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REFEREED JOURNAL ARTICLES:

1. G. Apai and B. G. Frederick, "X–ray photoelectron spectroscopic characterisation of CO bonding sites on supported small rhodium clusters," Langmuir (1987) 395-411. Citations: 11

2. B. G. Frederick, G. Apai and T. N. Rhodin, "An XPS study of rhodium carbonyls adsorbed on planar aluminas: formation of geminal dicarbonyl species," J. Am. Chem. Soc. 109 (1987) 4797-4804. Citations: 58

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Total citations (Web of Science 3/23/2024): 2663.
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Patents:

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PRESENTATIONS:

1. B. G. Frederick, G. Apai and T. N. Rhodin, "An XPS Study of $Rh_6(CO)_{16}$ on Planar Aluminas," 191st ACS National Meeting, April 1986, New York, New York.
2. G. Apai, B. G. Frederick and T. N. Rhodin, "Chemisorption of Ethylene and 1,3–Butadiene on Ag(111)," 35th Annual Symposium of the American Vacuum Society, October 1988, Atlanta, Georgia
3. G. Apai, B. G. Frederick and T. N. Rhodin, "Optical Phonon Properties of Thin Film Al2O3 Using HREELS: Thickness and Roughness Effects," 37th Annual Symposium of the American Vacuum Society, October 1990, Toronto, Canada.
4. B. G. Frederick, G. Apai and T. N. Rhodin, "Electronic Properties and Surface Hydroxyl Stability of Thin Film Transition Aluminas," 37th Annual Symposium of the American Vacuum Society, October 1990, Toronto, Canada.
5. B. G. Frederick, N. V. Richardson, W. N. Unertl and A. El Farrash, "Reaction of Aniline and Phenylene Diamine with Monolayer PMDA: Model for Polyimide Bonding and Adhesion," March Meeting of the American Physical Society, March 1992, Indianapolis, Indiana.
6. N. V. Richardson, B. G. Frederick, W. N. Unertl, C. Hahn and T. Strunskus, "Electron Beam Effects in Pyromellitic Dianhydride and Other Polyimide Related Materials," 39th Annual Symposium of the American Vacuum Society, November 1992, Chicago, Illinois.
7. P. D. A. Pudney, B. G. Frederick and N. V. Richardson, "Deuterated Benzoate Species on Copper (110), a Vibrational Spectroscopic Study," European Conference on Surface Science, August 1993, Warwick, England.
8. B. G. Frederick and N. V. Richardson, "Application of Bayesian Methods to Spectral Restoration in HREELS," ESF conference on Ultra-High Resolution EELS, May 1994, Lancashire, England.
9. B. G. Frederick, Th. Bitzer and N. V. Richardson, "Bayesian resolution enhancement in HREELS of semiconductors", 14th European Conference on Surface Science, September 1994, Leipzig, Germany.
10. B.G. Frederick, F.M. Leibsle, S. Dhesi, M. B. Lee, K. Kitching and N. V. Richardson, "Long Range Periodicity and Local Order in Complex Molecule Chemisorption", 41st Annual Symposium of the American Vacuum Society, October 1994, Denver, Colorado.
11. B. G. Frederick, F. M. Leibsle, S. Dhesi, S. D. Barrett, K. J. Kitching and N. V. Richardson, "Electron induced disordering of benzoate/Cu(110)", European Workshop on Vibrations at Surfaces and the Role of Negative Ion Resonances, December, 1994, Birmingham, England.
12. Th. Bitzer, B.G. Frederick and N.V. Richardson, "The Adsorption of benzoic acid on Si(100) and Si(111)",15th European Conference on Surface Science, September 1995, Lille, France.
13. B. G. Frederick, B. B. Frederick, N. V. Richardson and R. Unwin, “Model picking, data reduction and quantification in spectra”, 42nd Annual Symposium of the American Vacuum Society, October 1995, Minneapolis, Minnesota.

14. B. G. Frederick, "Self-Assembly Features in Chemisorbed Layers on the Cu(110) Surface - Models and Mechanisms", Cornell Materials Science Center, Cornell University, Ithaca, NY, Nov. 2, 1995.
15. B. G. Frederick, "Bayesian methods for smoothing, peak picking and resolution enhancement in HREELS", Invited speaker. VIIIth International Conference on Vibrations at Surfaces, Univ. of Birmingham, UK, June 1996.
16. B. G. Frederick, "Electron Stimulated Disordering of benzoate/Cu(110)", EPSRC Scanning Probe Microscopy Initiative workshop on Tip-Sample Interactions, University of Cambridge, U. K., April 1996.
17. K. J. Kitching, B. G. Frederick, M. B. Lee, and N. V. Richardson, "An investigation into the Adsorption of Glycine onto a Cu(110) Surface using High Resolution Electron Energy Loss Spectroscopy" 11th Interdisciplinary Surface Science Conference, University of Cambridge, April 1996.
18. Q. Chen, S. Haq, B. G. Frederick, N. V. Richardson, "Formation of a phenyl intermediate from nitrobenzene on Cu(110)" 11th Interdisciplinary Surface Science Conference, University of Cambridge, April 1996.
19. B. G. Frederick, "Probing the Development of Molecular Self-Organisation" Institut für Festkörperphysik, University of Hannover, Hannover, Germany, 19 Aug. 1996.
20. B. G. Frederick**,** "Probing the Development of Molecular Self-Organisation", Dept of Physical Chemistry, Fritz-Haber Institüt der Max-Plank Gesellschaft, Berlin, Germany, 20-21 Aug. 1996.
21. C. C. Perry, Q. Chen, B. G. Frederick, Th. Bertrams, A. W. Munz, and N.V. Richardson, "Registry of benzoate from coadsorption with (2x3)N/Cu(110)", ECOSS-17, Enschede, Netherlands, September 16-19, 1997
22. B. G. Frederick, R. J. Cole, J. R. Power, C. C. Perry, Q. Chen, N. V. Richardson, C. Verdozzi, P. Weightman and D. R. Jennison, "Molecular orientation with visible light: reflection anisotropy spectroscopy of 3-thiophene carboxylate/Cu(110)" ECOSS-17, Enschede, Netherlands, ECOSS-17, Enschede, Netherlands, September 16-19, 1997.
23. B. G. Frederick, R. J. Cole, and P. Weightman, "Substrate dependence of adlayer optical response in reflectance anisotropy spectroscopy", Condensed Matter and Materials Physics Conference (CMMP-97), Institute of Physics, Exeter, U.K., 17-19 December 1997.
24. B. G. Frederick, "Development of Reflection Anisotropy Spectroscopy for Organic Film Growth", Labratory for Applied Surface Science and Technology, University of Maine, Orono, Me., U.S.A., January 13, 1998
25. B. G. Frederick, "Development of Reflection Anisotropy Spectroscopy for Organic Film Growth", Center for Advanced Materials, University of Massachusetts, Lowell, Mass., January 15, 1998
26. B. G. Frederick, "Inelastic Diffraction in Coadsorbed Periodic Structures", 9th International Conference on Vibrations at Surfaces, Kanaga-wa, Japan, October 16-19, 1998.
27. L. J. LeGore, R. J. Lad, E. A. Kenik, and B. G. Frederick, "Quantification of Oxidation/Reduction Reactions of Tungsten Trioxide Films by Electrical Conductivity", National Meeting of the Electrochemical Society, November 3, 1998.
28. B. G. Frederick, "Inelastic Diffraction in Coadsorbed Periodic Structures", Dept. of Physics, Univerity of Maine, 30 October 1998.

29. Z. Yang, R.H. Jackson, P. H. Kleban, B. G. Frederick, “Scattering of charged particles through electrode arrays”, Graduate Research Exposition, Univ. of Maine, March 19, 1999.
30. S. Ma, L. J. LeGore, R.H. Jackson, B. G. Frederick, “Correlated Thermal Desorption, FTIR, and conductivity measurements on Semiconducting WO_3 Thin Film Sensors”, Graduate Research Exposition, Univ. of Maine, March 19, 1999.
31. R.H. Jackson, B. G. Frederick, D. W. Dwyer, “Calibrated Thermal Desorption Mass Spectrometer System”, Graduate Research Exposition, Univ. of Maine, March 19, 1999.
32. L. J. LeGore, R. J. Lad, E. A. Kenik, and B. G. Frederick, “Quantification of Oxidation/Reduction Reactions of Tungsten Trioxide Films by Electrical Conductivity”, Graduate Research Exposition, Univ. of Maine, March 19, 1999.
33. R. H. Jackson and B. G. Frederick, “A Calibrated Adsorption and Thermal Desorption System” 8th Topical Conference on Quantitative Surface Analysis, Puyallup, WA, October 22-23, 1999
34. R. H. Jackson and B. G. Frederick, “A Calibrated Adsorption and Thermal Desorption System” 46th International Symposium of the American Vacuum Society, Seattle, WA, October 25-29
35. B. G. Frederick, "Strategies for Improving Selectivity in Semiconducting Metal Oxide Gas Sensors", University of New Hampshire, Oct 19, 2000; hosted by Howard Maynes
36. B. G. Frederick, "Selectivity Toward Organophosphorous Compounds in SMO Chemiresistive Sensors", Chemical Engineering Distinguished Lecture Series, April 20, 2001, Dept. Chem. Eng., University of Maine
37. B. G. Frederick , Presented NO Breath Analyzer to Tryggve Hemmingson, Project Manager, Aerocrine, Solna, Sweden. Included proposal for cooperation in further development work and live laboratory demonstration of NO sensor system. Contributors to effort included: Joe Paulus, Jay LeGore, Scott Moulzolf, George Bernhard. Oct. 26, 2000.
38. L.J. LeGore , R.J. Lad, J.F. Vetelino, B.G. Frederick and E.A. Kenik "Aggregation and sticking probability of gold on tungsten trioxide films" International Meeting on Chemical Sensors, Basel Switzerland, July 2, 2000.
39. J. L. Duncan, R. S. Pilling, S. Ma, C. S. Kim, R. H. Jackson and B. G. Frederick, "Mechanistic Studies of Organophosphorous Compounds on Semiconducting Metal Oxides", International Meeting on Chemical Sensors, Basel Switzerland, July 3, 2000.
40. B. Fruhberger, N. Stirling, F. G. Grillo, S. Ma, D. Ruthven, R.J. Lad and B. G. Frederick, "Detection and quantification of nitric oxide in human breath using a semiconducting oxide based chemiresistive microsensor" International Meeting on Chemical Sensors, Basel Switzerland, July 4, 2000.
41. B. G. Frederick, "Mechanistic Studies of Organophosphorous Compounds on Semiconducting Metal Oxides", Hosted by Giorgio Sberveglieri, Gas Sensor Laboratory, Univ. of Brescia, Brescia, Italy, July 7, 2000.
42. B. G. Frederick, "Strategies for Improving Selectivity in Semiconducting Metal Oxide Gas Sensors", Hosted by Carlos Cantalini, University of l'Aquila, l'Aquila, Italy, July 12, 2000

43. B. G. Frederick, "Mechanistic Studies of Organophosphorous Compounds on Semiconducting Metal Oxides", 47th International Symposium of the American Vacuum Society, Oct 1-5, 2000, Boston MA
44. B. G. Frederick, "Mechanistic Studies of Reactions on Semiconducting Metal Oxides", 2000 Int. Chemical Congr. of Pacific Basin Societies, Honolulu, HI, Dec. 14-19, 2000.
45. Shuguo Ma, R. H. Jackson, B. G. Frederick, "Effect of Surface Reduction on Decomposition of Dimethyl Methylphosphonate on Tungsten Trioxide Surfaces" AGS Poster presentation, April 10-12, 2001.
46. Zhongyu Yang, R. H. Jackson, L.J. LeGore, P. Kleban, B. G. Frederick, "Limitations of the Interleaved Comb Chopper for TOF Electron Spectrometers", AGS Poster presentation, April 10-12, 2001.
47. L.J. LeGore, R.H. Jackson, Z. Yang, P. Kleban, L.K. DeNoyer, and B.G. Frederick, "A Fourier Transform based TOF HREELS Spectrometer", 10th International Conference on Vibrations at Surfaces, St. Malo, France, June 17-21, 2001.
48. R.H. Jackson, L.J. LeGore, Z. Yang, P. Kleban, and B.G. Frederick, "Limitations of the Interleaved Comb Chopper for TOF Electron Spectrometers", 10th International Conference on Vibrations at Surfaces, St. Malo, France, June 17-21, 2001.
49. S. Ma, R.L. Jackson and B.G. Frederick, "Effect of Surface Reduction on Decomposition of Dimethyl Methyl Phosphonate on Tungsten Trioxide Surfaces", 30th American Chemical Society Northeast Regional Meeting, Durham NH, June 24-27, 2001.
50. R. S. Pilling, C. S. Kim, S. C. Moulzolf, G. Bernhardt, B. G. Frederick, "Selectivity toward Organophosphorous Compounds in SMO Chemiresistive Sensors", 30th American Chemical Society Northeast Regional Meeting, Durham NH, June 24-27, 2001.
51. R.H. Jackson, LeGore, L.J., Z. Yang, P. Kleban, and B.G. Frederick, "A Fourier Transform based TOF HREELS Spectrometer", 48th International Symposium of the American Vacuum Society, San Francisco, California, Oct 28-Nov 2, 2001.
52. S. Ma, R. H. Jackson, B. G. Frederick, "Effect of Surface Reduction on Decomposition of Dimethyl Methyl Phosphonate on Tungsten Trioxide Surfaces", 48th International Symposium of the American Vacuum Society, San Francisco, California, Oct 28-Nov 2, 2001.
53. R.S. Pilling, S. Ma, A. El Madi, A. Martin, G. Bernhardt, R. J. Lad, B. G. Frederick, "Methods for Compound Classification in Metal Oxide Sensor Array Systems", AVS Topical Conference on Understanding and Operating in Threat Environments, Monterey, CA May 1-2, 2002.
54. R.S. Pilling, C. S. Kim, S. C. Moulzof, G. Bernhardt, B. G. Frederick, "Selectivity toward organophosphorous compounds in SMO chemiresistive sensors", 9th International Meeting on Chemical Sensors, Boston, MA, July 7-10, 2002
55. R. S. Pilling, J. Duncan, B. G. Frederick, "A GC/MS Based Gas-Delivery System for Quantifying Sensitivity and response Time of Gas Sensors", 9th International Meeting on Chemical Sensors, Boston, MA, July 7-10, 2002.
56. A. L. Martin, R. S. Pilling, L. J. LeGore, B. G. Frederick, "Detection of Nitric Oxide Using Silver and Gold Modified WO_3 Chemiresistive Sensors", 9th International Meeting on Chemical Sensors, Boston, MA, July 7-10, 2002.

57. R.S. Pilling, S. Ma, A. El Madi, A. Martin, G. Bernhardt, R. J. Lad, B. G. Frederick, "Methods for Compound Classification in Metal Oxide Sensor Array Systems", AVS Topical Conference on Understanding and Operating in Threat Environments, Monterey, CA May 1-2, 2002.
58. S. Ma, F. G. Amar and B. G. Frederick, "Adsorption and Desorption of Methanol on WO^3 (100) surfaces", 49th International Symposium of the American Vacuum Society, Denver, Colorado, Oct 28-Nov 2, 2001.
59. R. L. Jackson, Z. Yang, L.J. LeGore, P. Kleban, and B. G. Frederick, "Development of a Time-of-Flight HREELS Using Pseudorandom Modulation", 49th International Symposium of the American Vacuum Society, Denver, Colorado, Oct 28-Nov 2, 2001.
60. Z. Yang, G. Bernhardt, R. L. Jackson, L.J. LeGore, P. Kleban, W. N. Unertl and B. G. Frederick, "TOF-HREELS and AFM characterization of highly oriented teflon (PTFE) films", 49th International Symposium of the American Vacuum Society, Denver, Colorado, Oct 28-Nov 2, 2001.
61. A. El Madi, B. Meulendyk, R. S. Pilling, G. Bernhardt, R. J. Lad, B. G. Frederick, "Phase and Morphology in Mixed CuO-WO_3 Films for Chemical Sensing" Materials Research Society, Fall Meeting, Boston, MA, Dec 2-6, 2002.
62. B. G. Frederick, "Role of materials properties in WO^3-based thin film sensor development", Topical conference on Oxide-Based Chemical and Biological Sensors, 105th Annual Meeting American Ceramic Society, Nashville, TN April 28-29. (Invited)
63. Z. Yang, R.H. Jackson, L.J. LeGore, L.K. DeNoyer, P. Kleban and B. G. Frederick, "A PRBS-modulated TOF-HREELS Spectrometer with high throughput and multiplex advantage", 63rd Annual Physical Electronics Conference, Ithaca, NY, June 16-18, 2003
64. B. G. Frederick, S. Ma, "Reactions of Aliphatic Alcohols on WO_3(001) Surfaces", 50th International Symposium of the American Vacuum Society, Baltimore, Maryland, Nov. 2-7, 2003.
65. A. G. Shirke, R. H. Jackson, B.G. Frederick, R. E. Cavicchi, S. Semancik, M. C. Wheeler, "Microsensor Technique for Analyte Surface Coverage vs. Sensor Response Correlation", 50th International Symposium of the American Vacuum Society, Baltimore, Maryland, Nov. 2-7, 2003.
66. B.G.Frederick, Z. Yang, P. Kleban, "A PRBS-modulated TOF-HREELS Spectrometer with High Throughput and Multiplex Advantage", 50th International Symposium of the American Vacuum Society, Baltimore, Maryland, Nov. 2-7, 2003.
67. B.G.Frederick, "The Future of High Throughput Mass Spectrometry", Varian, Inc., Walnut Creek, CA, May 4, 2004.
68. Z. Yang, R.H. Jackson, P.H. Kleban, B. G. Frederick, "TOF-HREELS: A New Tool for Surface Analysis", 11th International Conference on Vibrations at Surfaces, Bar Harbor, ME, June 6-10, 2004.
69. A.G. Shirke, B. G. Frederick, R. E. Cavicchi, S. Semancik and M.C. Wheeler, "Characterization of Adsorption on Metal-oxide Sensor Materials", 11th International Conference on Vibrations at Surfaces, Bar Harbor, ME, June 6-10, 2004.
70. B.G.Frederick, "The Future of High Throughput Mass Spectrometry", Waters Corporation, Medford, MA, August 17, 2004.

71. B.G.Frederick, The Future of High Throughput Time of Flight Mass Spectrometery" Agilent Technologies, Santa Clara, CA, Oct. 14, 2004.
72. B.G.Frederick, "Performance Advantages of Broadband-Modulated Time-of-Flight Spectrometry", Laval University, Quebec, Canada, Oct. 20, 2004.
73. Z. Yang, R. H. Jackson, L.J.LeGore, L.K.DeNoyer, P.Kleban, B.G.Frederick, "Performance of a High Throughput TOF-HREELS Analyzer", 51st International Symposium of the American Vacuum Society, Anaheim, CA, Nov. 16, 2004.
74. B.G.Frederick, "Performance Advantages of Broadband-Modulated Time-of-Flight Mass Spectrometry", American Society of Mass Spectrometrists Sanibel Conference 2005, Tampa, FL, Jan 28 –Feb. 1, 2005.
75. J. Wang, F. G. Amar, B. G. Frederick, "Modeling the role of spillover and diffusion in nitric oxide detection by gold nanoparticles on WO sensors" 229th ACS National Symposium, San Diego, CA, March 6-8, 2005.
76. Brian. G. Frederick, "The Future of High Throughput Mass Spectrometry", Agilent Technologies, Target Technology Incubator, Orono, ME, May 7, 2004.
77. Brian. G. Frederick, "The Future of High Throughput Time-of-Flight Spectrometry" LK Technologies, (Bloomington, IN), Target Technology Center, Orono, ME, May 17-18, 2004.
78. Brian. G. Frederick, "The Future of High Throughput Mass Spectrometry", Varian, Inc., Walnut Creek, CA, May 4, 2004.
79. Brian. G. Frederick, "The Future of High Throughput Mass Spectrometry", Waters Corporation, Medford, MA., August 17, 2004.
80. Brian. G. Frederick, "The Future of High Throughput Mass Spectrometry", Agilent Technologies, Santa Clara, CA. Oct. 14, 2004.
81. R. H. Jackson ,Z. Yang, L.J.LeGore, B.G.Frederick, P.Kleban, C.B.H.Crothers, D.P.Martin, "Throughput Advantages of PRBS Modulation in TOF Electron Spectroscopy and Mass Spectrometry", 52nd International Symposium of the American Vacuum Society, Boston, MA, Oct. 30-Nov. 4, 2005.
82. A.L. Martin, J. Wang, G. Bernhardt, M. Sander, R.J. Lad, F.G. Amar, B.G. Frederick, "Detection of Nitric Oxide using Gold Nanoparticle Catalysts on WO_3 Chemiresistive Sensors", 52nd International Symposium of the American Vacuum Society, Boston, MA, Oct. 30-Nov. 4, 2005.
83. Zhongyu Yang, Robert Jackson, Jay LeGore, Bronson Crothers, Daniel Martin, Peter Kleban, Linda DeNoyer, Brian G. Frederick, "Surface Analysis using Time of Flight Electron Spectroscopy", 54th ASMS Conference on Mass Spectrometry and Allied Topics, May 28, - June 1, 2006, Seattle, WA.
84. Brian G. Frederick, Jay LeGore, Robert Jackson, Bronson Crothers, Daniel Martin, Zhongyu Yang, Peter Kleban, Linda K. DeNoyer, Stephen A. Lammert, "Axial Time of Flight Mass Spectrometry (Axial-ToF-MS)", 54th ASMS Conference on Mass Spectrometry and Allied Topics, May 28, - June 1, 2006, Seattle, WA.
85. H. P. Pendse, M.C. Wheeler, W. J. DeSisto, B. G. Frederick, A. van Heiningen, "DoE Implementation Award: Thermochemical Conversion of Woody Biomass to Fuels and Chemicals", Renewable Energies for a Global Economy, NSF/DOE EPSCOR National Conference, Golden, CO, July 22-25, 2007.
86. I. T. Ghampson, B. Walsh, M. C. Wheeler, W. J. DeSisto, B. G. Frederick, A. van Heiningen, "Infrastructure development for the thermal conversion of woody biomass

to fuels and chemicals", Nanoporous Materials Gordon Research Conference, Colby College, Waterville, ME, June 15-20, 2008.

87. Amol G. Shirke, Brian G. Frederick and M. Clayton Wheeler, "Femtomolar Isothermal Desorption to Probe Surface Reactions", 82nd ACS Colloid & Surface Science Symposium, June 15-18, 2008.
88. H. P. Pendse, M. C. Wheeler, W. J. DeSisto, B. G. Frederick, A. van Heiningen, "Thermochemical Conversion of Woody BIomass to Fuels and Chemicals", DOE EPSCoR Annual Program Review and Workshop 2008, July 22-24, 2008, Oak Ridge National Laboratory.
89. H. P. Pendse, M. C. Wheeler, W. J. DeSisto, B. G. Frederick, A. van Heiningen, "Thermochemical Conversion of Woody Biomass to Fuels and Chemicals", First Annual Conference on Cellulosic Biofuels, Sept. 19, 2008, TIMBER, Univ. of Massachusetts Amherst.
90. H. P. Pendse, M. C. Wheeler, W. J. DeSisto, B. G. Frederick, A. van Heiningen, "Thermochemical Conversion of Woody BIomass to Fuels and Chemicals", Maine EPSCOR conference, Sept. 29-30, 2008.
91. R. Nelson, W. J. DeSisto, B. G. Frederick, A. van Heiningen, M. C. Wheeler,"High Throughput Microcalorimetry for Catalyst Discovery", AIChE Annual Meeting, Nov. 16-21, 2008, Philadelphia, PA.
92. Rachel. A. Pollock, Brenna R. Walsh, Jason A. Fry, I. Tyrone Ghampson, Tracy Steinbach, Helmut Kaiser, Roger Pynn, Yuri Melnichenko, M. Clayton Wheeler, William J. DeSisto, Brian G. Frederick, "Mild Pressure Liquid Water Modification of Mesoporous Silica", DOE EPSCOR National Meeting, Brookhaven National Laboratory, July 2009.
93. T. J. Thibodeau, B. G. Frederick, M. C. Wheeler, W. J. DeSisto, D. R. Moberg, F. G. Amar, "Hydrodeoxygenation of acrolein and allyl alcohol: Model compounds for upgrading of biomass derived feedstocks", 238th National Meeting of the American Chemical Society, Washington, DC, Aug. 17-20, 2009.
94. K.D. Hurley, R. Chen, R. Nelson, B.G. Frederick, W.J. DeSisto, and M.C. Wheeler, "Catalyst screening using micromachined calorimeters," 238th National Meeting of the American Chemical Society, Washington, DC, Aug. 16-20, 2009.
95. D. R. Moberg, T. J. Thibodeau, F. G. Amar, M. C. Wheeler, W. J. DeSisto, B. G. Frederick, "Density Functional Theory Studey of Oxygen Vacancy Formation on Cluster Models of the MoO_3(010) Surface," 36th Northeast Regional Meeting of the American Chemical Society, Hartford, CT, Oct. 7-10, 2009.
96. R. A. Pollock, B. R. Walsh, J. A. Fry, I. T. Ghampson, T. Steinbach, H. Kaiser, R. Pynn, Y. Melnichencko, M. C. Wheeler, W. J. DeSisto, B. G. Frederick, "Mild Pressure Liquid Water Modification of Mesoporous Silica," 36th Northeast Regional Meeting of the American Chemical Society, Hartford, CT, Oct. 7-10, 2009.
97. K. Hurley, R. Chen, D. Bragg, T. Kirkmann, B. J. Frederick, S. MacKay, W. J. DeSisto, and M. C. Wheeler, "High-throughput screening of hydrodeoxygenation catalysts," 2009 AIChE Annual Meeting, Nashville, TN, Nov. 8-13, 2009.
98. P. Ruiz, K. D. Hurley, B. G. Frederick, W. J. DeSisto, L. R. Radovic, N. Escalona, and M. C. Wheeler, "Hydrodeoxygenation of guaiacol as a model compound for pyrolysis oil," 2009 AIChE Annual Meeting, Nashville, TN, Nov. 8-13, 2009.

99. I.T. Ghampson, C. Newman, L. Kong, E. Pier, K.D. Hurley, R. A. Pollock, B.R. Walsh,M.C. Wheeler, W.J. DeSisto, B.G. Frederick, R.N. Austin, "Effect of Pre- and Post-Reaction Measurement of Cobalt Particle Size and Metal Fraction On the Turnover Frequency of Silica Supported Fischer-Tropsch Catalysts, 2009 AIChE Annual Meeting, Nashville, TN, Nov. 8-13, 2009.
100. S. H. Beis, N. Hill, S. Mukkamala, B. G. Frederick, M. C. Wheeler, W. J. DeSisto, , "Fast Pyrolysis of Wood Lignin: Towards A Continuous Process", 2009 AIChE Annual Meeting, Nashville, TN, Nov. 8-13, 2009.
101. S. H. Beis, N. Hill, S. Mukkamala, H. Lehtonen, A. van Heiningen, B. G. Frederick, M. C. Wheeler, W. J. DeSisto, "Fast Pyrolysis of Pine Wood: The Influence of Process Parameters On the Quality and the Quantity of the Pyrolysis Oil," 2009 AIChE Annual Meeting, Nashville, TN, Nov. 8-13, 2009.
102. B. G. Frederick, "Catalyst Development for Thermochemical Conversion of Woody Biomass to Fuels and Chemicals", Nov. 21, 2009, Dept. of Physics, Univ. of Maine.
103. F. G. Amar, D. R. Moberg, T. J. Thibodeau, M.C. Wheeler, W. J. DeSisto, B. G. Frederick, "Hydrodeoxygenation of Acrolein on Reducible Oxide Catalysts: Mechanism for Upgrading of Biomass Derived Feedstock," 2010 Spring National Meeting of the American Chemical Society, San Francisco, CA, Mar. 21-25, 2010.
104. R.A. Pollock, B.R. Walsh, J.A. Fry, I.T. Ghampson, H. Kaiser, R. Pynn, M.C. Wheeler, W.J. DeSisto, B.G. Frederick, "Structure and adsorption in secondary pore network of mesoporous silica", 2010 American Conference on Neutron Scattering, Ottowa, CN, June 27 – July 2, 2010.
105. B. G. Frederick, F. G. Amar, "Hydrodeoxygenation of Acrolein on Reduced Molybdenum and Tungsten Oxide Bronze Catalysts: Mechanism for Upgrading of Biomass Derived Feedstocks", Center for Functional Nanomaterials, Brookhaven National Laboratory, July 13, 2010.
106. M. C. Wheeler (invited), W. J. DeSisto, B.G. Frederick, A.R.P. van Heiningen, G. P. van Walsum, H. P. Pendse, R.N. Austin, N. Escalona B., and S. H. Beis, "Biomass Thermal Conversion Research within the University of Maine's Forest Bioproducts Research Institute (FBRI)," XXV Interamerican Congress of Chemical Engineering, November 14-17, 2011, Santiago, Chile.
107. T. J. Thibodeau, P. Liu, A. Vidal Sandrea, F. Wang, C. Di Valentin, G. Pacchioni, F. G. Amar, B. G. Frederick, Theoretical Modeling of Reduced Tungsten Oxides and Bronze Hydrodeoxygenation Catalysts," 243rd National American Chemical Society Meeting, San Diego, CA March 25-29, 2012.
108. T. J. Thibodeau, C. Goodwin, F. G. Amar, B. G. Frederick, "Reduced Tungsten Oxide Bronze Catalysts for Hydrodeoxygenation of Bio-oils," 243rd National American Chemical Society Meeting, San Diego, CA March 25-29, 2012.
109. Rachel A. Pollock, Francois G. Amar, Brian G Frederick, "Modeling diffusion of Methane in polydisperse pore systems", 2012 American Conference on Neutron Scatttering, Washington, D.C., June 24-28, 2012.
110. Rachel A. Pollock, Gennady Yu. Gor, Brenna R. Walsh, Jason A Fry, I. Tyrone Ghampson, Yuri B Melnichenko, Helmet Kaiser, Brian G. Frederick, "Probing the Spatial Distribution of Pores during Hydrothermal Degradation of SBA-15," 2012 American Conference on Neutron Scatttering, Washington, D.C., June 24-28, 2012.

111. James P. Fecteau, Jincy Joseph, David Labrecque, Bruce L. Jensen, Brian G. Frederick, "Polymerization Reactions during Pyrolysis Oil Aging," Symposium on Alternative Energy and Fuel Chemistry, 38th Northeast Regional Meeting of the American Chemical Society, Rochester NY, Oct. 1-3, 2012. (Undergraduate Poster presentation)
112. Brian G. Frederick, Timothy J. Thibodeau, Daniel Moberg, Christopher Goodwin, Francois G. Amar, "Fast Pyrolysis of Biomass and Hydrodeoxygenation using Metal Oxide Bronzes", Symposium on Alternative Energy and Fuel Chemistry, 38th Northeast Regional Meeting of the American Chemical Society, Rochester NY, Oct. 1-3, 2012. (Oral Presentation)
113. Jincy Joseph, David Labrecque, Diane Smith, Bruce L. Jensen, Brian G. Frederick, " Probing the reactions that stabilize bio-oil with methanol", Symposium on Alternative Energy and Fuel Chemistry, 38th Northeast Regional Meeting of the American Chemical Society, Rochester NY, Oct. 1-3, 2012. (Oral Presentation)
114. P. Ruiz, Brian G. Frederick, M. Clayton Wheeler, W. DeSisto, "Activity and Selectivity over a tungsten oxide catalyst", Symposium on Alternative Energy and Fuel Chemistry, 38th Northeast Regional Meeting of the American Chemical Society, Rochester NY, Oct. 1-3, 2012. (Poster presentation)
115. X. Zhou, C. Newman, B. Goundie, R. A. Pollock, M. C. Wheeler, R. W. Meulenberg, R. N. Austin, B. G. Frederick, Hydrodeoxygenation of Pyrolysis Oils with Ruthenium Catalysts"Symposium on Alternative Energy and Fuel Chemistry, 38th Northeast Regional Meeting of the American Chemical Society, Rochester NY, Oct. 1-3, 2012. (Oral Presentation)
116. Francois G. Amar, Brian G. Frederick, Timothy J. Thibodeau, Christopher Goodwin, Daniel Moberg, “Theoretical investigation of tungsten oxide bronzes as hydrodeoxygenation catalysts”, 246th American Chemical Society National Meeting, Indianapolis, IN, Sept. 8-12, 2013.
117. K. A. Tracy, J. Joseph, B. G. Frederick, B. J. W. Cole, E. A. Stemmler, Identification of Sugars in Fast Pyrolysis Oil,” 39th Northeast Regional Meeting of the American Chemical Society, New Haven, CT, Oct. 23-26, 2013. (Poster presentation)
118. J. Joseph, J. Fecteau, M. Rasmussen, E. A. Stemmler, B. L. Jensen, B. G. Frederick, “Chemical Reactions Causing Instability of Bio-oils”, 39th Northeast Regional Meeting of the American Chemical Society, New Haven, CT, Oct. 23-26, 2013. (Oral presentation)
119. P. Ruiz, N. Escalona, W. J. DeSisto, M. C. Wheeler, B. G. Frederick, “Effect of H_2 activation on reduced tungsten oxide bronze catalysts for hydrodeoxygenation of guaiacol,” 39th Northeast Regional Meeting of the American Chemical Society, New Haven, CT, Oct. 23-26, 2013. (Oral presentation)
120. Md. Emtias Chowdhury, J. Joseph, E. A. Stemmler, B. G. Frederick, “Automated identification of Compounds in Bio-oil with GC/MS,” 39th Northeast Regional Meeting of the American Chemical Society, New Haven, CT, Oct. 23-26, 2013. (Poster presentation)
121. A. Mahdavi Shakib, B. G. Frederick, “Surface Acidity of Tungsten Oxide Bronze Catalysts,” 39th Northeast Regional Meeting of the American Chemical Society, New Haven, CT, Oct. 23-26, 2013. (Poster presentation)

122. F. G. Amar, B. G. Frederick, K. York, R. A. Pollock, "Modeling the Filling of Methane in Heterogeneous Pore Networks," 248th National Meeting of the American Chemical Society, San Francisco, CA, Aug. 13, 2014. Rasiah Symposium.
123. B. G. Frederick, "Catalysis for bio-oil hydrodeoxygenation," Dept. of Chem. & Biological Eng., Lehigh University, Bethlehem, PA Oct. 1, 2014. (Invited talk)
124. James R. Clark, Francois G. Amar, Brian G. Frederick, "Computational Investigation of Bronsted and Lewis Acid Properties of Tungsten Oxide Clusters," 6th Annual Undergraduate Research & Creative Activities Academic Showcase, UMaine, Apr. 14, 2015
125. A. Mahdavi-Shakib, B. G. Frederick, Mechanistic Mechanistic Studies of Reducible Metal Oxides as Hydrodeoxygenation Catalysts, GradExpo, Univ. of Maine, Apr. 2-3, 2015. Awarded 3rd place, Physical Sciences & Technology Oral Competition.
126. A. Mahdavi-Shakib, J. R. Clark, F. G. Amar, B. G. Frederick, "Surface Acidity of Tungsten Oxide Bronzes in the Hydrodeoxygenation Mechanism", 40th Northeast Regional Meeting of the American Chemical Society, Ithaca College, Ithaca, NY, Jun. 10-13, 2015.
127. A. Mahdavi-Shakib, J. R. Clark, F. G. Amar, B. G. Frederick, Mechanistic Studies of Reducible Metal Oxides as Hydrodeoxygenation Catalysts, ACS Summer School on Green Chemistry & Sustainable Energy, Colorado School of Mines, Golden, CO, Jun 17-24, 2015.
128. Dexter Morse, A. Mahdavi-Shakib, B. G. Frederick, Fructose Structural Optimization on Tungsten Oxide (WO3) Catalyst Surface, 2016 UMaine Undergraduate Research Symposium, Bangor, Apr. 27, 2016.
129. Kevin Dietz, A. Crane, A. Mahdavi-Shakib, B. G. Frederick, "Synthesis and Characterization of WO3 Nanowires", 2016 UMaine Undergraduate Research Symposium, Bangor, Apr. 27, 2016.
130. A. Mahdavi-Shakib, Aiden C. Crane, Jessica Welch, Kevin Dietz, Brian G. Frederick, Selective Tungsten Oxide Catalyzed Conversion of Glucose and Fructose to HMF, a platform Chemical for Sustainable Production of Fuels and Chemicals, Graduate and Undergraduate Student Research Symposium, Cross Insurance Center, Bangor, (oral) Apr 27, 2016
131. Akbar Mahdavi Shakib, Aiden Crane, Jessica Welch, B. G. Frederick, "Tungsten Oxide as a Solid Acid Catalyst for the Conversion of Glucose to HMF and Lactic Acid," Gordon Research Conference, Catalysis, Colby-Sawyer College, NH, June 12-16, 2016.
132. R. N. Austin, L. Grabow, B. G. Frederick, R. Nelson, B. Baek, P. Ruiz, M.C. Wheeler, "New ideas for hydrogen-efficient direct deoxygenation catalysts," 251st ACS National Meeting & Exposition, San Diego, CA, United States, March 13-17, 2016.
133. B. G. Frederick, POGIL materials for Physical Chemistry, POGIL Northeast Regional Workshop, Symmons College, Boston, June 27-29, 2016.
134. Kevin J. Dietz, Antonia T. Carroll, Akbar Mahdavi-Shakib, Brian G. Frederick, "Synthesis and characterization of WO_3 nanowires", 41st Northeast Regional Meeting of the American Chemical Society, Binghamton, NY (oral) Oct. 5-8, 2016.
135. Akbar Mahdavi-Shakib, Aiden Crane, Brian G. Frederick, Tungsten oxide as solid acid catalyst for the conversion of glucose to HMF and lactic acid, 41st Northeast

Regional Meeting of the American Chemical Society, Binghamton, NY (oral) Oct. 5-8, 2016.

136. Samra Husremovic; Ryan C. Nelson, Brian G. Frederick, Rachel N. Austin, Akbar Mahdavi, Sohee Ki, "Highly selective Ru/TiO_2 catalysts for HDO of phenolic compound: Effects of support structure and partial substitution of nickel for ruthenium", 253rd ACS National Meeting & Exposition, San Francisco, CA, United States, April 2-6, 2017.
137. Jincy Joseph, Matthew Rasmussen, Elizabeth A. Stemmler, Bruce Jensen, Brian G. Frederick, "Chemical Reactions and Structure Identification of a coniferyl alcohol dimer causing instability in wood-derived pyrolysis oils," 253rd ACS National Meeting & Exposition, San Francisco, CA, United States, April 2-6, 2017.
138. Lauren R. Nguyen, Jincy Joseph, Matthew J. Rasmussen, Paige Speight, Brian G. Frederick, Elizabeth A. Stemmler, "Characterization of reactions responsible for aging in wood-based pyrolysis oil", 253rd ACS National Meeting & Exposition, San Francisco, CA, United States, April 2-6, 2017.
139. Kevin J. Dietz, Antonia T. Carroll, Akbar Mahdavi-Shakib, Brian G. Frederick, "Synthesis and characterization of WO_3 nanowires", 2017 University of Maine Student Symposium: Research & Creative Activity, Cross Insurance Center, Bangor ME, April 24th, 2017.
140. Akbar Mahdavi-Shakib, Aiden Crane, Brian G. Frederick, "Tungsten Oxide As a Solid Acid Catalyst for the Conversion of Glucose to 5-Hydroxymethylfurfural and Lactic Acid" 25th North American Catalysis Society Meeting, Denver, CO, June 4-9, 2017.
141. Colin Whitton, Kevin Dietz, François Amar, Brian G. Frederick, "Acid/Base Defect Sites on Tungsten Oxide Clusters", 2017 University of Maine Student Symposium: Research & Creative Activity, Cross Insurance Center, Bangor ME, April 24th, 2017.
142. Akbar Mahdavi-Shakib, Thomas J. Schwartz, Rachel N. Austin, Brian G. Frederick, "Implication of e-Scavenging Character of Sulfated Titania for Photocatalysis," New England Catalysis Society Meeting, Worcester Polytechnic Institute, May 24, 2018
143. Akbar Mahdavi-Shakib, Juan M. Arce-Ramos, Rachel N. Austin, Thomas J. Schwartz, Lars C. Grabow, Brian G. Frederick, "Use of Surface Hydroxyl Frequencies to Identify the Exposed Facets of Pyrogenic TiO_2 Nanoparticles", Gordon Research Seminar, Colby-Sawyer College, New London, NH, June 23-24, 2018.
144. Akbar Mahdavi-Shakib, Thomas J. Schwartz, Rachel N. Austin, Brian G. Frederick, "Implication of Electron Scavenging Character of Sulfated Titania in Photocatalysis," 78th Physical Electronics Conference, Univ. of New Hampshire, June 25-28, 2018. Awarded 1st Poster Prize.
145. Timothy J. Thibodeau, Jalal Tavana, Christopher M. Goodwin, Francois G. Amar, Thomas J. Schwartz, Brian G. Frederick, "Reaction Kinetics Analysis of Acrolein Hydrodeoxygenation over a WO_3 Catalyst", ACS National Meeting & Exposition, Orlando, FL, United States, March 31-April 4, 2019.
146. Daniela Stück V., Brian G. Frederick, Rachel N. Austin, Lars G. Grabow, Thomas J. Schwartz, "Phenol Hydrodeoxygenation in a High-Pressure Liquid-Phase Flow Reactor over Ru/TiO_2," ACS National Meeting & Exposition, Orlando, FL, United States, March 31-April 4, 2019.

147. Akbar Mahdavi-Shakib, Juan M. Arce-Ramos, Rachel N. Austin, Thomas J. Schwartz, Lars C. Grabow, Brian G. Frederick, "Use of surface hydroxyl frequencies to identify the exposed facets of pyrogenic TiO_2 nanoparticles," ACS National Meeting & Exposition, Orlando, FL, United States, March 31-April 4, 2019
148. Akbar Mahdavi-Shakib, Amir Rahmani-Chokanlu, Thomas J. Schwartz, Rachel N. Austin, Brian G. Frederick, "Implications of electron scavenging character of sulfated titania for photochemistry," ACS National Meeting & Exposition, Orlando, FL, United States, March 31-April 4, 2019.
149. B.G. Frederick, P. Ruiz, N. Escalona, T. J. Schwartz, W. DeSisto, M.C. Wheeler, "Liquid phase hydrodeoxygenation of guaiacol by tungsten oxide bronze catalysts," ACS National Meeting & Exposition, Philadelphia, PA, United States, March 22-26, 2020. Cancelled due to COVID-19.
150. Stuck, D. I.; Mahdavi-Shakib, A.; Austin, R. N.; Grabow, L.; Frederick, B. G.; Schwartz, T. J. In *Influence of Water on Phenol Deoxygenation Catalyzed by Ru/Tio2*, American Chemical Society: 2020. Cancelled due to COVID-19.
151. Robert M. Stolz, Akbar Mahdavi Shakib, Anna Kolln, Anna Brinks, Lukasz Mendecki, Brian G. Frederick, Katherine Mirica, "Understanding the surface chemistry of 2D conductive MOFs: insight into the role of the interface in electrically-transduced chemical sensing," 260th ACS National Meeting & Exposition, San Francisco, CA, United States, August 23-27, 2020.
152. Akbar Mahdavi-Shakib, Amir Rahmani-Chokanlu, Thomas J. Schwartz, Rachel N. Austin, Liping Yu, Brian G. Frederick, "Direct evidence for sulfur induced deep electron and hole traps in titania," 261st ACS National Meeting & Exposition, On-line April 5-30, 2021.
153. Amir Rahmani Chokanlu; Akbar Mahdavi-Shakib; Thomas J. Schwartz; Rachel N. Austin; Brian G. Frederick, "Direct evidence for sulfur induced deep electron and hole traps in titania," New England Catalysis Society, 2021 Spring Symposium, May 21, 2021.
154. Amir Rahmani Chokanlu*; Akbar Mahdavi-Shakib; Thomas J. Schwartz; Rachel N. Austin; Liping Yu, Brian G. Frederick, "Direct evidence for sulfur induced deep electron and hole traps in titania," 81st Physical Electronics Conference, Hamilton College (virtual), August 3, 2021. *Recipient of People's Choice Award for video presentation at https://www.youtube.com/watch?v=UuMeu-1LXK8
155. Amir Rahmani Chokanlu; Akbar Mahdavi-Shakib; Thomas J. Schwartz; Rachel N. Austin; Liping Yu, Brian G. Frederick, "Direct evidence for sulfur induced deep electron and hole traps in titania," New England Catalysis Society, 2022 Spring Symposium in Honor of Prof. Maria Stephanopolous, June 3, 2022, Tufts University, Boston, MA.
156. Christian Geci, Robert Meulenberg, Brian G. Frederick, "Measurement of Low-Concentration Sulfur X-ray Absorption Spectra to Investigate Deep Trap Formation in Sulfated TiO_2, New England Catalysis Society, 2022 Spring Symposium in Honor of Prof. Maria Stephanopolous, June 3, 2022, Tufts University, Boston, MA.
157. C.K. Boucher, A. Mahdavi-Shakib, T.J. Schwartz, B.G. Frederick, " Kinetic model of tungsten oxide catalyzed conversion of glucose to lactic acid and hydroxymethylfurfural," North East Regional Meeting of the American Chemical Society, NERM 2022, Oct.2-5, 2022 Rochester, NY.

158. B.M. Walden, S.W. Bonnevie, R.A. Pollock, B.G. Frederick, F.G. Amar, "Simulation of pore filling in meso- and micro-porous catalyst supports," North East Regional Meeting of the American Chemical Society, NERM 2022, Oct.2-5, 2022 Rochester, NY.
159. C. Geci, B.G. Frederick, R.W. Meulenberg, "Measuring speciation of dilute low-Z dopants in photocatalysts with fluorescence XAFS," North East Regional Meeting of the American Chemical Society, NERM 2022, Oct.2-5, 2022 Rochester, NY.
160. R.N. Austin, J.D. Sempel, A. Mahdavi-Shakib, M. Hoffman, A. Oza, E. Bennett, J.S. Owen, A.R. Chokanlu, T.J. Schwartz, B.G. Frederick, "Probing the influence of metal oxide nanoparticle surfaces in catalysis," North East Regional Meeting of the American Chemical Society, NERM 2022, Oct.2-5, 2022 Rochester, NY.
161. Marissa A. Smith, Megan A. Arsenault, Chayton Boucher, Thomas J. Schwartz, Brian G. Frederick, "Development of Methods to Determine the Enantiomeric Excess of Lactic Acids in Biphasic Solutions," North East Regional Meeting of the American Chemical Society, NERM 2022, Oct.2-5, 2022 Rochester, NY.
162. Andrew Boucher, François G. Amar, Thomas J. Schwartz, Brian G. Frederick, "Using transmission IR, volumetric uptake, and LAMMPS simulations to study the adsorption of water in micro-porous zeolites," North East Regional Meeting of the American Chemical Society, NERM 2022, Oct.2-5, 2022 Rochester, NY.
163. Brian G. Frederick,* Timothy J. Thibodeau, Akbar Mahdavi-Shakib, Chayton Boucher, Amir Rahmani Chokanlu, Thomas J. Schwartz, François G. Amar, "Effects of composition and phase on catalytic sites in reducible metal oxides," American Chemical Society Spring 2023 Meeting, Indianapolis, IN March 26-30, 2023. Invited.
164. Amir Rahmani Chokanlu, Akbar Mahdavi-Shakib, Liping Yu, Thomas J. Schwartz, Rachel N. Austin, Brian G. Frederick, "Direct Evidence for Sulfur-induced Deep Electron and Hole Traps in Titania and Implications for Photochemistry," 28th Meeting of the North American Catalysis Society (NAM28), Providence RI, June 18-23, 2023.
165. Kevin Dietz, Alex Bloomer, Chayton Boucher, Akbar Mahdavi-Shakib, Thomas J. Schwartz, Brian G. Frederick, "Synthesis and Characterization of hex-WO_3 for Fructose Dehydration", ACS National Award for Research at an Undergraduate Institution: Symposium in Honor of Rachel Narehood-Austin, American Chemical Society Spring 2024 Meeting, New Orleans, LA March 17-21, 2024. Invited.
166. Mahdi Niknam Shahrak, Christian Geci, Brian G. Frederick, Thomas J. Schwartz, "Highly porous MOF-derived MgO as a basic catalyst for C-C bond forming reactions", American Chemical Society Spring 2024 Meeting, New Orleans, LA March 17-21, 2024.
167. Christian Geci, Amir Rahmani-Chokanlu, Thomas J. Schwartz, Robert Meulenberg, Brian G. Frederick, "Influence of Lattice Stoichiometry on Electron- vs. Hole Trapping Character of Sulfur in Anatase Titania," New England Catalysis Society Spring Meeting, New Haven, CT, May 10, 2024.
168. Christian Geci, Amir Rahmani-Chokanlu, Thomas J. Schwartz, Robert Meulenberg, Brian G. Frederick, "Influence of Lattice Stoichiometry on Electron- vs. Hole Trapping Character of Sulfur in Anatase Titania," Advanced Photon Source User Meeting, Argonne National Lab, Chicago IL, May 13-17.

Research Grants and Contracts:

1. DARPA, $1,847,615, “Development of a Nitric Oxide Monitor for Early Detection of Pathogenic Exposure”, R. J. Lad, P.I., $225,000, Jan ‘98-Feb. ’99; received support for graduate student.
2. National Science Foundation Major Research Instrumentation grant, $745,710, ($637,000 awarded) “Development of a Fourier-transform based time-of-flight electron spectrometer” (with P.Kleban) 9/1/1999-8/31/2002.
3. Dept. of Navy, $250,000 out of $10,000,000 block funding;, “Advanced Development of a Chem/Bio Sensor Suite”, R. J. Lad, P.I. Jan ’99 - Jan ’01.
4. Cutting Edge Technologies, Orono, ME, $5040, “Chopper development for an Electron Velocity Analyzer”, 6/1/99-8/30/99.
5. "Development of a Prototype Chemical Agent Detector System Based on Semiconducting Metal Oxide (SMO) Thin Film Technology", co-investigator on LASST proposal; R. J. Lad, P.I., Dahlgren Surface Warface Center, Dept. of Navy, $1,679,960.
6. "Advanced Development of a Chemical and Biological Sensor Suite", Department of Defense, Naval Surface Warfare Center - Dahlgren Division, PI: R.J. Lad, Co-PI's: B. Frederick, C. Tripp, J. Vetelino, C. Kim, W. DeSisto, B. Segee; $4,187,000; February 1999 - July 2001.
7. "Development of a prototype HT-MS instrument", submitted through Cutting Edge Technologies, with B.B. Frederick, P.I., Seed Grant, $25,125, (Oct. 1, 2000 - May 15,2001)
8. "Manipulating Nano-materials: Developing Hands-On Model-Building Activities in the Peer-Led Team Learning Setting", F. G. Amar, B. G. Frederick, M. Bruce, B. Stewart, an Active Student Learning Micro-Grant Proposal, December 22, 2000 $500.
9. NSF, $5000, “Supplement to Development of a Fourier-transform based time-of-flight electron spectrometer”, National Science Foundation Major Research Instrumentation grant, B.G. Frederick, P.I., (with P.Kleban) $5,000 6/1/2001-6/1/2002.
10. ONR, $460,598, “Development of a Prototype Chemical Agent Detector System Based on Semiconducting Metal Oxide (SMO) Thin Film Technology”, R. J. Lad, PI., with C.Tripp, W. DeSisto, $460,598, 5/1/01-4/30/02.
11. Maine Technology Institute, $237,000 “Analyzers using Statistical Methods with PRBS-TOF”, $237,000, Feb. 1, 2002 – Jul. 31, 2003. Submitted through Stillwater Scientific Instruments (formerly Cutting Edge Technologies).
12. Stillwater Scientific Instruments/Dept. of Labor, $126,773. “Manufacturing Prototype of TOF-HREELS analyzer”, Jan 1, 2004 – Dec. 31, 2004. R. J. Lad, P.I. on UMaine subcontract, as part of a $334,121 H1-B contract submitted to Maine Manufacturing Extension Partnership by Stillwater Scientific Instruments with B.G. Frederick as P.I.
13. ACS-PRF "Foreign Speaker Travel for 11th Int. Conf. on Vibrations at Surfaces", $3600, 15/5/2004-30/7/2004.
14. US Department of Labor/Maine MEP, Technical Skills Training Program, support for Maine participants to 11th International Conference on Vibrations at Surfaces, $3,112, 4/30/2004-3/31/2005.

15. DOE EPSCOR "Thermochemical Conversion of Woody Biomass to Fuels and Chemicals", H. Pendse, PI; van Heiningen,Wheeler, DeSisto, Frederick, Lad, Collins, Co-PIs. $3,375,000, 3/2007-3/2010.
16. ORNL Neutron Sciences, "Pore Accessibility in Mesoporous Silica using CM-SANS," IPT#1552, 72 hours beam time on CG-2, General SANS beamline. High Flux Isotope Reactor, Oak Ridge, TN, Jan. 6, 2009.
17. ORNL Neutron Sciences, "Pore Accessibility in Mesoporous Silica using CM-SANS," IPT#2542, 48 hours beam time on CG-2, General SANS beamline. High Flux Isotope Reactor, Oak Ridge, TN, Aug. 31, 2009.
18. Center for Functional Nanomaterials, Brookhaven National Laboratory, "Mechanistic Exploration of Hydrodeoxygenation Reactions of Biofuel Feedstocks over Metal Oxide Catalysts using DFT Methods,", F. G. Amar, B. G. Frederick, T. J. Thibodeau, May-August 2010, 100k hours computational time.
19. ORNL Neutron Sciences, "Role of micropores and coadsorbed water on diffusivity of alkanes in SBA-15," B. G. Frederick, R. A. Pollock, W.J. DeSisto, J. A. Fry, H.Kaiser, R. Pynn, 5 days beam time on BASIS, for Quasi-Elastic Neutron Scattering (QENS) at the Spallation Neutron Source, Oak Ridge, TN, May 11-16, 2011.
20. DOE EPSCOR "Thermochemical Conversion of Woody Biomass to Fuels and Chemicals", H. Pendse, PI; Wheeler, DeSisto, Frederick, Austin, Co-PIs. $1,860,000, 7/01/2011-06/30/2014.
21. NSF "Designing and characterizing highly selective heterogeneous catalysts for hydrodeoxygenation bio-oils" R. N. Austin (PI); B. G. Frederick, L. Grabow, T. Schwartz, Co-PI's. $375,000, 9/1/2016-8/31/2019.
22. NSF MRI "Acquisition of a 500 MHz NMR Spectrometer with Improved Sensitivity and Accessibility to Benefit Research and Education at UMaine", Co-PI
23. US Dept of Energy, "Next Generation Harsh-Environment Materials and Wireless Sensor Techniques for Energy Sector Applications," M. DaCunha & R. J. Lad (PI's), B. G. Frederick, Co-PI's, $1,072,930, 10/13/2021.
24. American Chemical Society, Petroleum Research Fund, "Photocatalytic Methane Oxidation: A rigorous kinetics and materials characterization study," B. G. Frederick (PI), Thomas J. Schwartz (Co-PI), $110,000, 12/8/2021-8/31/2024.
25. University of Maine Arts Initiative, "Portable X-Ray Fluorescence (PXFR) Technology for Art, Engineering and Geologic Applications," Gretchen Faulkner (PI), Bonnie Newsom, Martin Yates, Anna Chatenever, Brian G. Frederick (Co-PI's), $37,524, 5/9/2022.
26. National Science Foundation through Barnard College, "Understanding the mechanism of C-X hydrogenolysis catalyzed by metal nanoparticles supported on metal oxides," R. N. Austin (PI), Lars Grabow, Thomas J. Schwartz, Brian G. Frederick (Co-PI's), $313,770, 9/1/2022-8/31/2025.

Collaborators, current address, date of collaboration:

1. Thor N. Rhodin, Dept. Appl. & Eng. Physics, Cornell University (Thesis Advisor)
2. Neville V. Richardson, School of Chemistry, Univ. of St. Andrews (Post-doctoral mentor)
3. Robert J. Lad; Dept. of Physics and LASST, University of Maine at Orono, USA
4. Francois G. Amar; Dept. of Chemistry, University of Maine

5. M. Clayton Wheeler, Dept. of Chemical Engineering, University of Maine
6. William DeSisto, Dept. of Chemical Engineering and LASST, University of Maine
7. Rachel Austin, Dept. of Chemistry, Bates College, Lewiston, Maine
8. Roger Pynne, University of Indiana, Physics
9. Helmut Kaiser, University of Indiana, Physics
10. Yuri Melnichenko, High Flux Isotope Reactor, Oak Ridge National Laboratory
11. Ping Liu, Center for Functional Nanomaterials, Brookhaven National Laboratory
12. Richard Cavicchi, National Institute of Standards and Technology
13. Steve Semancik, National Institute of Standards and Technology
14. Lars Grabow, Univ. of Houston
15. Thomas J. Schwartz, Dept. of Chemical Engineering, University of Maine
16. Katherine Mirica, Dartmouth College
17. Onur Apul, Dept. of Civil and Environmental Engineering, University of Maine

Ph.D. students:
Liverpool:
Ruth C. Bainbridge
Myong-Bok Lee
Chen Qiao
Christopher Perry
Univ. of Maine:
L. Jay LeGore (2000)
Robert H. Jackson (2000)
Shuguo Ma (2003)
Zhongyu Yang (2003)
Timothy J. Thibodeau (2012)
Rachel A. Pollock (2012)
Jincy Joseph (2016)
Pamela Ruiz (2018)
Akbar Mahdavi Shakib (2018)
Aravind Reghu (2017)
Amir Rahmani (2022)
Christian Geci
Benjamin Walden
Chayton Boucher
Marlon Moorer

M.S. students:
Andrea Martin (2004)
Aziz El Madi
Meng Lu (2005)
Xiaobo Zhou (2014)
Md. Emtias Chowdhury (2014)
Anna Tyrina (2021)
Lauren Babb (2022)

Andrew Boucher (2023)
Kyle Pease

Post-doctoral research associates:
Joanna Duncan
Chung S. Kim
L. Jay LeGore
Robert H. Jackson
Zhongyu Yang

Undergraduate thesis students:
Ryan Crosby
Rebekah Pilling (Honors, 2002)
Aziz El Madi (2005)
Brenna R. Walsh (Honors, 2010; Recipient of the Outstanding International Undergraduate Student in the College of Liberal Arts and Sciences)
Daniel R. Moberg (Honors, 2010)
James P. Fecteau (2012)
Katelyn Tracy (2013)
Jordan Trasko (2014)
Kelsie York
Jessica Welch (2015)
James Clark (2015)
Thomas (Dexter) Morse (2016)
Antonia Carroll (2018)
Kevin Deitz (2018)
Daniela Stück (NSF-REU, Univ. Concepcion, Chile, 2016)
Benjamin Walden (Phys/Chem, 2018)
Spencer Martel (2018)
Chayton Boucher (2018)
Colin Whitton (2018)
Megan Arsenault (2021)
Samuel Bonnevie (2021)
Marissa Smith (2023)
Alexander Bloomer (2024)
Niall Gushue
Leah Batoosingh (2024)
Riley Day

High School students:
Jue Wang (Bangor High School, Maine MERITS Scholar)
John White (Hampden Academy, Maine MERITS Scholar)
Keji Xu (Bangor High School)
Aiden Crane (Orono High School, NSF EPSCoR High School Internship)
Joshua Palmeter (Bangor Christian High School, NSF EPSCoR High School Internship)
Alex Bloomer (Bangor High School)

Memberships in scientific organizations:
American Chemical Society
New England Catalysis Society