

## **Morris D. Argyle**

306 N 1420 E, Provo, UT 84606

Cell: (801) 960-8943

Email: morrisdargyle@gmail.com

### **Academic Appointments and Professional Registration**

**Associate Professor, Brigham Young University**, Chemical Engineering Department, August 2009—present

**Adjunct Faculty, University of Wyoming**, School of Energy Resources and Department of Chemical and Petroleum Engineering, July 2009—2014

**Department Head, University of Wyoming**, Department of Chemical and Petroleum Engineering, July 2008—June 2009

**Associate Professor, University of Wyoming**, Department of Chemical and Petroleum Engineering, July 2008—June 2009

**Assistant Professor, University of Wyoming**, Department of Chemical and Petroleum Engineering, September 2003—June 2008

**Professional Engineer**, 1997—present (Texas License # 82571; Utah License # 14278544-2202)

### **Education**

Ph.D., **University of California at Berkeley**, Chemical Engineering, 2003

Dissertation topic: Oxidative Dehydrogenation of Light Alkanes on Metal Oxide Catalysts

Dissertation committee: Alexis T. Bell, Enrique Iglesia, A. Paul Alivisatos

B.S., Magna Cum Laude, **Brigham Young University**, Chemical Engineering, 1990

### **Expert Witness**

Areas of expertise: petroleum refining, especially fluid catalytic cracking units; heterogeneous catalysis; refinery and chemical plant process design; and chemical process engineering safety

#### **Current engagements**

**Consultant on petroleum refinery operations** (January 2025-present)

Advising a client on safety and air and water emissions for potential litigation

**Patent infringement** case involving oil refining operations (October 2025-present)

**Trade secret** case involving chemical manufacture (December 2025-present)

#### **Recent engagements**

**Coal ash composition** (April-May 2025)

Produced an expert witness report on the silica content of coal ash

**Product liability regarding benzene content of gasoline** (July 2023-April 2024)

Produced an expert report on historical gasoline benzene content for the plaintiff

Deposed in Provo, UT, September 5, 2023

Testified at trial in Stamford, CT, October 27, 2023

**Recent engagements (continued)****Fire/deflagration liability defense** (February-April 2019)

AMCO Insurance Company v. Production Engineering, LLC and Chris Carruthers  
(Vanco, Inc.)

Produced an expert report that highlighted process safety design deficiencies, which was used successfully by the defense

**Aggravated attempted arson defense** (November 2018-February 2019)

State of Utah v. Sheridan, Andrew Adonai

Prepared to testify in defense of person accused of aggravated attempted arson

Video evidence showed the individual poured gasoline in front of a business and threw a lit cigarette into the spill, which failed to ignite

Research demonstrated that cigarettes are not a competent ignition source

Case was dismissed three days before going to trial

## Career Experience

**Exxon Corporation:** Baytown, Texas Refinery, 1990-1998

**Operations Supervisor, 1998**

Supervised 35 process operating personnel

Ensured their appropriate training, development as future first-line supervisors, and general career development

Responsible for safe and environmentally sound process and mechanical operation of an 85,000 barrel/day fluidized catalytic cracking unit, a 50,000 barrel/day naphtha hydrodesulfurization unit, and a 50,000 barrel/day catalytic reforming unit

**Technical Supervisor, 1997**

Supervised 10-14 chemical and mechanical engineers providing technical support for one-third of the refinery

Oversaw their technical output

Promoted their professional development

**Coordination Engineer, 1996**

Responsible for light and heavy clean products (all fuel products lighter than diesel)

Maintained feed and product inventories for 15 refinery operating units

Set operating targets to maximize economic performance

Interfaced with three similar coordinators to smoothly implement unit start-ups, shut-downs, and manage unplanned downtimes

**Unit Operating Engineer, 1993-1995**

Provided day-to-day process engineering support for an 85,000 barrel/day fluidized catalytic cracking unit

Optimized process operation, diagnosed and resolved operational problems, and developed PC-based monitoring tools as a member of the fluidized catalytic cracking team

Designed and implemented capital projects up to \$100,000

**Process Design Engineer, 1991-1992**

Completed detailed process design for a ~\$5 million crude oil distillation unit furnace project that was successfully implemented

Completed detailed process designs for several unit HAZOP safety analysis follow-up projects that were successfully implemented

Refinery liaison for a ~\$100 million refinery/chemical plant steam and electrical system upgrade project study

**Process Design Engineer** summer intern, 1990

Completed detailed process design for successful water wash facilities for a naphtha reforming unit distillation column

**Idaho National Engineering Laboratory;** summer intern, 1988 and 1989

Developed novel waste destruction methods for naval vessels, 1989

Tested fluidized beds to clean spent nuclear reactor fuel assemblies, 1988

## Patents

Removal of elements from coal fly ash. **US patent 9,550,084**. Maohong Fan, Morris D. Argyle, Mustafa O. M. Sharrad. Granted January 24, **2017**.

A cost-effective catalyst for gasification of Powder River Basin coal. **US patent 8,926,931**. Maohong Fan, Morris D. Argyle, Tiberiu Popa. Granted January 6, **2015**.

System and method of operating a power generation system with an alternative working fluid. **US patent 8,806,849**. John Frederick Ackerman; Matthew Timothy Franer, Randy Lee Lewis, David Allen Bell, Morris Dee Argyle, and Brian Francis Towler. Granted August 19, **2014**.

Apparatus and method to sequester contaminants. **US patent 8,673,257**. Katta J. Reddy and Morris D. Argyle. Granted March 18, **2014**.

Apparatus and method to sequester contaminants. **US patent 8,506,918**. **European Patent EP2414734**. Katta J. Reddy and Morris D. Argyle. Granted August 13, **2013** and February 8, **2012**.

Apparatus and method for sequestering flue gas CO<sub>2</sub>. **US patent 7,879,305**. Katta J. Reddy and Morris D. Argyle. Granted February 1, **2011**.

## Patent Applications

Novel sorbents for mercury removal. Maohong Fan, Morris Argyle, Rodolfo Monterrozo, U.S. Patent Application, US 20120213682 A1 20120823.

System and method of operating a gas turbine engine with an alternative working fluid. John Frederick Ackerman; Matthew Timothy Franer, Randy Lee Lewis, David Allen Bell, Morris Dee Argyle, and Brian Francis Towler. US 20100024433 and 20100024378, WO 2010014324 and 2010036432.

System and method of operating a power generation system with an alternative working fluid. John Frederick Ackerman; Matthew Timothy Franer, Randy Lee Lewis, David Allen Bell, Morris Dee Argyle, and Brian Francis Towler. WO application 2010039318.

## Research Activities

### Publications (in Peer Reviewed Journals)

65. Nelson, Conner J.; Park, Justin L.; Smith, Colin; Smith, Adam; Bishop, Andrew; Boyack, Caleb; Sanders, Lindsey; Smith, Stacey J.; Zheng, Kaifeng; Li, Yuanyuan; Frenkel, Anatoly I.; Argyle, Morris D.; Stowers, Kara J. "Enhancement of oxidative dehydrogenation over cerium-doped nickel niobium catalysts and analysis of batch-to-batch variability." *Journal of Catalysis*, 454, 116577, **2026**.  
<https://doi.org/10.1016/j.jcat.2025.116577>
64. Fu, Yanghe; Gao, Yijing; Jia, Huilin; Zhao, Yuncai; Feng, Yan; Zhu, Weidong; Zhang, Fumin; Argyle, Morris D.; Fan, Maohong, "Rational engineering of triazine-benzene linked covalent-organic frameworks for efficient CO<sub>2</sub> photoreduction." *Green Energy & Environment*, 10, 804-810, **2025**.  
<https://doi.org/10.1016/j.gee.2024.07.002>
63. Moeini, Behnam; Fullwood, David T.; Minson, Paul; Shollenberger, Daniel; Bell, David S.; Argyle, Morris D.; Vanfleet, Richard; Linford, Matthew R., "Microstructure quantification of oblique angle sputtered porous a-Si thin films as a basis for structure-property relations of solid phase microextraction coatings." *Surface and Coatings Technology*, 473, 130014, 1-13, **2023**.  
<https://doi.org/10.1016/j.surfcoat.2023.130014>
62. Moeini, Behnam; Pinder, Joshua W.; Avval, Tahereh G.; Jacobsen, Collin; Brongersma, Hidde H.; Průša, Stanislav; Bábík, Pavel; Vaníčková, Elena; Argyle, Morris D.; Strohmeier, Brian R.; Jones, Brian; Shollenberger, Daniel; Bell, David S.; Linford, Matthew R., "Controlling the surface silanol density in capillary columns and planar silicon via the self-limiting, gas-phase deposition of tris(dimethylamino)methylsilane, and quantification of surface silanols after silanization by low energy ion scattering." *Journal of Chromatography A*, 1707, 464248, 1-9, **2023**.  
<https://doi.org/10.1016/j.chroma.2023.464248>
61. Lai, Qinghua; Cai, Tianyi; Tsang, Shik Chi Edman; Chen, Xia; Ye, Runping; Xu, Zhenghe; Argyle, Morris D.; Ding, Dongji; Chen, Yongmei; Wang, Jianji; Russell, Armistead G.; Wu, Ye; Liu, Jian, Fan, Maohong, "Chemical looping based ammonia production—A promising pathway for production of the noncarbon fuel." *Science Bulletin*, 67, 2124-2138, **2022**.  
<https://doi.org/10.1016/j.scib.2022.09.013>
60. C. Xiong, Y. Wu, M. Feng, J. Fang, D. Liu, L. Shen, M. D. Argyle, K. A. M. Gasem, M. Fan, "High thermal stability Si-Al based N-carrier for efficient and stable chemical looping ammonia generation." *Applied Energy*, 323, 119519, **2022**.  
<https://doi.org/10.1016/j.apenergy.2022.119519>
59. D. I. Patel, G. H. Major, C. Jacobsen, D. Shah, B. R. Strohmeier, D. Shollenberger, D. S. Bell, M. D. Argyle, M. R. Linford, "Flow-Through Atmospheric Pressure-Atomic Layer Deposition Reactor for Thin-Film Deposition in Capillary Columns." *Analytical Chemistry*, 94, 7483-7491, **2022**.  
<https://doi.org/10.1021/acs.analchem.1c05029>

**Publications (Peer Reviewed Journals, continued)**

58. H. Jiang, L. Zhang, Z. Han, Y. Tang, Y. Sun, P. Wan, Y. Chen, M. D. Argyle, M. Fan, "Direct conversion of methane to methanol by electrochemical methods." *Green Energy & Environment*, 7, 1132-1142, **2022**.  
<https://doi.org/10.1016/j.gee.2021.11.007>
57. J. Ding, Q. Liu, R. Ye, W. Gong, F. Zhang, X. He, Y. Zhang, Q. Zhong, M. D. Argyle, M. Fan, "Metal-support interactions in Fe-Cu-K admixed with SAPO-34 catalysts for highly selective transformation of CO<sub>2</sub> and H<sub>2</sub> into lower olefins." *Journal of Materials Chemistry A*, 9, 21877-21887, **2021**.  
<https://doi.org/10.1039/d1ta03327a>
56. M. Chen, J. Wu, C. Lu, X. Luo, Y. Huang, B. Jin, H. Gao, X. Zhang, M. D. Argyle, Z. Liang, M. Fan, "Photoreduction of CO<sub>2</sub> in the presence of CH<sub>4</sub> over g-C<sub>3</sub>N<sub>4</sub> modified with TiO<sub>2</sub> nanoparticles at room temperature." *Green Energy & Environment*, 6, 938-951, **2021**.  
<https://doi.org/10.1016/j.gee.2020.07.001>
55. D. Shah, D. I. Patel, G. H Major, M. D. Argyle, M. R. Linford. "A new holder/container with a porous cover for atomic layer deposition on particles, with transport analysis and detailed characterization of the resulting materials." *Surface and Interface Analysis*, 53, 156-166, **2021**.  
<https://doi.org/10.1002/sia.6895>
54. X. Sun, J. Bao, K. Li, M. D. Argyle, G. Tan, H. Adidharma, K. Zhang, M. Fan, P. Ning. "Advance in Using Plasma Technology for Modification or Fabrication of Carbon-Based Materials and Their Applications in Environmental, Material, and Energy Fields." *Advanced Functional Materials*, 31, 2006287 (1-26), **2021**.  
<https://doi.org/10.1002/adfm.202006287>
53. B. Xu, M. D. Argyle, X. Shi, A. K. Goroncy, A. H. Rony, G. Tan, M. Fan. "Effects of mixture of CO<sub>2</sub>/CH<sub>4</sub> as pyrolysis atmosphere on pine wood pyrolysis products." *Renewable Energy* 162, 1243-1254, **2020**.  
<https://doi.org/10.1016/j.renene.2020.08.069>
52. M. Li, Z. Zhang, H. Xiong, L. Wang, S. Zhuang, M. D. Argyle, Y. Tang, X. Yang, Y. Chen, P. Wan, M. Fan. "0.03 V Electrolysis Voltage Driven Hydrazine Assisted Hydrogen Generation on NiCo phosphide Nanowires Supported NiCoHydroxide Nanosheets." *ChemElectroChem*, 7, 3089-3097, **2020**.  
<https://doi.org/10.1002/celec.202000604>
51. Q. Sheng, R.-P. Ye, W. Gong, X. Shi, B. Xu, M. D. Argyle, H. Adidharma, M. Fan. "Mechanism and catalytic performance for direct dimethyl ether synthesis by CO<sub>2</sub> hydrogenation over CuZnZr/ferrierite hybrid catalyst." *Journal of Environmental Sciences*, 92, 106-117, **2020**.  
<https://doi.org/10.1016/j.jes.2020.02.015>
50. M. Rahmati, M.-Saeed Safdari, T. H. Fletcher, M. D. Argyle, C. H. Bartholomew. "Chemical and Thermal Sintering of Supported Metals with Emphasis on Cobalt Catalysts During Fischer-Tropsch Synthesis." *Chemical Reviews*, 120, 4455-4533, **2020**.  
<https://dx.doi.org/10.1021/acs.chemrev.9b00417>

**Publications (Peer Reviewed Journals, continued)**

49. W. Lu, Q. Cao, B. Xu, H. Adidharma, K. Gasem, M. Argyle, F. Zhang, Y. Zhang, M. Fan. "A New Approach of Reduction of Carbon Dioxide Emission and Optimal Use of Carbon and Hydrogen Content for the Desired Syngas Production from Coal." *Journal of Cleaner Production*, 265, 121786, **2020**.  
<https://doi.org/10.1016/j.jclepro.2020.121786>
48. J. L. Park, K. A. Canizales, M. D. Argyle, B. F. Woodfield, K. J. Stowers. "The effects of doping alumina with silica in alumina-supported NiO catalysts for oxidative dehydrogenation of ethane." *Microporous and Mesoporous Materials*, 293, 109799, **2020**.  
<https://doi.org/10.1016/j.micromeso.2019.109799>
47. Run-Ping Ye, Jie Ding, Weibo Gong, Morris D. Argyle, Qin Zhong, Yujun Wang, Christopher K. Russell, Zhenghe Xu, Armistead G. Russell, Qiaohong Li, Maohong Fan, Yuan-Gen Yao. "CO<sub>2</sub> hydrogenation to high-value products via heterogeneous catalysis." *Nature Communications*, 10, 5698 **2019**.  
<https://doi.org/10.1038/s41467-019-13638-9>
46. M. Rahmati, B. Huang, L. M. Schofield, T. H. Fletcher, B. F. Woodfield, W. C. Hecker, C. H. Bartholomew, M. D. Argyle, "Effects of Ag promotion and preparation method on cobalt Fischer-Tropsch catalysts supported on silica-modified alumina." *Journal of Catalysis*, 362, 118-128, **2018**.  
<https://doi:10.1016/j.jcat.2018.03.027>
45. J. L. Park, S. K. Balijepalli, M. D. Argyle, K. J. Stowers, "Low Temperature Oxidative Dehydrogenation of Ethane by Ce-Modified NiNb Catalysts." *Industrial and Engineering Chemistry Research*, 57, 5234–5240, **2018**.  
<https://doi:10.1021/acs.iecr.8b00531>
44. B. B. Hallac, J. C. Brown, E. Stavitski, R. G. Harrison, M. D. Argyle, "In Situ UV-Visible Assessment of Iron-Based High-Temperature Water-Gas Shift Catalysts Promoted with Lanthana: An Extent of Reduction Study." *Catalysts*, 8, 63, **2018**.  
<https://doi:10.3390/catal8020063>
43. M. Rahmati, B. Huang, M. K. Mortensen, Jr., T. H. Fletcher, B. F. Woodfield, W. C. Hecker, M. D. Argyle, "Effect of Different Alumina Supports on Performance of Cobalt Fischer-Tropsch Catalysts." *Journal of Catalysis*, 359, 92-100, **2018**.  
<https://doi.org/10.1016/j.jcat.2017.12.022>
42. X. Huang, M. Fan, X. Wang, Y. Wang, M. D. Argyle, Y. Zhu, "A cost-effective approach to realization of the efficient methane chemical-looping combustion by using coal fly ash as a support for oxygen carrier." *Applied Energy*, 230, 393-402, **2018**.  
<https://doi:10.1016/j.apenergy.2018.08.029>
41. F. Wu, M. D. Argyle, P. A. Dellenback, M. Fan, "Progress in O<sub>2</sub> separation for oxy-fuel combustion—A promising way for cost-effective CO<sub>2</sub> capture: A review." *Progress in Energy and Combustion Science*, 67, 188-205, **2018**.  
<https://doi:10.1016/j.pecs.2018.01.004>

**Publications (Peer Reviewed Journals, continued)**

40. F. Zhang, M. Fan, X. Huang, M. D. Argyle, B. Zhang, B. Towler, Y. Zhang, "Catalytic gasification of a Powder River Basin Coal with CO<sub>2</sub> and H<sub>2</sub>O mixtures." *Fuel Processing Technology*, 161, 145-154, **2017**.  
<https://doi.org/10.1016/j.fuproc.2017.03.010>
39. M. K. Albretsen, B. Huang, K. Keyvanloo, B. F. Woodfield, C. H. Bartholomew, M. D. Argyle, W. C. Hecker, "Effect of Drying Temperature on Iron Fischer-Tropsch Catalysts Prepared by Solvent Deficient Precipitation." *Journal of Nanomaterials*, 2017, 7258650, **2017**.  
<https://doi.org/10.1155/2017/7258650>
38. T. J. Okeson, K. Keyvanloo, M. D. Argyle, W. C. Hecker, "On the Kinetics and Mechanism of Fischer-Tropsch Synthesis on a Highly Active Iron Catalyst Supported on Silica-Stabilized Alumina." *Catalysis Today*, 261, 67-74, **2016**.  
<https://dx.doi.org/10.1016/j.cattod.2015.08.054>
37. F. Zhang, D. Xu, Y. Wang, M. D. Argyle, M. Fan, "CO<sub>2</sub> gasification of Powder River Basin coal catalyzed by a cost-effective and environmentally friendly iron catalyst." *Applied Energy*, 145, 295-305, **2015**.  
<https://dx.doi.org/10.1016/j.apenergy.2015.01.098>
36. M. D. Argyle, C. H. Bartholomew, "Heterogeneous Catalyst Deactivation and Regeneration: A Review." *Catalysts*, 5, 145-269, **2015**.  
<https://dx.doi.org/10.3390/catal5010145>
35. B. B. Hallac, K. Keyvanloo, K., J. D. Hedengren, W. C. Hecker, M. D. Argyle, "An optimized simulation model for iron-based Fischer-Tropsch catalyst design: Transfer limitations as functions of operating and design conditions." *Chemical Engineering Journal*, 263, 268-279, **2015**.  
<https://dx.doi.org/10.1016/j.cej.2014.10.108>
34. Z. Mei, Y. Li, M. Fan, M. D. Argyle, J. Tang, "The effects of bimetallic Co-Ru nanoparticles on Co/RuO<sub>2</sub>/Al<sub>2</sub>O<sub>3</sub> catalysts for the water gas shift and methanation." *International Journal of Hydrogen Energy*, 39, 14808-14816, **2014**.  
<https://dx.doi.org/10.1016/j.ijhydene.2014.07.072>
33. K. Keyvanloo, J. B. Horton, W. C. Hecker, M. D. Argyle, "Effects of Preparation Variables on an Alumina-Supported FeCuK Fischer-Tropsch Catalyst." *Catalysis Science and Technology*, 4, 4289-4300, **2014**.  
<https://dx.doi.org/10.1039/C4CY00510D>
32. B. B. Hallac, J. C. Brown, L. L. Baxter, M. D. Argyle, "Structural and Functional Roles of Lanthana in Iron-Based High Temperature Water-Gas Shift Catalysts." *International Journal of Hydrogen Energy*, 39, 7306-7317, **2014**.  
<https://dx.doi.org/10.1016/j.ijhydene.2014.02.170>
31. M. D. Argyle, T. S. Frost, C. H. Bartholomew, "Modeling Cobalt Fischer Tropsch Catalyst Deactivation with Generalized Power Law Expressions." *Topics in Catalysis*, 57, 415-429, **2014**.  
<https://dx.doi.org/10.1007/s11244-013-0197-9>

### Publications (Peer Reviewed Journals, continued)

30. L. Xu, M. Tang, L. Duan, B. Liu, X. Ma, Y. Zhang, M. D. Argyle, M. Fan, "Pyrolysis Characteristics and Kinetics of Residue from China Shenhua Industrial Direct Coal Liquefaction Plant." *Thermochimica Acta*, 589, 1-10, **2014**.  
<https://dx.doi.org/10.1016/j.tca.2014.05.005>
29. R. A. Monterroso, M. Fan, M. D. Argyle, K. Varga, D. Dyar, J. Tang, Q. Sun, B. F. Towler, K. W. Elliot, D. Kammen, "Characterization of the Mechanism of Gasification of a Powder River Basin Coal with a Composite Catalyst for Producing Desired Syngases and Liquids." *Applied Catalysis A: General*, 475, 116-126, **2014**.  
<https://dx.doi.org/10.1016/j.apcata.2014.01.007>
28. B. Reynolds, K. J. Reddy, M. D. Argyle, "Field Application of Accelerated Mineral Carbonation." *Minerals*, 4, 191-207, **2014**.  
<https://dx.doi.org/10.3390/min4020191>
27. R. Monterroso, M. Fan, F. Zhang, Y. Gao, T. Popa, M. D. Argyle, B. Towler, Q. Sun, "Effects of an environmentally-friendly, inexpensive composite iron-sodium catalyst on coal gasification." *Fuel*, 116, 341-349, **2014**.  
<https://dx.doi.org/10.1016/j.fuel.2013.08.003>
26. L. Xu, Y. Liu, Y. Li, Z. Lin, X. Ma, Y. Zhang, M. D. Argyle, M. Fan. "Catalytic CH<sub>4</sub> Reforming with CO<sub>2</sub> over Activated Carbon Based Catalysts." *Applied Catalysis A: General*, 469, 387-397, **2014**.  
<https://dx.doi.org/10.1016/j.apcata.2013.10.022>
25. M. Bentley, M. Fan, B. Dutcher, M. Tang, M. D. Argyle, A. G. Russell, Y. Zhang, M. P. Sharma, S. M. Swapp. "Catalytic Regeneration of Mercury Sorbents." *Journal of Hazardous Materials*, 262, 642-648, **2013**.  
<https://dx.doi.org/10.1016/j.jhazmat.2013.09.021>
24. T. Popa, M. Fan, M. D. Argyle, M. D. Dyar, Y. Gao, J. Tang, E.A. Speicher, D.M. Kammen, "H<sub>2</sub> and CO<sub>x</sub> generation from coal gasification catalyzed by a cost-effective iron catalyst." *Applied Catalysis A: General*, 464-465, 207-217, **2013**.  
<https://dx.doi.org/10.1016/j.apcata.2013.05.038>
23. T. Popa, M. Fan, M. D. Argyle, R. B. Slimane, D. A. Bell, B. F. Towler, "Catalytic Gasification of a Powder River Basin Coal." *Fuel*, 103, 161-170, **2013**.  
<https://dx.doi.org/10.1016/j.fuel.2012.08.049>
22. R. A. Monterroso, M. Fan, and M. D. Argyle, "Adsorption of Mercury with Modified Thief Carbons." *Journal of Environmental Engineering*, 138, 386-391, **2012**.  
[https://dx.doi.org/10.1061/\(ASCE\)EE.1943-7870.0000434](https://dx.doi.org/10.1061/(ASCE)EE.1943-7870.0000434)
21. Z. Sun, M. Fan, M. D. Argyle, "Supported Monoethanolamine for CO<sub>2</sub> Separation." *Industrial & Engineering Chemistry Research*, 50, 11343-11349, **2011**.  
<https://dx.doi.org/10.1021/ie2005115>
20. K. J. Reddy, S. John, H. W. Weber, M. D. Argyle, P. Bhattacharyya, D. T. Taylor, P. M. Fahlsing. "Simultaneous capture and mineralization of anthropogenic carbon dioxide (CO<sub>2</sub>): Pilot scale studies." *Energy Procedia*, 4 1574-1583, **2011**.  
<https://dx.doi.org/10.1016/j.egypro.2011.02.027>

**Publications (Peer Reviewed Journals, continued)**

19. Z. Sun, M. Fan, M. D. Argyle, "Desorption Kinetics of the Monoethanolamine/Macroporous TiO<sub>2</sub>-Based CO<sub>2</sub> Separation Process." *Energy & Fuels*, 25 2988-2996, **2011**.  
<https://dx.doi.org/10.1021/ef200556j>
18. T. Popa, G. Xu, T. F. Barton, M. D. Argyle, "High Temperature Water Gas Shift Catalysts with Alumina." *Applied Catalysis A: General*, 379 15-23, **2010**.  
<https://dx.doi.org/10.1016/j.apcata.2010.02.021>
17. S. John, J. C. Hamann, S. Muknahallipatna, S. Legowski, J. F. Ackerman, M. D. Argyle, "Energy efficiency of hydrogen sulfide decomposition in a pulsed corona discharge reactor." *Chemical Engineering Science*, 64, 4826-4834, **2009**.  
<https://dx.doi.org/10.1016/j.ces.2009.07.034>
16. G. B. Zhao, S. John, J. J. Zhang, J. C. Hamann, S. Muknahallipatna, S. Legowski, J. F. Ackerman, M. D. Argyle, "Production of Hydrogen and Sulfur from Hydrogen Sulfide in a Nonthermal-Plasma Pulsed Corona Discharge Reactor." *Chemical Engineering Science*, 62, 2216-2227, **2007**.  
<https://dx.doi.org/10.1016/j.ces.2006.12.052>
15. G. B. Zhao, M. D. Argyle, M. Radosz, "Optical Emission Study of Nonthermal Plasma Confirms Reaction Mechanisms Involving Neutral Rather than Charged Species." *Journal of Applied Physics*, 101, 033303-1-033303-14, **2007**.  
<https://dx.doi.org/10.1063/1.2434002>
14. G. B. Zhao, S. John, J. J. Zhang, L. Wang, S. Muknahallipatna, J. C. Hamann, J. F. Ackerman, M. D. Argyle, O. A. Plumb, "Methane Conversion in Pulsed Corona Discharge Reactors" *Chemical Engineering Journal*, 125, 67-79, **2006**.  
<https://dx.doi.org/10.1016/j.cej.2006.08.008>
13. G. B. Zhao, M. D. Argyle, M. Radosz, "Effect of CO on NO and N<sub>2</sub>O Conversion in Nonthermal Argon Plasma." *Journal of Applied Physics*, 99, 113302-1-113302-14, **2006**.  
<https://dx.doi.org/10.1063/1.2197067>
12. G. B. Zhao, X. Hu, M. D. Argyle, M. Radosz, "Effect of CO<sub>2</sub> on Nonthermal Plasma Reactions of Nitrogen Oxides in N<sub>2</sub>. 1. PPM-Level Concentrations." *Industrial & Engineering Chemistry Research*, 44, 3925-3934, **2005**.  
<https://dx.doi.org/10.1021/ie049076k>
11. G. B. Zhao, X. Hu, M. D. Argyle, M. Radosz, "Effect of CO<sub>2</sub> on Nonthermal Plasma Reactions of Nitrogen Oxides in N<sub>2</sub>. 2. Percent-Level Concentrations." *Industrial & Engineering Chemistry Research*, 44, 3935-3946, **2005**.  
<https://dx.doi.org/10.1021/ie048905z>
10. G. B. Zhao, S. V. B. J. Garikipati, X. Hu, M. D. Argyle, M. Radosz, "The Effect of Oxygen on Nonthermal-Plasma Reactions of Dilute Nitrogen Oxide Mixtures in N<sub>2</sub>." *AIChE Journal*, 51, 1813-1821, **2005**.  
<https://dx.doi.org/10.1002/aic.10452>
9. G. B. Zhao, S. V. B. J. Garikipati, X. Hu, M. D. Argyle, M. Radosz, "The Effect of Reactor Configuration on NO Conversion and Energy Consumption in Non-thermal Plasma Parallel Tube Reactors." *AIChE Journal*, 51, 1800-1812, **2005**.  
<https://dx.doi.org/10.1002/aic.10451>

### Publications (Peer Reviewed Journals, continued)

8. G.-B. Zhao, S. V. B. Janardhan Garikipati, X. Hu, M. D. Argyle, M. Radosz, "The Effect of Gas Pressure on NO Conversion Energy Efficiency in Non-Thermal Plasma Reactors." *Chemical Engineering Science*, 60 1927-1937, **2005**.  
<https://dx.doi.org/10.1016/j.ces.2004.11.032>
7. M. D. Argyle, K. D. Chen, E. Iglesia, A. T. Bell, "In situ UV-Visible Spectroscopic Measurements of Kinetic Parameters and Active Sites for Catalytic Oxidation of Alkanes on Vanadium Oxides." *Journal of Physical Chemistry B*, 109, 2414-2420, **2005**.  
<https://dx.doi.org/10.1021/jp040166c>
6. G.-B. Zhao, X. Hu, M. D. Argyle, M. Radosz, "N Atom and  $N_2(A^3\Sigma_u^+)$  Found to be Responsible for Nitrogen Oxides Conversion in Non-thermal Nitrogen Plasma." *Industrial & Engineering Chemistry Research*, 43, 5077-5088, **2004**.  
<https://dx.doi.org/10.1021/ie049795z>
5. M. D. Argyle, C. Krebs, C. Resini, K. D. Chen, A. T. Bell, E. Iglesia, "Extent of Reduction on Vanadium Oxide Catalysts During Catalytic Oxidation of Alkanes Measured by In Situ UV-Visible Spectroscopy." *Journal of Physical Chemistry B*, 108, 2345-2353, **2004**.  
<https://dx.doi.org/10.1021/jp030989m>
4. T. Waku, M. D. Argyle, A. T. Bell, E. Iglesia, "Effects of O<sub>2</sub> Concentration on the Rate and Selectivity in Oxidative Dehydrogenation of Ethane Catalyzed by Vanadium Oxide: Implications for O<sub>2</sub> Staging and Membrane Reactors." *Industrial & Engineering Chemistry Research*, 42, 5462-5466, **2003**.  
<https://dx.doi.org/10.1021/ie0304661>
3. M. D. Argyle, C. Krebs, C. Resini, K. D. Chen, A. T. Bell, E. Iglesia, "Quantification of Reduced Centers in Metal Oxide Catalysts during Propane Oxidative Dehydrogenation Using UV-visible Spectroscopy." *Chemical Communications*, 2082-2083, **2003**.  
<https://dx.doi.org/10.1039/B305264H>
2. M. D. Argyle, K. D. Chen, A. T. Bell, E. Iglesia, "Ethane Oxidative Dehydrogenation Pathways on Vanadium Oxide Catalysts." *Journal of Physical Chemistry B*, 106, 5421-5427, **2002**.  
<https://dx.doi.org/10.1021/jp0144552>
1. M. D. Argyle, K. D. Chen, A. T. Bell, E. Iglesia, "Effect of Catalyst Structure on Oxidative Dehydrogenation of Ethane and Propane on Alumina-Supported Vanadia." *Journal of Catalysis*, 208, 139-149, **2002**.  
<https://dx.doi.org/10.1006/jcat.2002.3570>

### Publications (Books and Book Chapters)

3. M. D. Argyle, Ed., *Commemorative Issue in Honor of Professor Calvin H. Bartholomew's 75<sup>th</sup> Birthday*; MDPI: Bern, Switzerland, **2018**.
2. C. H. Bartholomew and M. D. Argyle, Eds., *Advances in Catalyst Deactivation*; MDPI: Bern, Switzerland, **2016**.
1. R. Monterroso, M. Fan, M. D. Argyle, "Mercury Removal." *Coal Gasification and Its Applications*; D. A. Bell, B. F. Towler, M. Fan, Elsevier: Oxford, **2011**; 247-292.

## Other Publications

14. M. D. Argyle, special issue editorial, "Commemorative Issue in Honor of Professor Calvin H. Bartholomew's 75<sup>th</sup> Birthday." *Catalysts*, 8, 533-536, **2018**.  
<https://doi.org/10.3390/catal8110533>
13. C. H. Bartholomew, M. D. Argyle, special issue editorial, "Advances in catalyst deactivation and regeneration." *Catalysts*, 5, 949-954, **2015**.  
<https://dx.doi.org/10.3390/catal5020949>
12. W. V. Wilding, T. A. Knotts IV, W. G. Pitt, M. D. Argyle, "Developing and Assessing Leadership in Engineering Students." Adaptive and Supportive Learning Environments Session, AC 2012-4462, American Society of Engineering Education Annual Conference Proceedings, **2012**.
11. T. A. Knotts IV, W. V. Wilding, W. G. Pitt, M. D. Argyle, "A New Assessment Method to Easily Identify Areas Needing Improvement in Course-level Learning Outcomes." New Classrooms, New Challenges II: Assessing Non-traditional Approaches Session, AC 2012-4388, American Society of Engineering Education Annual Conference Proceedings, **2012**.
10. K. J. Reddy, M. D. Argyle, B. Reynolds, A. K. Sankara Warrier, D. T. Taylor, T. Foulke, P. Fahlsing. "SequesTech: direct capture and mineralization of flue gas CO<sub>2</sub>." *G.I.T. Laboratory Journal*, **2011**.  
<https://www.laboratory-journal.com/science/environment/sequestech-direct-capture-and-mineralization-flue-gas-carbon-dioxide>.
9. Randy Lewis, Thomas Knotts, W. Vincent Wilding, William Pitt, Morris Argyle. "Results and Analysis of a Required Senior Exam to Assess Learning of Course Competencies." Chemical Engineering Education: Upperclass Years Session, American Society of Engineering Education 2010 Annual Conference & Exposition Proceedings, AC 2010-1889, **2010**.
8. K. J. Reddy, S. John, H. W. Weber, M. D. Argyle, P. Bhattacharyya, D. T. Taylor, M. Christensen, T. Foulke, P. M. Fahlsing. "Accelerated mineral carbonation (AMC) of flue gas carbon dioxide: Pilot scale study." In: Ron Zevenhoven (ed.) conference proceedings of 3<sup>rd</sup> Accelerated Carbonation for Environmental and Materials Engineering, Abo Academy University, Turku, Finland, 303-312. **2010**.
7. M. Fan, J. Wang, R. Ettema, M. Northam, A. Hansen, M. Argyle, Y. Shen, M. Radosz, invited guest editors for special issue on "Application of Green Chemistry in Energy Production" of *The Journal of Physical Chemistry: A*, 114, 373, **2010**.  
<https://dx.doi.org/10.1021/jp910352n>
6. K. J. Reddy, M. D. Argyle, A. Viswatej, D. T. Taylor. "A Novel Method to Capture and Store Flue Gas Carbon Dioxide (CO<sub>2</sub>): Accelerated Mineral Carbonation", *IOP Conference Series: Earth and Environmental Science*, 6, 172021, **2009**.  
<https://dx.doi.org/10.1088/1755-1307/6/17/172021>
5. M. Fan, R. Ettema, M. Northam, M. D. Argyle, invited guest editors for special issue on "Progress Made in Coal-Based Energy and Fuel Production." *Energy & Fuels*, 23, 4709 **2009**.  
<https://dx.doi.org/10.1021/ef900741e>.
4. T. Barton, M. Argyle, T. Popa, "The Integration of a Structural Water Gas Shift Catalyst with a Vanadium Alloy Hydrogen Transport Device." Final Technical Report to the Department of Energy, Award Number DE-FC26-05NT42454, **2009**.  
<https://dx.doi.org/10.2172/973587>

**Other Publications (continued)**

3. K. J. Reddy, M. D. Argyle, A. Viswatej. 2008. "Capture and mineralization of flue gas carbon dioxide." In Baciocchi et al., (ed.) Conference Proceedings of 2<sup>nd</sup> Accelerated Carbonation for Environmental and Materials Engineering, University of Rome, Rome, Italy, 221-228, **2008**.
2. M. Argyle, J. F. Ackerman, S. Muknahallipatna, J. C. Hamann, S. Legowski, G.-B. Zhao, J.-J. Zhang, S. John, "Novel Composite Hydrogen-Permeable Membranes for Nonthermal Plasma Reactors for the Decomposition of Hydrogen Sulfide." Final Technical Report to the Department of Energy, Contract Number DE-FC26-03NT41963, **2007**.  
<https://dx.doi.org/10.2172/941661>
1. M. D. Argyle, "Supported, Alkali-Promoted Cobalt Oxide Catalysts for NO<sub>x</sub> Removal from Coal Combustion Flue Gases." Final Technical Report to the Department of Energy, Contract Number DE-FG26-04NT42181, **2005**.  
<https://dx.doi.org/10.2172/913563>

## Grants

### Current

Savannah River National Laboratory, "Isotope Effects on Hydrogen Reactivity." Co-PI Morris Argyle (PI is Larry Baxter). \$599,098, April 2025-March 2027.

### Pending:

Safety Management Services and Hill Air Force Base, "ROM Shell 405 - Catalyst Cleaning." Co-PI Morris Argyle (PI is Clint Guymon). \$167,000, March 2026-August 2027.

### Previously Funded Grants

Brigham Young University Interdisciplinary Research Origination Award, "Combining the Forces of Experiment, Simulation, and Data Science to Develop New Catalysis Technology for Natural Gas Conversion." Co-PI's: Kara Stowers and Dan Ess of Chemistry and Biochemistry, David Wingate of Computer Science, and Dennis Della Corte of Physics and Astronomy. \$120,000, April 2021-March 2023

Brigham Young University Mentoring Environment Grant, "Development of a Stable Cobalt/Zeolite Catalyst for Fischer-Tropsch Synthesis to Diesel Fuel: Deactivation Mechanism and Modeling." Dr. Argyle was PI, \$20,000, 1/1/2014 to 8/31/2016.

Brigham Young University Research Initiation Grant, "Iron-based Fischer Tropsch Synthesis Catalysts." Dr. Argyle was PI, \$25,000, 9/1/2013 to 8/31/2014.

ExxonMobil Corporation, "BTLX DILCHILL Flow Nozzle Pressure Drop Correlation." Dr. Argyle was PI. \$10,000, 5/1/2014-7/31/2014.

FMC Corporation, "FMC and UW Research for Advancement of Trona Mineral Products & Processes." Professors Maohong Fan and Argyle were co-PI's. \$200,000, 1/1/2010—12/31/2014.

State of Wyoming Advanced Conversion Technologies Research Program, "Low Cost Route to Next Generation Commercial Iron FT Catalysts for CTL & BTL." Dr. Argyle was PI with Dr. William Hecker and Dr. Calvin Bartholomew as co-PI's. \$420,004 for 1/17/2011—12/31/2013.

Brigham Young University Research Initiation Grant, "Nanocatalyst Preparation Methods." Dr. Argyle was co-PI with Dr. William Hecker, \$10,000, 8/1/2010 to 8/1/2011.

State of Wyoming Advanced Conversion Technologies Research Program, "Capture and Mineralization of Carbon Dioxide from Coal Combustion Flue Gas Emissions: Pilot Scale Studies." Professor K. J. Reddy of the University of Wyoming was PI with Dr. Argyle as co-PI, \$972,115, 7/1/2008 to 6/30/2010.

### Previously Funded Grants (continued)

Jupiter Oxygen. “Oxy-Fuel Burner and Integrated Pollutant Removal Research and Development Test Facility Mercury Removal Study.” Dr. Argyle is PI with Khalid Omar of the Western Research Institute as co-PI, \$50,000 (\$25,000 from Jupiter Oxygen as a subcontract from the Department of Energy and \$25,000 from the University of Wyoming School of Energy Resources), 12/15/2007 to 3/31/2010.

Idaho National Laboratory and the University of Wyoming School of Energy Resources, “Novel Composite Hydrogen-Permeable Membranes for Nonthermal Plasma Reactors for the Decomposition of Hydrogen Sulfide continuation.” Dr. Argyle was PI. \$24,992, 1/22/2008—12/31/2009.

Research at the University of Wyoming.” Dr. Argyle was PI. \$28,000, 8/14/2008 to 9/30/2008.

U. S. Department of Energy and University of Wyoming School of Energy Resources matching grant, “The Integration of a Structural Water Gas Shift Catalyst with a Vanadium Alloy Hydrogen Transport Device” continuation. Dr. T. F. Barton of the Western Research Institute was PI with Dr. Argyle as co-PI. \$200,000, 1/1/2008 to 6/30/2009.

U. S. Department of Energy, “The Integration of a Structural Water Gas Shift Catalyst with a Vanadium Alloy Hydrogen Transport Device” (Contract Number: DE-FC26-05NT42454). Dr. T. F. Barton of the Western Research Institute was PI with Dr. Argyle as co-PI. This project developed novel water gas shift catalysts integrated with hydrogen membranes; \$500,000, 7/1/2005 to 12/31/2007.

University of Wyoming Office of Research and Economic Development. “Capture and Mineralization of Carbon Dioxide from Coal Combustion Flue Gas Emissions.” Professor K. J. Reddy of the Department of Renewable Resources was PI, with Dr. Argyle as co-PI, \$182,000, 6/1/2006 to 5/31/2008.

U. S. Department of Energy, “Advanced Selective Catalytic Reduction Catalysts for NO<sub>x</sub> Removal from Coal Combustion Flue Gases” (Contract Number DE-FG26-04NT42181) \$75,000 for 9/15/2004 to 12/31/2005 including, a \$25,000 major equipment grant from UW. Dr. Argyle was PI.

U. S. Department of Energy, “Novel Composite Hydrogen-Permeable Membranes for Nonthermal Plasma Reactors for the Decomposition of Hydrogen Sulfide” (Contract Number DE-FC26-03NT41963). \$592,000, 2003-2007. Dr. Argyle was PI.

### Presentations (as speaker)

- American Chemical Society** 256<sup>th</sup> National Meeting, August 23, 2018, Boston, MA. Invited. "Operando UV-visible spectroscopy of high temperature water gas shift catalysts." M. D. Argyle.
- 5<sup>th</sup> U.S.-China Symposium on CO<sub>2</sub> Emission Control & Technology**, June 7, 2016, Hangzhou, China. Invited. "Mineralization for CO<sub>2</sub> Capture and Sequestration." K. J. Reddy, S. John, H. W. Weber, P. Bhattacharyya, B. Reynolds, M. D. Argyle.
- Wyoming **2014 Clean Coal Technology Fund Research Symposium**, August 22, 2014, Laramie, WY. "Low Cost Route to Next Generation Commercial Iron FT Catalysts for CTL & BTL."
- American Institute of Chemical Engineers** 2012 Annual Meeting, October 29, 2012, Pittsburgh, PA. "UV-Visible Spectroscopic Studies of High Temperature Water Gas Shift Catalysts." J. C. Brown, B. B. Hallac, M. D. Argyle.
- American Chemical Society** 243<sup>rd</sup> National Meeting, March 29, 2012, San Diego, CA. "Enhanced High Temperature Water Gas Shift Catalysts: UV-Visible Studies." J. C. Brown, B. Hallac, M. D. Argyle.
- American Institute of Chemical Engineers** 2010 Annual Meeting, November 10, 2010, Salt Lake City, UT. "Simultaneous Capture and Mineralization of Flue Gas Carbon Dioxide from a Coal-Fired Power Plant: SesqueTech™." S. John, K. J. Reddy, H. Weber, M. D. Argyle.
- Brigham Young University** invited Chemical Engineering Department **Graduate Seminar**, March 4, 2010, Provo, UT. "Catalytic Hydrogen Generation."
- 4<sup>th</sup> Annual **Hydrogen Implementation Conference** of the Mountain States Hydrogen Business Council, invited member of Panel #4: Enabling Technology, July 23, 2008, Laramie, WY. "Metal Oxide Catalysis and Plasma Reactions for Small Molecule Conversion [for Hydrogen Production]."
- University of Wyoming **School of Energy Resources** Coal Gasification Symposium, February 28, 2007, Casper, WY. "Research and Development Initiatives of the University of Wyoming."
- Gordon Research Conference** on Catalysis, June 26, 2006, New London, NH. "The Integration of a Structural Water Gas Shift Catalyst with a Vanadium Alloy Hydrogen Transport Device" poster presentation.
- Colorado State University** invited Department of Chemical Engineering **Graduate Seminar**, April 14, 2006, Ft. Collins, CO. "In Situ UV-Visible Spectroscopic Studies of Supported Metal Oxide Catalysts."
- National Energy Technology Center Annual Contractor's Review**, June 8, 2005, Pittsburgh, PA. "Advanced NO<sub>x</sub> Decomposition Catalysts."
- American Chemical Society** 226<sup>th</sup> National Meeting, March 15, 2005, San Diego, CA. "In Situ UV-visible Spectroscopic Studies of Supported Metal Oxides During Catalytic Oxidation of Light Alkanes and NO<sub>x</sub> Decomposition."
- Brigham Young University** invited Chemical Engineering Department **Graduate Seminar**, October 14, 2004, Provo, UT. "Oxidative Dehydrogenation of Light Alkanes on Metal Oxide Catalysts."
- National Energy Technology Center**, November 6, 2003, November 9, 2004, and February 6, 2006, Pittsburgh, PA. "Novel Composite Hydrogen-Permeable Membranes for Nonthermal Plasma Reactors for the Decomposition of Hydrogen Sulfide."

### Presentations (as speaker, continued)

- University of Wyoming** Department of Chemical and Petroleum Engineering **Graduate Seminar**, March 24, 2003, Laramie, WY. "Oxidative Dehydrogenation of Light Alkanes on Metal Oxide Catalysts and Proposed Future Research."
- University of California at Berkeley** Chemical Engineering **Colloquium**, December 4, 2002, Berkeley, CA. "Oxidative Dehydrogenation of Light Alkanes on Metal Oxide Catalysts."
- American Institute of Chemical Engineers** 2002 Annual Meeting, November 4, 2002, Indianapolis, IN. "*In Situ* UV-visible Spectroscopy During Propane Oxidative Dehydrogenation: Measurement of Reduced and Active Centers and Kinetic Parameters."
- U. S. Department of Energy **National Laboratory Catalysis Conference**, May 22, 2002, Richland, WA. "Oxidative Dehydrogenation of Ethane and Propane on Vanadia-Based Catalysts."
- American Chemical Society** 223<sup>rd</sup> National Meeting, April 10, 2002, Orlando, FL. "Oxidative Dehydrogenation of Light Alkanes on Supported Vanadium Oxide Catalysts: Mechanism and Kinetic Studies."
- American Institute of Chemical Engineers** 2001 Annual Meeting, November 8, 2001, Reno, NV. "Ethane Oxidative Dehydrogenation on Alumina-Supported Vanadium Oxide Catalysts."
- California Catalysis Society** 2001 Annual Meeting, October 24, 2001, Pasadena, CA. "Comparison of Ethane and Propane Oxidative Dehydrogenation on Vanadium Oxide Catalysts."

### Presentations (by Students and Coauthors)

- 2024 Spring Technical Meeting Western States Section of the Combustion Institute**, March 4, 2024, Salt Lake City, UT. "Isotopic effects on hydrogen combustion and flame speeds." E.B. Saxey, J.C. Wilde, A.E. Clark, L.T. Whitesides, M.D. Argyle, L.L. Baxter.
- 2024 Spring Technical Meeting Western States Section of the Combustion Institute**, March 4, 2024, Salt Lake City, UT. "Procedure and analysis methods for hydrogen isotopic reactivity analysis." J. Wilde, L. Whitesides, E. Saxey, A. Clark, M. Argyle, L. Baxter.
- 2024 Spring Technical Meeting Western States Section of the Combustion Institute**, March 4, 2024, Salt Lake City, UT. "The intricate transport and kinetic structure of hydrogen flames." J. Wilde, L. Whitesides, E. Saxey, A. Clark, M. Argyle, L. Baxter.
- The 47<sup>th</sup> International Technical Conference on Clean Energy**, July 24, 2023, Clearwater, FL. "Hydrogen Combustion and Flame Speeds." Jacob Wilde, Morris D. Argyle, Larry Baxter.
- The 47<sup>th</sup> International Technical Conference on Clean Energy**, July 24, 2023, Clearwater, FL. "The Intricate Transport and Kinetic Structure of Hydrogen Flames." Jacob Wilde, Morris D. Argyle, Larry Baxter.
- 12<sup>th</sup> Natural Gas Conversion Symposium**, June 3, 2019, San Antonio, TX. "A Fresh Look at Ni-Based Catalysts for the Oxidative Dehydrogenation of Ethane." K. Stowers, J. Park, K. Canizales, M. D. Argyle.

### Presentations (by Students and Coauthors, continued)

- American Institute of Chemical Engineers** 2017 Annual Meeting, October 31, 2017, Minneapolis, MN. "Investigation of a New Preparation Method for Cobalt Fischer-Tropsch Catalysts." M. Rahmati, M. D. Argyle, W. C. Hecker, C. H. Bartholomew, M.-S. Safdari.
- American Institute of Chemical Engineers** 2016 Annual Meeting, November 16, 2016, San Francisco, CA. "Comparison of Cobalt Fischer-Tropsch Catalysts on Robust Silica-Alumina Supports." M. Rahmati, W. C. Hecker, M. J. Lindsay, M.-S. Safdari.
- American Institute of Chemical Engineers** 2015 Annual Meeting, November 12, 2015, Salt Lake City, UT. "Effect of Silver and Manganese Promoters on Performance of Cobalt Fischer-Tropsch Catalysts." M. Rahmati, K. Keyvanloo, W. C. Hecker, M. D. Argyle.
- American Institute of Chemical Engineers** 2015 Annual Meeting, November 9, 2015, Salt Lake City, UT. "On the Kinetics and Mechanism of Fischer-Tropsch Synthesis on a Highly Active Iron Catalyst Supported on Silica-Stabilized Alumina." T. J. Okeson, W. C. Hecker, K. Keyvanloo, M. D. Argyle, J. S. Lawson.
- 32<sup>nd</sup> Annual International Pittsburgh Coal Conference:** Coal—Energy, Environment and Sustainable Development, IPCC, October 8, 2015, Pittsburgh, PA. "Comparison of iron based Fischer Tropsch catalysts prepared using a simple, inexpensive, solvent deficient preparation method." W. C. Schaffers, W. C. Hecker, M. D. Argyle, K. Brunner.
- Rocky Mountain Catalysis Society** 2015 Annual Symposium, March 26, 2015, Denver, CO. "Kinetics and Mechanism of Fischer Tropsch Synthesis over Supported Iron Catalyst." T. J. Okeson.
- American Institute of Chemical Engineers** 2014 Annual Meeting, November 20, 2014, Atlanta, GA. "Effects of Preparation Variables on an Alumina-Supported Fe/Cu/K Fischer-Tropsch Catalyst." J. B. Horton, K. Keyvanloo, M. D. Argyle, W. C. Hecker.
- American Institute of Chemical Engineers** 2014 Annual Meeting, November 17, 2014, Atlanta, GA. "Supported Fe Fischer-Tropsch Catalysts: Optimizing Preparation Methods Based on a Parametric Study of Their Effects." J. B. Horton, W. C. Hecker, M. D. Argyle, K. Keyvanloo.
- Western States Catalysis Club** 2014 Annual Symposium, March 21, 2014, Albuquerque, NM. "Effects of Preparation Variables on an Alumina-Supported Fe/Cu/K Fischer-Tropsch Catalyst." J. B. Horton.
- American Institute of Chemical Engineers** 2013 Annual Meeting, November 7, 2013, San Francisco, CA. "A Kinetic Study on the Structural and Functional Roles of Lanthana in Iron-Based Catalysts for High-Temperature Water-Gas Shift Reaction." B. Hallac, M. D. Argyle, J. C. Brown.
- American Chemical Society** 246<sup>th</sup> National Meeting, September 19, 2013, Indianapolis, IN. "Effects of composite iron-sodium catalysts on coal gasification." Preprints - American Chemical Society, Division of Energy & Fuels (2013), 58(2), 667. R. Monterroso, M. Fan, F. Zhang, Y. Gao, T. Popa, M. D. Argyle, B. Towler.
- American Chemical Society** 246<sup>th</sup> National Meeting, September 19, 2013, Indianapolis, IN. "A Kinetic Study on the Structural and Functional Roles of Lanthana in Iron-Based Catalysts for High-Temperature Water-Gas Shift Reaction." B. Hallac, J. C. Brown, M. D. Argyle.

### Presentations (by Students and Coauthors, continued)

- Western States Catalysis Club** 2013 Annual Meeting, April 19, 2013, Provo, UT. "Understanding the Structural and Functional Roles of Lanthana in High Temperature Water Gas Shift Catalysts." B. Hallac, M. D. Argyle.
- ASEE Annual Conference and Exposition**, June 2012, San Antonio, TX. "A new assessment method to easily identify areas needing improvement in course-level learning outcomes." T. A. Knotts IV, W. V. Wilding, W. G. Pitt, M. D. Argyle.
- ASEE Annual Conference and Exposition**, June 2012, San Antonio, TX. "Developing and assessing leadership in engineering students." W. V. Wilding, T. A. Knotts IV, W. G. Pitt, M. D. Argyle.
- Western States Catalysis Club** 2012 Annual Meeting, March 9, 2012, Boulder, CO. "Kinetic and UV-visible Analysis of High Temperature Water Gas Shift (Fe-Cr-Cu-La-O<sub>x</sub>) Catalysts." B. Hallac, J. C. Brown, M. D. Argyle.
- American Chemical Society** 242<sup>nd</sup> National Meeting, August 2011, Denver, CO. "Alternative approach to use of monoethenalamine for CO<sub>2</sub> separation." Z. Sun, F. Fan, M. Argyle.
- 12<sup>th</sup> International Conference on Energy and Environment (EE-12)**, Aswan, Egypt, March 13-17, 2011 (Invited). "Simultaneous capture and mineralization of flue gas pollutants." K. J. Reddy, H. W. Weber, M. D. Argyle, P. Battacharyya, D. T. Taylor, P. M. Fahlsing.
- American Institute of Chemical Engineers** 2010 Annual Meeting, November 9, 2010, Salt Lake City, UT. "Performance of Modified Thief Sorbents on Mercury Removal Catalysts." R. Monterroso, M. Fan, M. D. Argyle.
- 3<sup>rd</sup> International Conference on Accelerated Carbonation for Environmental and Materials Engineering**, Turku, Finland. 2010 (Invited) Accelerated mineral carbonation of carbon dioxide: Pilot scale study panel "Pilot and Full Scale Applications for CO<sub>2</sub> Capture and Storage", K. J. Reddy, S. John, H. W. Weber, M. D. Argyle, P. Battacharyya, D. T. Taylor, M. Christensen, T. Foulke, P. M. Fahlsing.
- 10<sup>th</sup> International Conference on Greenhouse Gas Control Technologies**, Amsterdam, Netherlands. 2010. "Simultaneous capture and mineralization of anthropogenic carbon dioxide (CO<sub>2</sub>): Preliminary and pilot scale studies." K. J. Reddy, S. John, H. W. Weber, M. D. Argyle, P. Battacharyya, D. T. Taylor, M. Christensen, T. Foulke, P. M. Fahlsing.
- ASEE Annual Conference and Exposition**, June 2010, Louisville, KY. "Results and analysis of a required senior exam to assess learning of course competencies." R. Lewis, T. Knotts, W. V. Wilding, W. Pitt, M. Argyle.
- International Advanced Coal Technologies Conference**, University of Wyoming and University of Queensland, and School of Energy Resources, Laramie, Wyoming. June 23, 2010. "Direct mineralization of carbon dioxide from coal combustion flue gas." H. W. Weber, K. J. Reddy, S. John, M. D. Argyle, P. Battacharyya, D. T. Taylor, P. M. Fahlsing.
- 9<sup>th</sup> Carbon Capture and Storage Conference**, Pittsburgh, PA. 2010. "Simultaneous capture and mineralization of flue gas carbon dioxide: Pilot scale studies." K. J. Reddy, S. John, H. W. Weber, M. D. Argyle, P. Battacharyya, D. T. Taylor, and P. M. Fahlsing.
- Climate Change: Global Risks, Challenges, and Decisions** conference, Copenhagen, Denmark. 2009. "A novel method to capture and store flue gas carbon dioxide (CO<sub>2</sub>): accelerated mineral carbonation." K. J. Reddy, M.D. Argyle, A. Viswatej, D.T. Taylor.

### Presentations (by Students and Coauthors, continued)

- 4th Annual **Hydrogen Implementation Conference** of the Mountain States Hydrogen Business Council, July 23, 2008, Laramie, WY. "Development of New Mercury Sorbents." R. Monterroso, M. Fan, M. D. Argyle.
- University of Hyderabad, A.P. India.** 2008. (Invited) "CO<sub>2</sub> and climate change: Direct mineralization of anthropogenic carbon dioxide." K. J. Reddy, M. D. Argyle, A. Viswatej.
- American Physical Society** 61<sup>st</sup> Annual Gaseous Electronics Conference, October 14, 2008, Dallas, TX. "Hydrogen Sulfide Decomposition in Pulsed Corona Discharge Reactors." S. John, G.-B. Zhao, J. J. Zhang, J.C. Hamann, S. S. Muknahallipatna, S. Legowski, J. F. Ackerman, M. D. Argyle.
- 2<sup>nd</sup> Accelerated Carbonation for Environmental and Materials Engineering** Conference, October 3, 2008, Rome, Italy. "Capture and mineralization of flue gas CO<sub>2</sub>." K. J. Reddy, M. D. Argyle, A. Viswatej. <http://w3.uniroma1.it/ACEME/program.htm>
- American Institute of Chemical Engineers** 2007 Annual Meeting, November 7, 2007, Salt Lake City, UT. "Structural Water Gas Shift Catalysts." T. Popa, G. Xu, T. F. Barton, M. D. Argyle.
- American Institute of Chemical Engineers** 2007 Annual Meeting, November 8, 2007, Salt Lake City, UT. "Decomposition of H<sub>2</sub>S and CH<sub>4</sub> in Pulsed Corona Discharge Reactors." S. John, G.-B. Zhao, J.-J. Zhang, L. Wang, S. S. Muknahallipatna, J. C. Hamann, J. F. Ackerman, M. D. Argyle, O. A. Plumb.
- American Chemical Society/American Institute of Chemical Engineers** Regional Conference, August 31, 2007, Denver, CO. "Structural Water Gas Shift Catalysts." T. Popa, G. Xu, T. F. Barton, M. D. Argyle.
- American Chemical Society/American Institute of Chemical Engineers** Regional Conference, August 30, 2007, Denver, CO. "Decomposition of Hydrogen Sulfide and Methane in Pulsed Corona Discharge Reactors." S. John, G.-B. Zhao, J.-J. Zhang, L. Wang, S. S. Muknahallipatna, J. C. Hamann, J. F. Ackerman, M. D. Argyle.
- Department of Energy** Annual Review, May 16, 2007, Pittsburgh, PA. "Integration of a Structural Water Gas Shift Catalyst with a Vanadium Alloy Hydrogen Transport Device." T. F. Barton and M. Argyle.
- Western States Catalysis Club** 2007 Annual Meeting, February 23, 2007, Provo, UT. "Structural Water Gas Shift Catalysts." T. Popa, G. Xu, T. F. Barton, M. D. Argyle.
- American Institute of Chemical Engineers** 2006 Annual Meeting, November 16, 2006, San Francisco, CA. "Decomposition of Hydrogen Sulfide in a Nonthermal-Plasma Pulsed Corona Discharge Reactor." G.-B. Zhao, S. John, J. C. Hamann, S. S. Muknahallipatna, S. Legowski, J. F. Ackerman, M. D. Argyle.
- American Institute of Chemical Engineers** 2005 Annual Meeting, November 3, 2005, Cincinnati, OH. "Production of Hydrogen and Sulfur from Hydrogen Sulfide in a Nonthermal-Plasma Pulsed Corona Discharge Reactor." G.-B. Zhao, S. John, J.-J. Zhang, M. D. Argyle, J. C. Hamann, S. S. Muknahallipatna, S. Legowski.
- American Chemical Society** 222<sup>nd</sup> National Meeting, Chicago, IL, August 26-30, 2001. "UV-visible spectroscopy studies of dispersed oxide catalysts for oxidative dehydrogenation of alkanes." K. D. Chen, C. Rellini, M. Argyle, A. T. Bell, E. Iglesia.

**Presentations (by Students and Coauthors, continued)**

**American Chemical Society** 220<sup>th</sup> National Meeting, Washington, DC, August 20-24, 2000.  
“Oxidative reactions of alkanes on supported oxide domains: Structural requirements and reaction pathways.” E. Iglesia, K. D. Chen, M. D. Argyle, S. Xie, A. T. Bell.

## Research Supervision and Mentoring

<u>Student</u>	<u>Degree</u>	<u>Degree Date</u>
Francis Anane	PhD	2028 (anticipated)

## Previous Graduate Student Supervision

<u>Student</u>	<u>Degree</u>	<u>Degree Date</u>
Mahmood Rahmati	PhD	2019
Dissertation: Effect of Support, Preparations Methods, Ag Promotion and NC Size on the Activity/Selectivity and Sintering Deactivation of Supported Co Fischer-Tropsch Catalysts.		
William Schaffers	MS	
Thesis: Effects of Iron Precursors with Copper and Manganese Promoters on the Properties of Iron Fischer-Tropsch Catalysts Prepared Using Solvent Deficient Precipitation. Co-advised with Professor William C. Hecker.		
Basseem Hallac	PhD	2014
Dissertation: Kinetic Experimental and Modeling Studies on Iron-Based Catalysts Promoted with Lanthana for the High-Temperature Water-Gas Shift Reaction Characterized with Operando UV-Visible Spectroscopy and for Fischer-Tropsch Synthesis		
Jared Brown	MS	2012
Thesis: UV Visible Spectra Analysis of High Temperature Water Gas Shift Catalysts Made From Iron, Lanthanum, Copper, and Chromium Oxides Currently employed by Micron Technology in Boise, ID.		
Ying Li	MS	2011
Thesis: Ru-based water gas shift catalyst study Returned home to China after her degree.		
Rodolfo Monterroso	MS	2010
Thesis: Development of New Mercury Sorbents Obtained PhD at the University of Wyoming, 2013. Returned to Guatemala to teach at the Universidad del Valle de Guatemala		
Tiberiu Popa	PhD	2009
Dissertation: Metal Oxide Catalysts for Green Applications Currently employed by Ford Motor Company, Detroit, MI.		
Sanil John	PhD	2008
Dissertation: Decomposition of Hydrogen Sulfide and Methane in Pulsed Corona Discharge Reactors Currently employed by Lynntech, Inc., Austin, TX.		
Guoqing Xu	MS	2006
Thesis: Water Gas Shift Catalyst Study Currently employed by Black & Veatch, Kansas City, MO		
Janardhan Garikipati	MS	2004
Thesis: Effect of Oxygen and Pressure on Nitric Oxide Conversion in Non-Thermal Plasma. Co-chaired MS committee with Professor Maciej Radosz as chair and supervisor.		
Robin Alcanzare	PhD student, 2003-2004	
Transferred to Louisiana State University to be closer to her family.		

### Undergraduate Student Supervision

<u>Student</u>	<u>Date</u>	<u>Project</u>
Taewoo Kang	2025-present	Fischer-Tropsch Synthesis
Joshua Hansen	2025-present	Fischer-Tropsch Synthesis
Isaac Hammond	2025-present	Fischer-Tropsch Synthesis
Nelson Loris	2024-present	Fischer-Tropsch Synthesis
Billy Hyde	2023-present	Fischer-Tropsch Synthesis
Lydia Schouten	2021-2022,2024-pres.	Fischer-Tropsch Synthesis
Hunter Hillesheim	2024-2024	Fischer-Tropsch Synthesis
Evan Dantzscher	2024-2024	Fischer-Tropsch Synthesis
Anna Wooley	2023-2024	Fischer-Tropsch Synthesis
Vitor Camacho	2023-2024	Fischer-Tropsch Synthesis
Tanner Garrett	2022-2023	Fischer-Tropsch Synthesis
Aubrey Simpson	2022-2023	Fischer-Tropsch Synthesis
Ethen Saxey	2021-2023	Fischer-Tropsch Synthesis
Joseph Talley	2021-2023	Fischer-Tropsch Synthesis
Matthew Argyle	2021-2022	Fischer-Tropsch Synthesis
Lukas Hermann	2020-2022	Fischer-Tropsch Synthesis
Shayla Nebeker	2018-2022	Fischer-Tropsch Synthesis
Alice Lundgren	2020-2021	Fischer-Tropsch Synthesis
Tyler Bell	2020-2021	Fischer-Tropsch Synthesis
Becky Fuller McDowell	2019-2020	Fischer-Tropsch Synthesis
Estanislado Bravo	2019-2019	Fischer-Tropsch Synthesis
Spencer Flindt	2018-2019	Fischer-Tropsch Synthesis
Colton VanWagoner	2018-2019	Fischer-Tropsch Synthesis
Kyle Primavera	2018-2020	Fischer-Tropsch Synthesis
Erienne Oh	2018-2019	Fischer-Tropsch Synthesis
Landon Nuttall	2018-2019	Fischer-Tropsch Synthesis
Jennifer Robinson	2017-2019	Fischer-Tropsch Synthesis
Matthew Crabtree	2017-2020	Fischer-Tropsch Synthesis
Ivan Bowles	2017-2018	Fischer-Tropsch Synthesis
Edgar Diaz-Vita	2017-2018	Fischer-Tropsch Synthesis
Hunter Lee	2017-2018	Fischer-Tropsch Synthesis
Eduardo Meza Mera	2017-2018	Fischer-Tropsch Synthesis
Sergio Rodriguez	2017-2018	Fischer-Tropsch Synthesis
Clarissa Knight	2016-2020	Fischer-Tropsch Synthesis
Garrett Strong	2016-2019	Fischer-Tropsch Synthesis
Howard Choi	2016-2018	Fischer-Tropsch Synthesis
John Jeong	2016-2018	Fischer-Tropsch Synthesis
Landon Schofield	2015-2018	Fischer-Tropsch Synthesis
Max Mortensen	2015-2017	Fischer-Tropsch Synthesis
Jacob Parker	2015-2017	Zeolite Hydroisomerization Catalysts
Sora Lee	2014-2016	Zeolite Hydroisomerization Catalysts

**Undergraduate Student Supervision (continued)**

Xirong Zhang	2015	Fischer-Tropsch Synthesis
Brannan Peterson	2015	Fischer-Tropsch Synthesis
Brandon Clark	2013-2014	WGS Catalysis
Asslan Mahmoud	2012-2013	WGS Catalysis
Whitney King	2012-2013	WGS Catalysis
John Hausen	2011	WGS Catalysis
Rabindra Sharma	2009-2012	Catalysis start-up
Rupak Bajagain	2009-2012	Catalysis start-up
Trevor Slade	2009-2012	Catalysis start-up
Basseem Hallac	2009-2010	Catalysis start-up
Jonathan Clark	2009-2010	Catalysis start-up
Colter Rieke	2007	H <sub>2</sub> S Plasma
Diane Cone	2006	H <sub>2</sub> S Plasma
Siluni Wikramathilaka	2005	Start-up research
Jessica McCoy	2005	Start-up research
Cy Bevenger	2005	Start-up research
Brandon Long	2004	Summer EPSCoR
Robert Leonard	2004	Start-up research

**Undergraduate Summer Intern Student Supervision**

<u>Student</u>	<u>Date</u>	<u>Project</u>
Charity Stradley	2007	REU/NO <sub>x</sub> Catalysts
Kelsy Jones	2006	WGS Catalyst

**Post-doctoral Fellow Research Supervision**

<u>Researcher</u>	<u>Dates</u>	<u>Project</u>
Guibing Zhao	2003-2006	H <sub>2</sub> S Plasma
Last employed by Blacklight Power, Inc., Cranbury, New Jersey.		
JiJun Zhang	2003-2005	H <sub>2</sub> S Plasma
Last employed by Headwaters Technology Innovation Group, Lawrenceville, NJ.		

## Teaching Experience

### Brigham Young University

Chemical Engineering 311 Chemical Engineering and Society, Fall 2016-2019, Winter 2020-2023  
Chemical Engineering 378 Science of Engineering Materials, Spring 2023  
Chemical Engineering 391 Career Skills 2, Winter 2019  
Chemical Engineering 410 Introduction to Petroleum Engineering, Winter 2018-2026  
Chemical Engineering 445 Separations and Process Control Fundamentals Laboratory, Fall 2023-2025  
Chemical Engineering 461 Capstone II: Projects coach, Winter 2026  
Chemical Engineering 476 Separations, Fall 2009-2012, 2020-2025  
Chemical Engineering 475 Unit Operations Lab I, Spring 2011, 2013, 2018  
Chemical Engineering 477 Unit Operations Lab II, Winter 2010-2012; Spring 2011-2013, Fall 2015; Spring 2018-2019  
Chemical Engineering 479 Unit Operations Lab, Spring 2022  
Chemical Engineering 535 Kinetics and Catalysis, Fall 2013, 2014, 2016, 2017  
Chemical Engineering 691/791 Graduate Seminar, Fall 2011, 2015; Winter 2015  
Engineering Technology 231 Foundations of Global Leadership, Winter 2013-2017 and Spring 2014-2016

### University of Wyoming

Chemical Engineering 3000 Chemical Process Analysis, Fall 2003-2007  
Chemical Engineering 3070 Process Simulation and Economics, Spring 2005 and 2006  
Chemical Engineering 4060 Process Kinetics, Fall 2004-2008  
Chemical Engineering 4080 Process Design safety module, Spring 2004 and 2005  
Chemical Engineering/Petroleum Engineering 5030 Reaction Kinetics, Spring 2006-2008  
Engineering Science 1060, Introduction to Engineering Problem Solving, Spring 2009  
Engineering Science 2330, Fluid Dynamics, Summer 2007

### University of California at Berkeley, Teaching Assistant

Chemical Engineering 154 Unit Operations Laboratory, Fall 2000  
Chemical Engineering 144 Reaction Engineering and Kinetics, Spring 1999

## Professional Service

### Department

Brigham Young University Department of Chemical Engineering Undergraduate Committee member, 2009-present; Committee chair, 2019-present.

Brigham Young University Department of Chemical Engineering Faculty Search Committee member, 2015-2017; Search Committee Chair, 2021-2022

Brigham Young University Society of Petroleum Engineers Student Chapter Advisor, 2025-present.

Brigham Young University Ira R. Fulton College of Engineering and Technology Leadership Committee member, 2009-2014

Brigham Young University American Institute of Chemical Engineers Student Chapter Advisor, 2009-2012

Brigham Young University Undergraduate Advisor, 2009-present

University of Wyoming Department of Chemical Engineering Adjunct Faculty, 2015—present

University of Wyoming Department of Chemical and Petroleum Engineering Adjunct Faculty, 2009—2015

University of Wyoming School of Energy Resources Adjunct Faculty, 2009—2014

University of Wyoming School of Energy Resources Academic Council, 2007-2008

University of Wyoming School of Energy Resources Steering Committee, 2006-2007

University of Wyoming School of Energy Resources Draft Committee, 2005

University of Wyoming College of Engineering Academic Programs Committee, 2005-2008

University of Wyoming College of Engineering Teaching Review Committee, 2005

University of Wyoming Department of Chemical and Petroleum Engineering Faculty Search Committee, 2004-2009

University of Wyoming Department of Chemical and Petroleum Engineering Graduate Student Search Committee, 2003-2008

University of Wyoming Department of Chemical and Petroleum Engineering Continuous Improvement Committee, 2003-2009

University of Wyoming American Institute of Chemical Engineers Student Chapter Advisor, 2003-2008

University of Wyoming Chess Club Advisor, 2005-2007

University of Wyoming high school recruiter, 2003-2009

University of Wyoming Undergraduate Advisor, 2003-2009

### Professional Service: Regional and National

American Institute of Chemical Engineers Great Salt Lake professional chapter board of directors, 2009—present

Treasurer for the 25<sup>th</sup> North American Catalysis Society Meeting held in Denver, CO, June 4-9, 2017, with 1500 attendees from ~30 countries and a \$1.1 million budget

Rocky Mountain Catalysis Society Director, 2018 to present

Rocky Mountain Catalysis Society (formerly Western States Catalysis Club) President, 2012 to 2018

**Professional Service: Regional and National (continued)**

Western States Catalysis Club Treasurer, 2007 to 2011

Member of the American Institute of Chemical Engineers Catalysis and Reaction Engineering Division national programming committee

Chaired two "Catalytic Hydrocarbon Processing" sessions at the American Institute of Chemical Engineers national meeting, Salt Lake City, UT, November 18, 2015.

Chaired one "Catalytic Hydrogen Generation" session at the American Institute of Chemical Engineers national meeting, Atlanta, GA, November 18, 2014.

Chaired one "Catalytic Hydrogen Generation" session at the American Institute of Chemical Engineers national meeting, Pittsburg, PA, November 1, 2012.

Chaired one "Catalytic Hydrogen Generation" session at the American Institute of Chemical Engineers national meeting, Minneapolis, MN, October 17, 2011.

Chaired one "Catalytic Hydrogen Generation" session at the American Institute of Chemical Engineers national meeting, Salt Lake City, UT, November 11, 2010

Chaired the "Catalytic Hydrogen Generation" session at the American Institute of Chemical Engineers national meeting, Nashville, TN, November 8, 2009

Chaired the "Size Effects in Catalysts at the Nanoscale" session at the American Institute of Chemical Engineers national meeting, San Francisco, CA, November 14, 2006

Judge for the student poster competition at the national American Institute of Chemical Engineers national meeting, 2006, 2007, 2009, 2011, 2012

**Manuscript reviewer**

*ACS Applied Materials and Interfaces*

*ACS Catalysis*

*ACS Omega*

*Advanced Functional Materials*

*Angewandte Chemie*

*Applied Catalysis A: General*

*Applied Catalysis B: Environmental*

*Applied Energy*

*Applied Petrochemical Research*

*Applied Spectroscopy*

*Applied Surface Science*

*C*

*Catalysis Communications*

*Catalysis Letters*

*Catalysis Science & Technology*

*Catalysis Today*

*Catalysts*

*Canadian Journal of Chemical Engineering*

*Canadian Journal of Chemistry*

*ChemCatChem*

*Chemical Communications*

*Chemical Engineering Communications*

**Professional Service:** Manuscript reviewer (continued)

*Chemical Engineering Journal*  
*Chemical Engineering Research and Design*  
*Chemical Engineering Science*  
*Chemical Papers*  
*Chemosphere*  
*Coatings*  
*Cogent Chemistry*  
*Communications Chemistry*  
*Crystals*  
*Energy & Fuels*  
*Environmental Science & Technology*  
*Frontiers in Energy*  
*Frontiers of Chemical Science and Engineering*  
*Fuel*  
*Fuel Processing Technology*  
*Gas Science and Engineering*  
*Green Processing and Synthesis*  
*Hydrogen Energy*  
*Industrial & Engineering Chemistry Research*  
*Inorganics*  
*Institute of Electrical and Electronics Engineers*  
*International Journal of Biological Macromolecules*  
*International Journal of Environmental Science and Technology*  
*International Journal of Greenhouse Gas Control*  
*International Journal of Hydrogen Energy*  
*International Journal of Industrial Chemistry*  
*Iranian Journal of Chemistry and Chemical Engineering*  
*Journal of Advanced Oxidation Technologies*  
*Journal of the American Chemical Society*  
*Journal of Catalysis*  
*Journal of Carbon Dioxide Utilization*  
*Journal of Cleaner Production*  
*Journal of Cluster Science*  
*Journal of Environmental Chemical Engineering*  
*Journal of the Energy Institute*  
*Journal of Membrane Science*  
*Journal of Natural Gas Science and Engineering*  
*Journal of Physical Chemistry B*  
*Journal of Physical Chemistry C*  
*Journal of Physical Chemistry Letters*  
*Journal of Physics and Chemistry of Solids*  
*Journal of the Taiwan Institute of Chemical Engineers*  
*Journal of Visualized Experiments*

**Professional Service:** Manuscript reviewer (continued)

*Langmuir*  
*Materials*  
*Membrane Science*  
*Metals*  
*Micromachines*  
*Microporous and Mesoporous Materials*  
*Molecules*  
*Nano Energy*  
*Nanomaterials*  
*Plasma Chemistry and Plasma Processing*  
*Plasma Processes and Polymers*  
*Processes*  
*Progress in Energy and Combustion Science*  
*Reactions*  
*Separation and Purification Technology*  
*Solid State Ionics*  
*South African Journal of Chemical Engineering*  
*Thermochimica Acta*  
*Topics in Catalysis*  
American Chemical Society Book Series  
John Wiley & Sons

**Proposal reviewer**

US Department of Energy University Coal Research  
Wyoming School of Energy Resources  
State of Wyoming Clean Coal Technologies Fund  
State of Wyoming In-Situ Recovery of Uranium Technologies Program  
Qatar National Research Fund  
American Chemical Society Petroleum Research Fund  
Alberta Ingenuity Fund  
National Science Foundation Graduate Research Fellowship Program  
Department of Defense Science Mathematics and Research for Transformation (SMART)  
US Civilian Research & Development Foundation for the Independent States of the  
Former Soviet Union and the International Science and Technology Center  
US Department of Energy

## **Awards and Honors**

Pope Endowed Professorship, 2023-2028

Fellow of the American Institute of Chemical Engineers, 2020

Brigham Young University Chemical Engineering Department Outstanding Faculty Award  
2020

University of Wyoming School of Energy Resources Adjunct Faculty, 2009—2014

University of Wyoming College of Engineering and Applied Science Tau Beta Pi Outstanding  
Undergraduate Teaching Award, 2005

University of Wyoming Department of Chemical and Petroleum Engineering Cooney  
Outstanding Teacher Award, 2004, 2005, 2006, and 2008

Mortar Board Honor Society "Top Prof" Award, 2004, 2006, and 2007

University of California at Berkeley Department of Chemical Engineering Outstanding  
Graduate Student Instructor Award, 2000

The Dow Prize for Excellence in Teaching, University of California at Berkeley, 1999

National Merit Scholar

Brigham Young University Trustees Scholar (one of 24 awarded annually)

Brigham Young University College of Engineering and Technology Honored Student Award,  
1990

Brigham Young University Chemical Engineering Department Outstanding Senior, Junior,  
Sophomore, and Freshman Scholarships, 1984-1986, 1988-1990

## **Professional and Honor Societies**

American Institute of Chemical Engineers, 1991-present

American Society of Engineering Education, 2003-present

American Chemical Society, 2004-present

Tau Beta Pi (President of the Utah Beta chapter, 1989-1990)

Phi Kappa Phi