five GC-FID, and one GC-FPD including repair and specific analysis from each; Safety Chair (2009-2015), Seed Committee Chair (2015-present), building and maintaining twenty-three continuous Stir Tank Reactors (CSTR), ten Fixed Bed Reactors, the gas lines and tanks responsible for gas delivery.

Professional Collaborations

NASA, Brookhaven National Lab, Chevron-Phillips, Chevron, Clariant, Sasol, Nexen, Exxon, One Scientific

Instrumentation

GC (TCD, FID, MS), LC (ESI, MS/MS), IR, NMR, SEM

Professional Societies

1. American Chemical Society (2004 - Present)
 - a Divisions of Inorganic chemistry – Coordination Chemistry and Sustainable energy and Environmental Subdivision
2. Tri-State Catalysis Club (2009 - Present)
 - a. Currently the treasurer
3. North American Catalysis Society (2009 - Present)
4. Sigma Zeta (2017 – Present)
5. Kentucky Academy of Science

Journal Reviewer

1. General Reviewer for Materials Chemistry and Physics Journal (2015)
2. General Reviewer for Catalysts Journal (2015)
3. Special Topic for: Topics in Catalysis 57
4. Proposals for Illinois Clean Coal Institute - 2014 (for acceptance in 2015)
5. General Reviewer for International Journal of Hydrogen Energy
6. Pearson chemistry Education books
7. Dissertations for University of South Africa
8. Guest Editor for Catalysts Journal for August 2018 -
9. Reviewed Manuscripts for Applied Catalysis A 2018 -
10. Reviewed Manuscripts for Chemosphere 2019 -
11. Reviewed Manuscripts for Chemical Physics Letters 2019 -
12. Reviewed Manuscripts for Biomass and Bioenergy 2019 -
13. Reviewed Manuscripts for Journal of Catalysis 2019 -
14. Reviewed Manuscripts for Fuel 2019 -

Educational Outreach

1. Taught a Demonstration for the 7th grade class at the School for the Creative and Performing Arts (SCAPA), “Art and Chemistry” - March, 2016 – *In talks with the teacher to make this an annual appointment for the 7th grade chemistry class.*
2. Worked for the Energy Fair at Sayre School with CAER to lead kids and teach demonstrations on Energy - April, 2016
3. Semi-finalist in the ChemChamps Contest with the American Chemical Society (ACS)
4. 2016: Guest Lecturer at Eastern Kentucky University

Professional Lectors

1. Shafer, Wilson D.; Jacobs, Gary; Alvez, Gabriela; Snell, Ryan; Hao, Xianghong; Davis, Burtron H. From Abstracts of Papers, 248th ACS National Meeting & Exposition, San Francisco, CA, United States, August 10-14, 2014 (2014), ENFL-619.

2. Graham, Uschi M.; Jacobs, Gary; Gnanamani, Muthu K.; Lipka, Stephen M.; Shafer, Wilson D.; Swartz, Christopher; Davis, Burtron H. From Abstracts of Papers, 248th ACS National Meeting & Exposition, San Francisco, CA, United States, August 10-14, 2014 (2014).
3. Gnanamani, Muthu Kumaran; Hamdeh, Hussein H.; Jacobs, Gary; Shafer, Wilson D.; Sparks, Dennis E.; Keogh, Robert A.; Davis, Burtron H. From Abstracts of Papers, 248th ACS National Meeting & Exposition, San Francisco, CA, United States, August 10-14, 2014 (2014).
4. Gnanamani, Muthu Kumaran; Hamdeh, Hussein H.; Jacobs, Gary; Shafer, Wilson D.; Davis, Burtron H. Abstracts of Papers, 251st ACS National Meeting & Exposition, San Diego, CA, United States, March 13-17, 2016 (2016), CATL-301.
5. Jacobs, Gary; Bertaux, Clement; Pendyala, Venkat Ramana Rao; Shafer, Wilson D.; Davis, Burtron H. Abstracts of Papers, 251st ACS National Meeting & Exposition, San Diego, CA, United States, March 13-17, 2016 (2016), CATL-443.
6. Jacobs, Gary; Martinelli, Michela; Shafer, Wilson D.; Graham, Uschi; Davis, Burtron H. From Abstracts of Papers, 249th ACS National Meeting & Exposition, Denver, CO, United States, March 22-26, 2015 (2015), CATL-27.
7. Chakrabarti, Debanjan; Gnanamani, Muthu K.; Shafer, Wilson D.; Ribeiro, Mauro C.; Sparks, Dennis E.; Prasad, Vinay; De Klerk, Arno; Davis, Burtron H. From Abstracts of Papers, 248th ACS National Meeting & Exposition, San Francisco, CA, United States, August 10-14, 2014 (2014), ENFL-566.
8. Gnanamani, Muthu Kumaran, Keogh, Robert A., Shafer, Wilson D., & Davis, Burtron H. (2010). Deutero-1-pentene tracer studies for iron and cobalt Fischer-Tropsch synthesis. *Prepr. Symp. - Am. Chem. Soc., Div. Fuel Chem.*, 55(2), 449-450.
9. Gnanamani, Muthu Kumaran, Willauer, Heather D., Hardy, Dennis R., Williams, Frederick W., Shafer, Wilson, & Davis, Burtron H. (2009). Inverse isotope effect in CO₂ hydrogenation: doubly promoted (Cu, K) Fe catalysts. *Prepr. Symp. - Am. Chem. Soc., Div. Fuel Chem.*, 54(2), 935.
10. Gnanamani, Muthu Kumaran; Hamdeh, Hussein H.; Jacobs, Gary; Shafer, Wilson D.; Davis, Burtron H. Fischer-Tropsch synthesis: Effect of Cu, Mn, and Zn addition on the activity and product selectivity of cobalt ferrite catalyst. Abstracts of Papers, 251st ACS National Meeting & Exposition, San Diego, CA, United States, March 13-17, 2016 (2016), CATL-301.
11. Jacobs, Gary; Shafer, Wilson; Graham, Uschi; Martinelli, Michela; Hu, Yongfeng; Davis, Burtron; abstracts of papers of the American Chemical Society, 255, 2018, ACS, 1155 16th St, NW, Washington, DC 20036 USA.

Publications

Book Chapters

1. Shafer, W.D.; Jacobs, G.; Alvez, G.; Snell, R.; Hao, X.; Davis, B.H., "Probing the ability of KL-zeolite to provide single file access of hexane to Pt nanoclusters as a function of pressure," in Fischer-Tropsch Synthesis, Catalysts and Catalysis: Advances and Applications, (eds. B.H. Davis, M.L. Occelli), CRC Press, Taylor & Francis Group, Boca Raton, FL, USA, 2016, Ch. 19, pp. 343-360.
2. Shafer, W.D.; Pendyala, V.R.R.; Jacobs, G.; Selegue, J.; Davis, B.H., "Investigation of the partitioning of dissociated H₂ and D₂ on activated ruthenium catalysts," in Fischer-Tropsch Synthesis, Catalysts and Catalysis: Advances and Applications, (eds. B.H. Davis, M.L.

- Occelli), CRC Press, Taylor & Francis Group, Boca Raton, FL, USA, 2016, Ch. 13, pp. 243-256.
3. Smiley, D.D.; Gloriot, V.; Jacobs, G.; Pendyala, V.R.R.; Graham, U.M.; Ma, W.; Shafer, W.D.; Thomas, G.A.; Hopps, S.; MacLennan, A.; Hu, Y.; Khalid, S.; Davis, B.H., "Fischer-Tropsch synthesis: comparisons of SiO₂ and SiC supported Co catalysts prepared by aqueous impregnation and CVD methods," in Fischer-Tropsch Synthesis, Catalysts and Catalysis: Advances and Applications, (eds. B.H. Davis, M.L. Occelli), CRC Press, Taylor & Francis Group, Boca Raton, FL, USA, 2016, Ch. 5, pp. 55-84.
 4. Suggs, S.S.; Moran, C.P.; Shafer, W.D.; Crawford, A.C.; Jacobs, G.; Patterson, P.M.; Khalid, S.; Davis, B.H., "Low temperature water-gas shift: comparative study of lanthanide oxide supported Pt catalysts," in Fischer-Tropsch Synthesis, Catalysts and Catalysis: Advances and Applications, (eds. B.H. Davis, M.L. Occelli), CRC Press, Taylor & Francis Group, Boca Raton, FL, USA, 2016, Ch. 18, pp. 327-342.
 5. Gnanamani, M.K.; Hamdeh, H.H.; Jacobs, G.; Shafer, W.D.; Sparks, D.E.; Davis, B.H., "Fischer-Tropsch synthesis: activity and selectivity of c-Fe₅C₂ and q-Fe₃C carbides," in Fischer-Tropsch Synthesis, Catalysts and Catalysis: Advances and Applications, (eds. B.H. Davis, M.L. Occelli), CRC Press, Taylor & Francis Group, Boca Raton, FL, USA, 2016, Ch. 2, pp. 15-30.
 6. Hughes, N.A.; Gloriot, V.; Smiley, D.D., Jacobs, G.; Pendyala, V.R.R.; Graham, U.M.; Ma, W.; Gnanamani, M.K.; Shafer, W.D.; MacLennan, A.; Hu, Y.; Khalid, S.; Davis, B.H., "Fischer-Tropsch synthesis: comparisons of Al₂O₃ and TiO₂ supported Co catalysts prepared by aqueous impregnation and CVD methods," in Fischer-Tropsch Synthesis, Catalysts and Catalysis: Advances and Applications, (eds. B.H. Davis, M.L. Occelli), CRC Press, Taylor & Francis Group, Boca Raton, FL, USA, 2016, Ch. 6, pp. 85-106.
 7. Martinelli, M.; Jacobs, G.; Graham, U.M.; Shafer, W.D.; Visconti, C.G.; Lietti, L.; Davis, B.H., "Low temperature water-gas shift: effects of Y and Na in high surface area Na-doped YSZ supported Pt catalysts," in Fischer-Tropsch Synthesis, Catalysts and Catalysis: Advances and Applications, (eds. B.H. Davis, M.L. Occelli), CRC Press, Taylor & Francis Group, Boca Raton, FL, USA, 2016, Ch. 17, pp. 309-326.
 8. Pendyala, V.R.R.; Jacobs, G.; Graham, U.M.; Poirier, J.-S.; Smiley, D.D.; Morales, M.A.; Shafer, W.D.; Khalid, S.; Davis, B.H., "Fischer-Tropsch synthesis: activity and product selectivity of SiC supported Ru catalysts," in Fischer-Tropsch Synthesis, Catalysts and Catalysis: Advances and Applications, (eds. B.H. Davis, M.L. Occelli), CRC Press, Taylor & Francis Group, Boca Raton, FL, USA, 2016, Ch. 16, pp. 295-308.

Journal Articles (organized by year)

Publications for the Masters - Animal Science/Analytical

1. Smith, Darrin, Smith, Lori, Shafer, Wilson, Klotz, James, & Strickland, James. Development and validation of an LC-MS method for quantitation of ergot alkaloids in lateral saphenous vein tissue, *Journal of Agricultural and Food Chemistry* 57(16) (2009) 7213-7220.
2. Klotz, J. L., Bush, L. P., Smith, D. L., Shafer, W. D., Smith, L. L., Arrington, B. C., & Strickland, J. R. "Ergovaline-induced vasoconstriction in an isolated bovine lateral saphenous vein bioassay" *Journal of Animal Science* 85(9) (2007) 2330-2336.
3. Klotz, J. L., Bush, L. P., Smith, D. L., Shafer, W. D., Smith, L. L., Vevoda, A. C., Strickland, J. R. Assessment of vasoconstrictive potential of D-lysergic acid using an isolated bovine lateral saphenous vein bioassay. *Journal of Animal Science* 84(11) (2006) 3167-3175.

Publications for the Dissertation Work Catalysis and Energy/Inorganic

1. Shafer, W.D.; Pendyala, V.R.R.; Gnanamani, M.K.; Jacobs, G.; Selegue, J.; Hopps, S.; Thomas, G.A.; Davis, B.H., "Isotopic apportioning of hydrogen/deuterium on the surface of an activated iron carbide catalyst," *Catalysis Letters* 145 (2015) 1683-1690.
2. Shafer, W.D., Selegue, J.; Jacobs, G.; Davis, B.H., "An investigation of the partitioning of dissociated H₂ and D₂ on activated nickel catalysts," *Catalysis Letters* 143 (2013) 1368-1373.
3. Shafer, W.D.; Jacobs, G.; Davis, B.H., "Fischer-Tropsch synthesis: investigation of the partitioning of dissociated H₂ and D₂ on an activated cobalt catalyst," *ACS Catalysis* 2 (2012) 1452-1456.

Additional Journal Publications

1. Shafer, W.D.; Jacobs, G.; Graham, U.M.; Hamdeh, H.H.; Davis, B.H., "Increased CO₂ hydrogenation to liquid products using promoted iron catalysts," *Journal of Catalysis*, accepted, *in press*.
2. Shafer, W. D., Davis, B. H., "Exchange Interference for a Range of Partially Deuterated Hydrocarbons using a GC-EI-MSD," *Journal of Mass Spectrometry*; doi: 10.1002/jms.4287. 2018
3. Gnanamani, Muthu Kumaran; Hamdeh, Hussein H; Shafer, Wilson D.; Hopps, Shelley D; Davis, Burtron H., "Dehydration of 1, 5-Pentanediol over Na-Doped CeO₂ Catalysts," *Applied Catalysis A: General* 564 (2018) 243-249.
4. Ma, W., Shafer, W.D., Jacobs, G., Yang, J., Sparks, D.E., Hamdeh, H.H., Davis, B.H., "Fischer-Tropsch synthesis: Effect of CO conversion on CH₄ and oxygenate selectivities over precipitated Fe-K catalysts," *Applied Catalysis A: General* 560 (2018) 142-152.
5. Shafer, W.D.; Jacobs, G.; Graham, U.M.; Pendyala, V.R.R.; Martinelli, M.; Thomas, G.A.; Jermwongratanachai, T.; MacLennan, A.; Hu, Y.; Davis, B.H., "Hexane aromatization: analysis of the K-edges of S and K provides new insight into H₂S poisoning of Pt/KL," *Catalysis Letters* 148 (2018) 97-107.
6. Gnanamani, M.K.; Jacobs, G.; Martinelli, M.; Shafer, W.D.; Hopps, S.D.; Thomas, G.A.; Davis, B.H., "Dehydration of 1,5-pentanediol over Na-doped CeO₂ catalysts," *ChemCatChem* 10 (2018) 1148-1154.
7. Pendyala, V.R.R.; Jacobs, G.; Ma, W.; Shafer, W.D.; Sparks, D.E.; MacLennan, A.; Hu, Y.; Davis, B.H., "Fischer-Tropsch synthesis: effect of carbonyl sulfide poison over a Pt promoted Co/alumina catalyst," *Catalysis Today (Special Issue, NGCS11)* 299 (2018) 14-19.
8. Ma, W.; Jacobs, G.; Pendyala, V.R.R.; Sparks, D.E.; Shafer, W.D.; Thomas, G.A.; MacLennan, A.; Hu, Y.; Davis, B.H., "Fischer-Tropsch synthesis: effect of KCl contaminant on the performance of iron and cobalt catalysts," *Catalysis Today (Special Issue, NGCS11)* 299 (2018) 38-36.
9. Gnanamani, M.K.; Jacobs, G.; Shafer, W.D.; Martinelli, M.; Cronauer, D.C.; Kropf, A.J.; Marshall, C.L.; Davis, B.H., "Ga and In modified Ceria as a support for Cobalt Fischer-Tropsch Synthesis," *Applied Catalysis A: General* 547 (2017) 115-123.
10. Sparks, DE; Vallee, S; Jia, Zhijun; Shafer, WD; Davis, BH, Fischer-Tropsch synthesis. Evaluation of an aluminum small channel reactor," *Faraday discussions*, (2017), 197, 403-419.
11. Jacobs, G.; Pendyala, V.R.R.; Martinelli, M.; Shafer, W.D.; Gnanamani, M.K.; Khalid, S.; MacLennan, A.; Hu, Y.; Davis, B.H., "Fischer-Tropsch Synthesis: XANES Spectra

- of Potassium in Promoted Precipitated Iron Catalysts as a Function of Time On-stream,” *Catalysis Letters* 147 (2017) 1861-1870.
12. Gnanamani, M.K.; Jacobs, G.; Shafer, W.D.; Hopps, S.D.; Davis, B.H., “Dehydration of Pentanediol over CeO₂, CeO₂-Ga₂O₃, and CeO₂-In₂O₃,” *Chemistry Select* 2 (2017) 4150-4156.
 13. Pendyala, V.R.R.; Jacobs, G.; Graham, U.M.; Shafer, W.D.; Martinelli, M.; Kong, L.; Davis, B.H., “Fischer-Tropsch synthesis: Influence of acid treatment and preparation method on carbon nanotube supported ruthenium catalysts,” *Ind. Eng. Chem. Res.* 56 (2017) 6408-6418.
 14. Gnanamani, M.; Hamdeh, H.H.; Jacobs, G.; Shafer, W.D.; Hopps, S.D.; Thomas, G.A.; Davis, B.H., “Hydrogenation of carbon dioxide over K-promoted FeCo bimetallic catalysts prepared from mixed metal oxalates,” *ChemCatChem* 9 (2017) 1303-1312.
 15. Pendyala, V.R.R.; Shafer, W.D., Jacobs, G., Martinelli, M.; Sparks, D.E.; Davis, B.H., “Fischer-Tropsch synthesis: effect of ammonia on product selectivities for a Pt promoted Co/alumina catalyst,” *RSC Advances* 7 (2017) 7793-7800.
 16. Martinelli, M.; Jacobs, G.; Shafer, W.D.; Davis, B.H., “Effect of alkali on C-H bond scission over Pt/YSZ catalyst during water-gas shift, steam-assisted formic acid decomposition and methanol steam reforming,” *Catalysis Today* 291 (2017) 29-35.
 17. Gnanamani, M.; Jacobs, G.; Shafer, W.D.; Davis, B.H., “Dehydration of 2-octanol over CeO₂-CaO mixed oxides,” *ChemCatChem* 9 (2017) 492-498.
 18. Pendyala, V.R.R.; Jacobs, G.; Ma, W.; Sparks, D.E.; Shafer, W.E.; Khalid, S.; Xiao, Q.; Hu, Y.; Davis, B.H., “Fischer-Tropsch synthesis: XANES investigation of hydrogen chloride poisoned iron and cobalt-based catalysts at the K-edges of Cl, Fe, and Co,” *Catalysis Letters* 146 (2016) 1858-1866.
 19. Gnanamani, M.K., Hamdeh, H.H., Jacobs, G., Qian, D., Liu, F., Hopps, S.D., Thomas, G.A., Shafer, W.D., Xiao, Q., Hu, Y., Davis, B.H., “Fischer-Tropsch synthesis: Effect of Cu, Mn and Zn addition on activity and product selectivity of cobalt ferrite,” *RSC Advances* 6 (2016) 62356-62367.
 20. Gnanamani, M.K.; Jacobs, G.; Pendyala, V.R.R.; Graham, U.M.; Hopps, S.D.; Thomas, G.A.; Shafer, W.D.; Sparks, D.E.; Xiao, Q.; Hu, Y.; Davis, B.H., “Fischer-Tropsch synthesis: anchoring of cobalt particles in phosphorus modified cobalt / silica catalysts,” *Applied Catalysis A: General* 523 (2016) 146-158.
 21. Ma, W., Jacobs, G., Shafer, W.D., Pendyala, V.R.R., Xiao, Q.; Hu, Y., Davis, B.H., “Effect of H₂S in syngas on the Fischer-Tropsch synthesis performance of 0.5%Pt-25%Co/Al₂O₃ catalyst”, *Catalysis Letters* 146 (2016) 1204-1212.
 22. Gnanamani, Muthu Kumaran; Shafer, Wilson D; Keogh, Robert A.; Davis, Burtron H, “Dehydrocyclization of C₆ Hydrocarbon With and Without Oxygen Containing Substituent Over Pt/(Na)-Al₂O₃ Catalyst,” *Catalysis Letters* (2016), 146(2), 424-432.
 23. Pendyala, V.R.R.; Shafer, W.D.; Jacobs, G.; Davis, B.H., “Fischer-Tropsch synthesis: Effect of solvent on the H₂-D₂ isotopic exchange rate over an activated nickel catalyst,” *Catalysis Today* 270 (2016) 2-8.
 24. Jacobs, G.; Bertaux, C.; Pendyala, V.R.R.; Shafer W.D.; Poirier, J.-S.; Xiao, Q.; Hu, Y.; Davis, B.H., “Fischer-Tropsch synthesis: Cobalt catalysts on alumina having partially pre-filled pores exhibit higher C₅⁺ and lower light gas selectivities,” *Applied Catalysis A: General* 516 (2016) 51-57.
 25. Bertaux, C.; Jacobs, G.; Shafer, W.D., Davis, B.H., “Mitigation of methane selectivity on Pt/KL-zeolite aromatization catalysts by Ag promotion,” *Catalysis Letters* 146 (2016) 763-769.

26. Ma, W.; Jacobs, G.; Sparks, D.E.; Shafer, W.D.; Hamdeh, H.H.; Hopps, S.G.; Pendyala, V.R.R.; Hu, Y.; Xiao, Q.; Davis, B.H., "Effect of H₂S in syngas on the Fischer-Tropsch synthesis performance of a precipitated iron catalyst," *Applied Catalysis A: General* 513 (2016) 127-137.
27. Gnanamani, M.K.; Jacobs, G.; Hamdeh, H.H.; Shafer, W.D.; Liu, F.; Hopps, S.; Thomas, G.A.; Davis, B.H., "Hydrogenation of carbon dioxide over Co-Fe bimetallic catalysts," *ACS Catalysis* 6 (2016) 913-927.
28. Gnanamani, M.K.; Jacobs, G.; Graham, U.M.; Ribeiro, M.C.; Noronha, F.B.; Shafer, W.D.; Davis, B.H., "Influence of carbide formation on oxygenates selectivity during Fischer-Tropsch synthesis over Ce-containing Co catalysts," (special issue dedicated to Prof. Calvin H. Bartholomew) *Catalysis Today* 261 (2016) 40-47.
29. Pendyala, V.R.R.; Jacobs, G.; Shafer, W.D.; Davis, B.H., "Fischer-Tropsch synthesis: Effect of solvent on the H₂-D₂ isotopic exchange rate over an activated cobalt catalyst," *Canadian J. Chem. Eng.* 94 (2016) 678-684.
30. Gao, P.; Graham, U.M.; Shafer, W.D.; Linganis, L.Z.; Jacobs, G.; Davis, B.H., "Nanostructure and kinetic isotope effect of alkali-doped Pt/silica catalysts for water-gas shift and steam-assisted formic acid decomposition," (special issue dedicated to Dr. Jens Rostrup-Nielsen) *Catalysis Today* 272 (2016) 42-48.
31. Gnanamani, M.K.; Jacobs, G.; Keogh, R.A.; Shafer, W.D.; Sparks, D.E.; Hopps, S.; Thomas, G.A.; Davis, B.H., "Fischer-Tropsch synthesis: Effect of pretreatment conditions of cobalt on activity and selectivity for hydrogenation of carbon dioxide," *Applied Catalysis A: General* 499 (2015) 39-46.
32. Chakrabarti, D.; de Klerk, A.; Prasad, V.; Gnanamani, M.K.; Shafer, W.D.; Jacobs, G.; Sparks, D.E.; Davis, B.H., "Conversion of CO₂ over a Co-based Fischer-Tropsch catalyst," *Industrial & Engineering Chemistry Research* 54 (2015) 1189-1196.
33. Ma, W.; Jacobs, G.; Thomas, G.A.; Shafer, W.D.; Sparks, D.E.; Hamdeh, H.H.; Davis, B.H., "Fischer-Tropsch synthesis: effects of hydrohalic acids in syngas on a precipitated iron catalyst," *ACS Catalysis* 5 (2015) 3124-3136.
34. Pendyala, V.R.R.; Shafer, W.D.; Jacobs, G.; Graham, U.M.; Khalid, S.; Davis, B.H., "Fischer-Tropsch synthesis: effect of reducing agent for aqueous-phase synthesis over Ru nanoparticle and supported Ru catalysts," *Catalysis Letters* 145 (2015) 893-904.
35. Martinelli, M.; Jacobs, G.; Graham, U.M.; Shafer, W.D.; Cronauer, D.C.; Kropf, A.J.; Marshall, C.L.; Khalid, S.; Visconti, C.G.; Lietti, L.; Davis, B.H., "Water-gas shift: characterization and testing of nanoscale YSZ supported Pt catalysts," *Applied Catalysis A: General* 497 (2015) 184-197.
36. Gnanamani, M. K., Shafer, W. D. Pendyala, V. R. R., Chakrabarti, D.; de Klerk, A., Keogh, R. A., Sparks, D. E.; Davis, B. H. ¹⁴C-Labeled Alcohol Tracer Study: Comparison of Reactivity of Alcohols over Cobalt and Ruthenium Fischer-Tropsch Catalysts, *Topics in Catalysis* (2015), 58(4-6), 343-349.
37. Luo, M., Shafer, W. D., Davis, B. H. Fischer-Tropsch synthesis: branched paraffin distribution for potassium promoted iron catalysts, *Catalysis Letters* (2014), 144(6), 1031-1041.
38. Pendyala, V.R.R.; Jacobs, G., Hamdeh, H.H.; Shafer, W.D.; Sparks, D.E.; Davis, B.H., "Fischer-Tropsch synthesis: effect of activation gas after varying Cu promoter loading over K-promoted Fe-based catalyst," *Catalysis Letters* 144 (2014) 1624-1635.

39. Graham, U.M.; Jacobs, G.; Gnanamani, M.; Lipka, S.M.; Shafer, W.D.; Swartz, C.R.; Jermwongratanachai, T.; Chen, R.; Rogers, F.; Davis, B.H., "Fischer Tropsch synthesis: high oxygenate-selectivity of cobalt catalysts supported on hydrothermal carbons," *ACS Catalysis* 4 (2014) 1662-1672.
40. Pendyala, V.R.R.; Shafer, W.D.; Jacobs, G.; Davis, B.H., "Fischer-Tropsch synthesis: effect of reaction temperature for aqueous-phase synthesis over a platinum promoted Co/alumina catalyst," *Catalysis Letters* 144 (2014) 1088-1095.
41. Ma, W.; Jacobs, G.; Gao, P.; Jermwongratanachai, T.; Shafer, W.D.; Pendyala, V.R.R.; Chia H. Yen; Jennifer L.S. Klettlinger; Davis, B.H., "Fischer-Tropsch synthesis: pore size and Zr promotional effects on the activity and selectivity of 25%Co/Al₂O₃ catalysts," *Applied Catalysis A: General* 475 (2014) 314-324.
42. Yang, J.; Shafer, W.D.; Pendyala, V.R.R., Jacobs, G.; Chen, D.; Holmen, A.; Davis, B.H. Fischer-Tropsch synthesis: using deuterium as a tool to investigate primary product distribution," *Catalysis Letters* 144 (2014) 524-530.
43. Jermwongratanachai, T.; Jacobs, G.; Shafer, W.D.; Pendyala, V.R.R.; Ma, W.; Gnanamani, M.K.; Hopps, S.; Thomas, G.A.; Kitiyanan, B.; Khalid, S.; Davis, B.H., "Fischer-Tropsch synthesis: TPR and XANES analysis of the impact of oxidation-reduction (OR) cycles on the reducibility of Co/alumina catalysts with different promoters (Pt, Ru, Re, Ag, Au, Rh, Ir)," *Catalysis Today* 228 (2014) 15-21.
44. Yang, J.; Shafer, W.D.; Pendyala, V.R.R.; Jacobs, G.; Ma, W.; Chen, D.; Holmen, A.; Davis, B.H., "Fischer-Tropsch synthesis: Deuterium kinetic isotopic effect for a 2.5%Ru/NaY catalysts," *Topics in Catalysis* 57 (2014) 508-517.
45. Gnanamani, M.K.; Jacobs, G.; Shafer, W.D.; Sparks, D.E.; Hopps, S.; Thomas, G.A.; Davis, B.H., "Low temperature water-gas shift reaction over alkali metal promoted cobalt carbide catalysts," *Topics in Catalysis* 57 (2014) 612-618.
46. Jermwongratanachai, T.; Jacobs, G.; Shafer, W.D.; Ma, W.; Pendyala, V.R.R.; Davis, B.H.; Kitiyanan, B.; Khalid, S.; Cronauer, D.C.; Kropf, A.J.; Marshall, C.L., "Fischer-Tropsch synthesis: oxidation of a fraction of cobalt crystallites in research catalysts at the onset of FT at partial pressures mimicking 50% CO conversion," *Topics in Catalysis* 57 (2014) 479-490.
47. Pendyala, V.R.R.; Gnanamani, M.K.; Jacobs, G.; Ma, W.; Shafer, W.D.; Davis, B.H., "Fischer-Tropsch synthesis: effect of ammonia impurities in syngas feed over cobalt/alumina catalyst," *Applied Catalysis A: General* 468 (2013) 38-43.
48. Jermwongratanachai, T.; Jacobs, G.; Ma, W.; Shafer, W.D.; Gnanamani, M.K.; Gao, P.; Kitiyanan, B.; Davis, B.H.; Klettlinger, J.L.S.; Yen, C.H.; Cronauer, D.C.; Kropf, A.J.; Marshall, C.L., "Fischer-Tropsch synthesis: comparisons between Pt and Ag promoted Co/Al₂O₃ catalysts for reducibility, local atomic structure, catalytic activity, and oxidation-reduction cycles," *Applied Catalysis A: General* 464-465 (2013) 165-180.
49. Gnanamani, M.K.; Jacobs, G.; Shafer, W.D.; Davis, B.H., "Fischer-Tropsch synthesis: activity of metallic phases of cobalt supported on silica," *Catalysis Today* 215 (2013) 13-17.
50. Sparks, D.E.; Jacobs, G.; Gnanamani, M.K.; Pendyala, V.R.R.; Ma, W.; Kang, J.; Shafer, W.D.; Keogh, R.A.; Graham, U.M.; Gao, P.; and Davis, B.H., "Poisoning of cobalt catalyst used for Fischer-Tropsch synthesis," *Catalysis Today* 215 (2013) 67-72.
51. Ma, W.; Jacobs, G.; Kang, J.; Sparks, D.E.; Gnanamani, M.K.; Pendyala, V.R.R.; Shafer, W.D.; Keogh, R.A.; Graham, U.M.; Thomas, G.A.; Davis, B.H., "Fischer-Tropsch synthesis. Effect of alkali, bicarbonate, and chloride addition on activity and selectivity," *Catalysis Today* 215 (2013) 73-79.

52. Pendyala, Venkat Ramana Rao, Shafer, W. D., Davis, B. H. (2013). Aqueous-phase Fischer–Tropsch synthesis: Effect of reaction temperature on ruthenium nanoparticle catalyst and comparison with supported Ru and Co catalysts,” *Catal. Lett.*, 143(9), 895-901.
53. Pendyala, V.R.R., Jacobs, G., Shafer, W.D., Keogh, R.A., Kang, J., Sparks, D.E., Davis, B.H., “Shape-selective alkylation of biphenyl with propylene using zeolite and amorphous silica-alumina catalysts,” *Applied Catalysis A: General* 453 (2013) 195-203.
54. Kang, J.; Ma, W.; Keogh, R.A.; Shafer, W.D.; Jacobs, G.; Davis, B.H., “Hydrocracking and hydroisomerization of n-hexadecane, n-octacosane and Fischer-Tropsch wax over a Pt/SiO₂-Al₂O₃ catalyst,” *Catalysis Letters* 142 (2012) 1295-1305.
55. Gnanamani, M.K.; Jacobs, G.; Hamdeh, H.H.; Shafer, W.D.; Davis, B.H., “Fischer-Tropsch synthesis: Mössbauer investigation of iron containing catalysts for hydrogenation of carbon dioxide,” *Catalysis Today* 207 (2013) 50-56.
56. Gnanamani, M.K.; Langaniso, L.Z.; Jacobs, G.; Keogh, R.A.; Shafer, W.D.; Davis, B.H., “Hydroisomerization of n-hexadecane over anion modified Pt/HfO₂ catalysts,” *Catalysis Letters* 142 (2012) 1180-1189.
57. Gnanamani, M.K.; Jacobs, G.; Shafer, W.D.; Ribeiro, M.C.; Pendyala, V.R.R.; Ma, W.; Davis, B.H., “Fischer-Tropsch synthesis: deuterium isotopic study for the formation of oxygenates over CeO₂-supported Pt-Co catalysts,” *Catalysis Communications* 25 (2012) 12-17.
58. Masuku, C.M.; Gnanamani, M.K.; Shafer, W.D.; Ma, W.; Jacobs, G.; Hildebrandt, D.; Glasser, D.; Davis, B.H., “Variation of residence time with chain length for products in a slurry phase Fischer-Tropsch reactor,” *Journal of Catalysis* 287 (2012) 93-101.
59. Gnanamani, M. K., Shafer, W. D., Davis, B. H. (2012). Hydroisomerization of n-Hexadecane Over Anion Modified Pt/HfO₂ Catalysts,” *Catal. Lett.*, 142(2), 190-194.
60. Gnanamani, M. K., Shafer, W. D., Sparks, D. E., Davis, B. H. “Fischer–Tropsch synthesis: Effect of CO₂ containing syngas over Pt promoted Co/ γ -Al₂O₃ and K-promoted Fe catalysts,” *Catal. Commun.*, 12(11) (2012) 936-939.
61. Gnanamani, M.K; Jacobs, G.; Shafer, W.D.; Sparks, D.E.; Davis, B.H., “Fischer-Tropsch Synthesis: Deuterium kinetic isotope study for hydrogenation of carbon oxides over cobalt and iron catalysts,” *Catalysis Letters* 141 (2011) 1420-1428.
62. Gnanamani, M.K.; Ribeiro, M.C.; Ma, W.; Shafer, W.D.; Jacobs, G., Graham, U.M.; Davis, B.H., “Fischer-Tropsch synthesis: metal-support interfacial contact governs oxygenates selectivity over CeO₂ supported Pt-Co catalysts,” *Applied Catalysis A: General* 393 (2011) 17-23.
63. Gnanamani, M. K, Keogh, R. A., Shafer, W. D., & Davis, B. H. Deutero-1-pentene tracer studies for iron and cobalt Fischer–Tropsch synthesis *Appl. Catal., A*, 393(1-2) (2011) 130-137.
64. Gnanamani, M. K., Keogh, R. A., Shafer, W. D., Shi, B, Davis, B. H. Fischer–Tropsch synthesis: Deuterium labeled ethanol tracer studies on iron catalysts *Applied Catalysis A: General* 385(1-2) (2010) 46-51.
65. Azzam, K.G.; Jacobs, G.; Shafer, W.D.; Davis, B.H., “Dehydrogenation of propane over Pt/KL catalyst: Investigating the role of L-zeolite structure on catalyst performance using isotope labeling,” *Applied Catalysis A: General* 390 (2010) 264-270.
66. Azzam, K.G.; Shafer, W.D.; Jacobs, G.; Davis, B.H., “Aromatization of n-hexane over Pt/KL catalyst: Role of intracrystalline diffusion on catalyst performance using isotope labeling,” *Journal of Catalysis* 270 (2010) 242-248.