CURRICULUM VITAE

Jeffrey W. Fergus, PhD, PE

Associate Dean for Program Assessment and Graduate Studies

Professor of Materials Engineering

1301 Shelby Center, Auburn, AL 36849

Phone: (334) 844‑3405; FAX: (334) 844‑4487; email: jwfergus@eng.auburn.edu

**Education**

* B.S. Metallurgical Engineering - with Honors (May 1985) – University of Illinois, Urbana, IL
* Ph.D. Materials Science and Engineering (May 1990) – University of Pennsylvania, Philadelphia, PA

**Employment History**

* 2014-date Associate Dean for Program Assessment and Graduate Studies, Auburn University
* 1992-date Assistant/Associate/Full Professor, Auburn University
* Summer 2013 Summer Faculty Fellowship Program, Wright-Patterson Air Force Research Laboratory
* 1990-1992 Postdoctoral Research Associate, University of Notre Dame
* 1985-1990 Research Assistant, University of Pennsylvania
* Summer 1985 Research Associate, University of Illinois
* Summer 1984 Summer Research Participant, Argonne National Laboratory

**Research Interests**

* High-temperature and solid-state chemistry of materials: energy storage / conversion (fuel cells, batteries, thermoelectric devices), chemical sensors, chemical compatibility / stability in high-temperature materials.

## Educational Interests

* Promoting interdisciplinary educational experiences and inclusion of sustainability-related issues.

## Extension/Outreach Interests

* Increasing the recruitment and retention of students from underrepresented groups in science and engineering.

**Professional Society Leadership**

* ABET
* Member At-Large of Executive Committee of the Engineering Accreditation Commission
* Facilitator for Program Evaluator Training
* The Metals, Minerals and Materials Society (TMS)
* Member of Board of Directors: Professional Development Director
* Co-chair of Sustainability in Materials Education Subcommittee of the Materials and Society Committee
* Electrochemical Society (ECS)
* Editor of *Electrochemical Society Transactions*.
* Past Chair of High Temperature Materials Division and Education Committee

## Publications

### Book Chapters

1. J.W. Fergus and W.P. Hoffmann, “Refractory Metals, Ceramics and Composites for High Temperature Structural and Functional Applications,” in *High Temperature Materials and Mechanisms,* Y. Bar-Cohen (Ed.) (CRC Press, Taylor Francis Group, Boca Raton, FL, 2014) 39-67.
2. C.O. Park. I. Lee, D.R. Lee, J.W. Fergus, N. Miura and H.J. Yoo, “Solid-State Electrochemical Gas Sensors,” in *Chemical Sensors: Simulation and Modeling, Volume 5: Electrochemical Sensors*, G. Korotcenkov (Ed.) (Momentum Press, New York, NY, 2013) 41-92.
3. J.W. Fergus, “Solid Oxide Fuel Cells,” in *Electrochemical Technologies for Energy Storage and Conversion*, R.-S. Liu, X. Sun, H. Liu, L. Zhang and J. Zhang (Eds.) (Wiley-VCH, Weinheim, Germany, 2012) 671-700.
4. J.W. Fergus, “High-Temperature Corrosion of Intermetallic Alloys,” in *Shreir’s Corrosion*, 4th Ed., Vol. 1, J.A. Richardson *et al.* (Eds.) (Elsevier B.V., Amsterdam, Netherlands, 2010) 646-667.
5. J.W. Fergus, “Electrochemical Sensors: Fundamentals, Key Materials and Applications,” in *Handbook of Solid State Electrochemistry: Fundamentals, Methodology and Recent Advances*, V. Kharton (Ed.) (Wiley-VCH, Weinheim, Germany, 2009) 427-491.
6. Z. Yang and J.W. Fergus, “Interconnects,” in *Solid Oxide Fuel Cells: Materials Properties and Performance*, J.W. Fergus, R. Hui, X. Li, D. Wilkinson and J. Zhang (Eds.) (CRC Press, Taylor Francis Group, Boca Raton, FL, 2009) 179-212.

### Refereed Journal Publications

1. V.A. Agubra, J.W Fergus, R. Fu, S.-y. Choe, “Analysis of the Deposit Layer from Electrolyte Side Reaction on the Anode of the Pouch Type Lithium Ion Polymer Batteries: The Effect of State of Charge and Charge Rate,” *Electrochimica Acta*, in press.
2. V.A. Agubra, J.W Fergus, R. Fu, S.-y. Choe, “Analysis of Effects of the State of Charge on the Formation and Growth of the Deposit Film Layer on Graphite Electrode of Lithium Ion Polymer NMC/Carbon Batteries,” *Journal of Power Sources* **270** (2014) 213-220.
3. V, Agubra and J.W. Fergus, “The Formation and Stability of the Solid Electrolyte Interface on the Graphite Anode,” *Journal of Power Sources* **268** (2014) 153-162.
4. J.W. Fergus, “Zirconia and Pyrochlore Oxides for Thermal Barrier Coatings in Gas Turbine Engines,” *Metallurgical and Materials Transactions E* **1**[1] (2014) 118-131.
5. R. Fu, S.-y. Choe, V. Agubra and J.W. Fergus, “Modeling of Degradation Effects Considering Side Reactions for a Pouch Type Li-Ion Polymer Battery with Carbon Anode,” *Journal of Power Sources* **261** (2014) 120-135.
6. X. Yang, J. Kirsch, Y. Zhang, J. Fergus and A. Simonian, “Electrode Passivation by Phenolic Compounds: Modeling Analysis,” *Journal of the Electrochemical Society* **161**[8] (2014) E3036-E3041.
7. J.W. Fergus, K. Yerkes and K. Yost, “Numerical Modeling of Multi-Materials Thermoelectric Devices under Static and Cyclic Heat Loading,” *Journal of Electronic Materials*, **43**[2] (2014) 393-403.
8. Y. Zhao and J.W. Fergus, “Oxidation Behavior of Stainless Steel 441 and 430 in Dual Atmosphere: Effects of Alloy Grain Boundaries,” *Journal of the Electrochemical Society* **161**[1] (2014) C69-C76.
9. C.J. Dileep Kumar, A. Dekich, H. Wang, Y. Liu, W. Tilson, J. Ganley and J.W. Fergus, “Transition Metal Doping of Manganese Cobalt Spinel Oxides for Coating SOFC Interconnects,” *Journal of the Electrochemical Society*, **161**[1] (2014) F47-F53.
10. Y. Liu, K. Wang, C.D. Cruz and J.W. Fergus, “Crystal Structure, Chemical Stabilities and Electrical Conductivity of Fe-Doped Manganese Cobalt Spinel Oxide for SOFC Interconnect Coatings,” *Journal of the Electrochemical Society* **160**[11] (2013) F1316-F1321.
11. Y. Liu, J.W. Fergus and C.D. Cruz, “Electrical Properties, Cation Distribution and Thermal Expansion of Manganese Cobalt Chromite Spinel Oxides,” *Journal of the American Ceramic Society* **96**[6] (2013) 1841-1846.
12. V. Agubra and J.W. Fergus, “Lithium Ion Battery Anode Aging Mechanisms,” *Materials* **6**[4] (2013) 1310-1325.
13. X. Yang, J. Kirsch, J.W. Fergus and A.L. Simonian, “Modeling Analysis of Electrode Fouling during Electrolysis of Phenolic Compounds,” *Electrochmica Acta* 94[1] (2013) 259-268.
14. X. Yang, J. Kirsch, E.V. Olsen, J.W. Fergus and A.L. Simonian, “Anti-Fouling PEDOT:PSS Modification on Glassy Carbon Electrodes for Continuous Monitoring of Tricresyl Phosphate,” *Sensors and Actuators B* **177** (2013) 659-667.
15. J.W. Fergus, “Ion Transport in Sodium Ion Conducting Solid Electrolytes,” *Solid State Ionics* **227** (2012) 102-112.
16. J.W. Fergus, “Oxide Materials for High Temperature Thermoelectric Energy Conversion,” *Journal of the European Ceramic Society* **32** (2012) 525-540.
17. Y. Zhao and J.W. Fergus, “High Temperature Oxidation Behavior of Stainless Steel 430 and 441 in Dual Atmosphere – Effects of Flow Rate and Humidity,” *Journal of the Electrochemical Society* **159**[3] (2012) C109-C113.
18. X. Yang, A. Zitova, J. Kirsch, J.W. Fergus, R.A. Overfelt and A.L. Simonian, “Portable and Remote Electrochemical Sensing System for Detection of Tricresyl-phosphate in Gas Phase,” *Sensors and Actuators B* **161** (2012) 564-569.
19. K. Wang, Y. Liu and J.W. Fergus, ‘Interactions between SOFC Interconnect Coating Materials and Chromia,” *Journal of the American Ceramic Society* **94**[12] (2011) 4490-4495.
20. J.W. Fergus, “Synergism in the Design of Interconnect Alloy-Coating Combinations for Solid Oxide Fuel Cells,” *Scripta Materialia* **65** (2011) 73-77.
21. J.W. Fergus, “Sensing Mechanism of Non-Equilibrium Solid Electrolyte Based Chemical Sensors,” *Journal of Solid State Electrochemistry* **15** (2011) 971-984.
22. M.H. Sk, R.A. Overfelt, R.L. Haney and J.W. Fergus, “Hydrogen Embrittlement of 4340 Steel due to Condensation during Vaporized Hydrogen Peroxide Treatment,” *Materials Science and Engineering A* **528**[10-11] (2011) 3639-3645.
23. M. Irimia-Vladu, P.A. Troshin, L. Shmygleva, Y. Kanbur, M. Reisinger, G. Schwabegger, M. Bodea, R. Schwödiauer, J.W. Fergus, V. Razumov, H. Sitter, N.S. Sariciftciand S. Bauer, “Biocompatible and Biodegradable Materials for Organic Field Effect Transistor,” *Advanced Functional Materials* **20** (2010) 4069-4076.
24. M. Irimia-Vladu, P.A. Troshin, M. Reisinger, G. Schwabegger, M. Ullah, R. Schwoediauer, A. Mumyatov, M. Bodea, J.W. Fergus, V.F. Razumov, H. Sitter, S. Bauer and N.S. Sariciftci, “Environmentally Sustainable Organic Field Effect Transistors,” *Organic Electronics* **11**[12] (2010) 1974-1990.
25. K. Wang and J.W. Fergus, The Effect of Transition Metal Doping on Chromium Deposition at Pt/YSZ Cathode Interfaces,” *Journal of the Electrochemical Society* **157**[7] (2010) B1008-B1011.
26. A. Purwanto, A. Fajar, H. Mugirahardjo, J.W. Fergus and K. Wang, “Cation Distribution in Spinel (Mn,Co,Cr)3O4 at Room Temperature,” *Journal of Applied Crystallography* **43** (2010) 394-400.
27. J.W. Fergus, “Ceramic and Polymer Solid Electrolytes for Lithium Ion Batteries,” *Journal of Power Sources*, **195** (2010) 4554-4569.
28. J.W. Fergus, “Recent Developments in Cathode Materials for Lithium Ion Batteries,” *Journal of Power Sources* **195** (2010) 939-954.
29. O.A. Oyarzabal, J.W. Fergus, R.S. Miller, W.F. Gale and D.E. Conner, “Reductions of *Escherichia coli*, Coliforms, Aerobic Plate Counts and *Campylobacter jejuni* by a Small-Scale, High-Pressure System Devised to Clean a Miniaturized Poultry Giblet Transport System,” *Journal of Food Safety* **29**[4] (2009) 650-660.
30. C.O. Park, J.W. Fergus, N. Miura, J. Park and A. Choi, “Solid-State Electrochemical Gas Sensors,” *Ionics* **15**[3] (2009) 261-284.
31. J.W. Fergus, S. Gopalan, T.M. Gür, R. Mukundan and W. Weppner, “Impact of Kiukkola-Wagner Paper on the Development of Electrochemical Probes and Tools for Fundamental Studies and Industrial Applications,” *ECS Interface* **18**[1] (2009) 51-55.
32. W.F. Gale, N.I. Sofyan, H.S. Gale, M.H. Sk, S.F. Chou, J.W. Fergus and C.G. Shannon, “The Effect of Vapour Phase Hydrogen Peroxide, as a Decontaminant for Civil Aviation Applications, on the Microstructure, Tensile Properties and Corrosion Resistance of 2024 and 7075 Age Hardenable Aluminum Alloys and 304 Austenitic Stainless Steel,” *Materials Science and Technology* **25**[1] (2009) 76-84.
33. J.W. Fergus, “Electrolyte and Electrode Materials for High Temperature Electrochemical CO2 and SO2 Gas Sensors,” *Sensors and Actuators B* **134** (2008) 1034-1041.
34. R. Aluru, W.F. Gale, S.V. Chitti, N. Sofyan, R.D. Love and J.W. Fergus, “Transient Liquid Phase Bonding of Dissimilar Nickel-Base Superalloys – Wettability, Microstructure and Mechanical Properties,” *Materials Science and Technology* **24**[5] (2008) 517-528.
35. K. Wang and J.W. Fergus, “Effect of Manganese Doping on Chromium Deposition at Pt / YSZ Cathode Interfaces, *Electrochemical and Solid-State Letters* **11**[8] (2008) B156-B160.
36. J.W. Fergus, “Materials Challenges for Solid Oxide Fuel Cells,” *JOM* **59**[12] (2007) 56-62.
37. J.W. Fergus, “Perovskite Oxides for Semiconductor-Based Gas Sensors,” *Sensors and Actuators B* **123**[2] (2007) 1169-1179.
38. J.W. Fergus, “Effect of Cathode and Electrolyte Transport Properties on Chromium Poisoning in Solid Oxide Fuel Cells,” *International Journal of Hydrogen Energy*, **32**[16] (2007) 3664-3671.
39. V. Krishnan and J.W. Fergus, “Effects of Dispersant Addition in the Synthesis of Indium-Doped Calcium Zirconate by Precipitation Methods,” *Journal of Materials Science* **42**[15] (2007) 6117-6122.
40. J.W. Fergus, “Solid Electrolyte Based Sensors for the Measurement of CO and Hydrocarbon Gases,” *Sensors and Actuators B* **122**[2] (2007) 683-693.
41. J.W. Fergus, “Materials for High Temperature Electrochemical NO*x* Gas Sensors,” *Sensors and Actuators B* **121**[2] (2007) 652-663.
42. M. Irimia-Vladu and J.W. Fergus, “Suitability of Emeraldine Base Polyaniline-PVA Composite Film for Carbon Dioxide Sensing,” *Synthetic Metals* **156**[21-24] (2006) 1401-1407.
43. M. Irimia-Vladu and J.W. Fergus, “Impedance Spectroscopy of Thin Films of Emeraldine Base Polyaniline and Its Implications for Chemical Sensing,” *Synthetic Metals* **156**[21-24] (2006) 1396-1400.
44. N.I. Sofyan, T.L. Mai, D.E. Conner, J.W. Fergus and W.F. Gale, “Attachment of *Listeria monocytogenes* to an Austenitic Stainless Steel with Three Different Types of Surface Finish,” *Food Protection Trends* **26**[12] (2006) 926-929.
45. J.W. Fergus, “Electrolytes for Solid Oxide Fuel Cells,” *Journal of Power Sources*, **162**[1-2] (2006) 30-40.
46. J.W. Fergus, “Oxide Anode Materials for SOFCs,” *Solid State Ionics* **177** (2006) 1529-1541.
47. T.L. Mai, N.I. Sofyan, J.W. Fergus, W.F. Gale and D.E. Conner, “Attachment of *Listeria monocytogenes* to an Austenitic Stainless Steel after Welding and Accelerated Corrosion Treatments,” *Journal of Food Protection* **69**[7] (2006) 1527-1532.
48. V.G. Krishnardula, N.I. Sofyan, W.F. Gale and J.W. Fergus, “Joining of ferritic oxide dispersion strengthened alloys,” *Trans. Indian Inst. Metals* **59**[2] (2006) 199-203.
49. V. Krishnardula, N. Sofyan, W.F. Gale and J.W. Fergus, “Transient Liquid Phase Bonding of Ferritic Oxide-Dispersion-Strengthened Alloys,” *Metallurgical and Materials Transactions A* **37A** (2006) 497-500.
50. J.W. Fergus, “Sealants for Solid Oxide Fuel Cells,” *Journal of Power Sources* **147** [1-2] (2005) 46-57.
51. J.W. Fergus, V.L. Salazar, C.J. Long, N.L. Harris, T. Zhou and W.F. Gale, “Cyclic Oxidation of Copper Doped Ti-48Al-2Cr-2Nb,” *Journal of Materials Science*, **40**[23] (2005) 6139-6144.
52. J.W. Fergus and T. Hsu, “Integrating Humidity Sensor Based on a Polybutadiene-MgSO4 Composite,” *Measurement Science and Technology* **16** [6] (2005) 1255-1262.
53. J.W. Fergus, “Metallic Interconnects for Solid Oxide Fuel Cells,” *Materials Science and Engineering A* **397**[1-2] (2005) 271-283.
54. J.W. Fergus, “Sensors for Monitoring the Quality of Molten Aluminum during Casting,” *Journal of Materials Engineering and Performance* **14**[2] (2005) 267-275.
55. J.W. Fergus, “Lanthanum Chromite Based Materials for Solid Oxide Fuel Cell Interconnects,” *Solid State Ionics* **171**[1-2] (2004) 1-15.
56. J.W. Fergus, “Doping and Defect Association in Oxides for Use in Oxygen Sensors,” *Journal of Materials Science* **38** (2003) 4259-4270.
57. I. Muda, A. Manaf and J.W. Fergus, “Development of Low Carbon Cold Rolled Steel Sheets for Enameling Application,” *Mater. Sci. Forum* **437-438** [Advanced Materials Processing II] (2003) 321-324.
58. J.W. Fergus, “Review of the Effect of Alloy Composition on the Growth Rates of Scales Formed During Oxidation of Gamma Titanium Aluminide Alloys,” *Materials Science and Engineering A* **338**[1-2] (2002) 108-125.
59. H.-P. Chen, J.W. Fergus and C. Shannon, “Characterization of Copolymer Poly(acrylonitrile) Based Polymer Electrolytes,” *Journal of Materials Science Letters* **21** (2002) 285-287.
60. B. Dang, J.W. Fergus and W.F. Gale, “Effect of Copper on the Oxidation Behavior of Ti-48Al-2Cr-2Nb,” *Oxidation of Metals* **56** [1/2] (2001) 15-32.
61. J.W. Fergus and A.H. Setiawan, “Hydrogen Sensor for Molten Aluminum,” *AFS Transactions* **109** (2001) 453-459.
62. Y. Shen, W.F. Gale, J.W. Fergus and X. Wen, “Wettability of Pre-Oxidized TiAl Substrates by Liquid Aluminum, Copper and Silver,” *Materials Science and Technology* **17**[10] (2001) 1293-1298.
63. J.W. Fergus and H.-P. Chen, “Structure and Conductivity of Tetragonal and Rhombohedral Lanthanum Oxyfluoride Compounds, *Journal of the Electrochemical Society* **147**[12] (2000) 4696-4704.
64. J.W. Fergus, “Chemical Sensors for Improved Control in the Processing of Molten Metals, *JOM-e*, **52**[10] 2000 (http://www.tms.org/pubs/journals/JOM/0010/Fergus/Fergus-0010.html).
65. H.-P Chen, J.W. Fergus and B.Z. Jang, “The Effect of Ethylene Carbonate and Salt Concentration on the Conductivity of Propylene Carbonate / Lithium Perchlorate Electrolytes,” *Journal of the Electrochemical Society* **147**[2] (2000) 399-406.
66. V.Y. Kodash and J.W. Fergus, “High-Temperature Oxidation of Tungsten- and Chromium-Alloyed Aluminosilicides,” *Journal of the Electrochemical Society* **146**[7] (1999) 2762-2768.
67. W.F. Gale, Y. Shen, J.W. Fergus and X. Wen, “Anomalous Wetting of Ti – 48 at.% 5 Al – 2 at.% Cr – 2 at.% Nb Substrates by Liquid Copper,” *Journal of Materials Research* **14**[10] (1999) 3889-3894.
68. J.W. Fergus, C.V.S. Mallipedi and D.L. Edwards, "Silver/Silver-Oxide Composite Coating for Intrinsically Adaptive Thermal Regulation," *Composites Part B* **29** (1998) 51-56.
69. J.W. Fergus, “Chemical Sensors for Use in the Processing of Molten Metals,”*AFS Transactions* **106** (1998) 125-130.
70. J.W. Fergus, "The Application of Solid Fluoride Electrolytes in Chemical Sensors," *Sensors and Actuators B* **42**[2] (1997) 119-130.
71. J.W. Fergus, "Effect of Niobium Additions on CO2-Enhanced Oxidation of Titanium Aluminum Intermetallic Alloys," *Oxidation of Metals* **48**[3/4] (1997) 201-214.
72. W.F. Gale, J.W. Fergus, W.M. Ingram and M. Koopman, "Wettability of NiAl by a Liquid Ni-Si-B Alloy," *Journal of Materials Science* **32** (1997) 4931-4940.
73. J.W. Fergus, S. Hui, W.F. Gale and Z.A.M. Abdo, "Origin of Anomalous Output of a Magnesium Sensor," *Materials Science and Technology* **13**[6] (1997) 533-536.
74. J.W. Fergus, "Crystal Structure of Lanthanum Oxyfluoride," *Journal of Materials Science Letters* **16** (1997) 267-269.
75. L.R. Hwang, J.W. Fergus, H.P. Chen and B.Z. Jang, "Interface Compatibility in Ceramic Matrix Composites," *Composites Science and Technology* **56**[12] (1996) 1341-1348.
76. J.W. Fergus, "Crystal Chemistry of Neodymium Oxyfluoride," *Materials Research Bulletin* **31**[11] (1996) 1317-1323.
77. J.W. Fergus, "Status of Chemical Sensors for Hot-Dip Galvanization," *JOM* **48**[9] (1996) 38-41.
78. J.W. Fergus and S. Hui, "Solid Electrolyte Based Galvanic Cell for Measuring the Antimony Concentration in Molten Zinc," *Journal of the Electrochemical Society* **143**[8] (1996) 2498-2502.
79. J.W. Fergus, "The Effect of Fluorine on the Phase Equilibria in the Lanthanum-Aluminum-Oxygen System," *Journal of Fluorine Chemistry* **78** (1996) 83-86.
80. J.W. Fergus and S. Hui, "Solid Electrolyte Sensor for Measuring Magnesium in Molten Aluminum," *Metallurgical and Materials Transactions B*, **26B**[6] (1995) 1289-1291.
81. J.W. Fergus, "Electrochemical Magnesium Sensors for Use in the Processing of Aluminum," *JOM*, **47**[11] (1995) 36-41.
82. J.W. Fergus and S. Hui, "Solid-State Barium-Vapor Detector," *Journal of the Electrochemical Society* **142**[8] (1995) L135-137.
83. J.W. Fergus and W.L. Worrell, "The Effect of Carbon and Boron on the High Temperature Oxidation of Silicon Carbide," *Journal of the American Ceramic Society*, **78**[7] 1961-1964 (1995).
84. J.W. Fergus and W.L. Worrell, "Silicon-Carbide/Boron-Containing Coatings for the Oxidation Protection of Graphite" *Carbon* **33**[4] (1995) 537-543.
85. J.W. Fergus and W.L. Worrell, "The Oxidation of Chemically Vapor Deposited Silicon Nitride," *Journal of the Electrochemical Society* **142**[1] (1995) 183-185.
86. C.B. Alcock, B. Li, J.W. Fergus and L. Wang, "New Electrochemical Sensors for Oxygen Determination," *Solid State Ionics* **53-56** (1992) 39-43.
87. C.B. Alcock, J.W. Fergus and L. Wang, "The Electrolytic Properties of LaYO3 and LaAlO3 Doped with Alkaline‑Earth Oxides," *Solid State Ionics* **51** (1992) 291‑295.
88. J.W. Fergus and C.B. Alcock, "X‑Ray Diffraction of Lanthanum Aluminate Doped with Alkaline Earth Cations," *Materials Letters* **12**[4] (1991) 219‑221.

### Education / Professional Development / Other Publications

1. J.W. Fergus, “High Temperature Materials for Energy Conversion,” *ECS Interface* **22**[4] (2013) 51.
2. J.W. Fergus, “Expanding the Impact of Electrochemical Society Transactions,” *ECS Interface* **22**[3] (2013) 8-11.
3. J.W. Fergus, C. Twigge-Molecey and J. McGuffin-Cawley, “Sustainability in Materials Education,” *JOM* **65**[8] (2013) 935-938.
4. J.W. Fergus, “How Do We Learn Electrochemistry?,” *ECS Interface* **21**[1] (2012) 55-56.
5. J.W. Fergus, “Program Improvement through Accreditation,” *JOM* **64**[1] (2012) 3-5.
6. J.W. Fergus, D.A. Shifler, A.A. Pengidore and D.L. Bourell, “Progress in the Licensing of Materials Engineers,” *JOM* **59**[5] (2007) 18-21.



**Citations of 79 papers listed on Science Citation Index (13 December 2014).**

### Conference Proceedings

1. J.W. Fergus, “Selection of Materials for Cascaded Thermoelectric Generators under Transient Thermal Loading,” *ECS Transactions* in press.
2. X. Yang, J. Kirsch, Y. Zhang, J. Fergus and A. Simonian, “Potential Drop Based Model to Analyze Electrode Passivation by Fouling from Phenolic Compounds,” *ECS Transactions* **53**[35] (2013) 1-14.
3. J.W. Fergus, “Corrosion in Nuclear Waste Containers,” *ECS Transactions* **53**[21] (2013) 75-80.
4. J.W. Fergus, “Materials Engineering as a Catalyst for Sustainability Education,” *2013 ASEE Annual Conference Proceedings*, (ASEE, Washington, DC, 2013) Paper ID# 6024.
5. J.W. Fergus and S. Scott-Harris, “Design of a Scholarship Program for Optimal Impact,” *2013 ASEE Annual Conference Proceedings*, (ASEE, Washington, DC, 2013) Paper ID# 6024.
6. J.W. Fergus, Dileep Kumar C.J. Y. Liu, W. Tilson, A. Dekich and J. Fergus, "Transition Metal Spinel Oxide Coatings for Solid Oxide Fuel Cell Interconnects," *ECS Transactions* **50**[44] (2013) 117-126.
7. Y. Liu, Dileep Kumar C.J. and J. Fergus, "Electrical Properties of Transition Metal-doped (Mn,Co)3O4 Spinels and Their Interaction with Chromia for SOFC Interconnect Coatings," *ECS Transactions* **45**[1] (2012) 421-427.
8. J.W. Fergus, Y. Liu and Y. Zhao, “Manganese Cobalt Spinel Oxide Based Coatings for SOFC Interconnects,” *Ceramic Transactions* **236** [Advanced in Materials Science for Environmental and Energy Technologies] (2012) 141-145.
9. J.W. Fergus, Y. Zhao and Y. Liu, “Optimization of Alloy-Coating Compositions for Use ad Solid Oxide Fuel Cell Interconnects,” *Mater. Res. Soc. Proc.* **1384** (2012) b13-22.
10. Dileep Kumar C.J., Y. Liu, J. Ganley, W. Tilson, A. Dekich and J. Fergus, “Transition Metal Doping of Manganese Cobalt Spinel Oxides for Coating SOFC Interconnects,” in *Energy Technology 2012: Carbon Dioxide Management and Other Technologies*, M.D. Salazar-Villalpando, N.R. Neelameggham, D.P. Guilllen, S. Pati and G.K. Krumdick (Eds.)(The Minerals, Metals & Materials Society, 2012) 313-319.
11. Y. Zhao and J.W. Fergus, “Oxidation Behavior of Stainless Steel 441 and 430 in Dual Atmosphere - Effects of Grain Size,” *ECS Transactions* **41**[42] (2011) 147-154
12. Y. Liu, K. Wang and J.W. Fergus, “Effect of Chromium Doping on the Crystal Structure, Electrical Conductivity and Thermal Expansion of Manganese Cobalt Spinel Oxides,” *Advanced in Solid Oxide Fuel Cells VII: Ceramic Engineering and Science Proceedings* **32**[4] (2011) 125-129.
13. J.W. Fergus and Y. Zhao, “Low-Chromium Alloys for Solid Oxide Fuel Cell Interconnects,” *ECS Transactions* **35**[1] (2011) 2447-2453.
14. J.W. Fergus, K. Wang and Y. Liu, “Transition Metal Spinel Oxide Coatings for Reducing Chromium Poisoning in SOFCs,”*ECS Transactions.* **33**[40] (2011) 77-84.
15. J.W. Fergus, K. Wang and Y. Liu, “Effect of Titanium and Iron Additions on the Transport Properties of Manganese Cobalt Spinel Oxide,” *Ceramic Transactions* **227** (2011) 33-37.
16. J.W. Fergus, “Sensors for On-Line Monitoring of Molten Metal Quality,” in B.G. Thomas, J.A. Yurko and L. Zhang (Eds.) *Sensors, Sampling and Simulation for Process Control* (The Minerals, Metals and Materials Society, 2011) 15-26.
17. M. Irimia-Vladu, P.A. Troshin, G. Schwabegger, M. Bodea, R. Schwoediauer, J.W. Fergus, V. Razumov, S. Bauer and N.S. Sariciftci, “Bio-Inspired Organic Field Effect Transistors,” *Proceedings of SPIE* **7778** [Organic Field-Effect Transistors IX] (2010) 777803-777803-5.
18. J. Fergus, K. Wang and Y. Liu, “Interactions between (Mn,Co)3O4 SOFC Interconnect Coating Materials and Chromia,” in *Supplemental Proceedings: Volume 2: Materials Characterization, Computation, Modeling and Energy* (The Minerals, Metals & Materials Society, 2010) 473-480.
19. J.W. Fergus, Y. Zhao, R. Haney, K. Cramer and L. Riherd, “Effect of Niobium Additions on the Oxidation Behavior of Stainless Steels for SOFC Interconnects,”*ECS Transactions.* **25** (2010) 101-107.
20. J. Fergus, K. Wang and Y. Liu, “Equilibria in Spinel Coatings for Solid Oxide Fuel Cell Interconnects,” *Materials Science & Technology (MS&T)* 2009, 312-321.
21. J. Fergus, A. Upadhyaya, H. Gale and R. Zee, “Effects of Zirconia Additions on the Toughness and Conductivity of Beta Alumina Ceramics,” *Materials Science & Technology (MS&T)* 2009, 679-687.
22. Y. Zhao and J.W. Fergus, “High Temperature Oxidation Behavior of Stainless Steel 441 in Dual Atmosphere – Effect of Flow Rate and Humidity,” *ECS Transactions* **16**[44] (2009) 57-64.
23. N. Pari, B. Tatarchuk and J. Fergus, “Minimization of Carbon Monoxide Poisoning in Polymer Electrolyte Fuel Cells Using In Situ PROX Catalysts,” *Proc. Power Sources Conf., 43rd* (2008) 193-195.
24. K. Wang and J. Fergus, “The Effect of Electrolyte Doping on Chromium Deposition at SOFC Electrode/Electrolyte Interface,” *ECS Transactions* **13**[26] (2008) 217-222.
25. [N. Pari](http://scitation.aip.org/vsearch/servlet/VerityServlet?KEY=JESOAN&possible1=Pari%2C+Narendhiran&possible1zone=author&maxdisp=25&smode=strresults&aqs=true), [J. Fergus](http://scitation.aip.org/vsearch/servlet/VerityServlet?KEY=JESOAN&possible1=Fergus%2C+Jeffrey&possible1zone=author&maxdisp=25&smode=strresults&aqs=true) and [B. Tatarchuk](http://scitation.aip.org/vsearch/servlet/VerityServlet?KEY=JESOAN&possible1=Tatarchuk%2C+Bruce&possible1zone=author&maxdisp=25&smode=strresults&aqs=true), “[Minimization of Carbon Monoxide Poisoning in Polymer Electrolyte Fuel Cells using in situ PROX Catalysts,”](http://scitation.aip.org/vsearch/servlet/VerityServlet?KEY=JESOAN&smode=strresults&sort=rel&maxdisp=25&threshold=0&pjournals=ESLEF6&pjournals=JESOAN&pjournals=ECSTF8&possible1zone=article&possible4=fergus&possible4zone=author&bool4=and&OUTLOG=NO&viewabs=ECSTF8&key=DISPLAY&docID=1&page=1&chapter=0) *ECS Transactions* **13**[17] (2008) 119-122.
26. J.W. Fergus, “Electrochemical Sensors for Use in High-Temperature Gases and Molten Metals,” *Proc. 12th International Meeting on Chemical Sensors*.
27. J.W. Fergus, “Ceramic Coatings for Metallic SOFC Interconnects,” in *Supplemental Proceedings: Volume I: Materials Processing and Properties* (The Minerals, Metals & Materials Society, 2008) 555-560.
28. J.W. Fergus, O.A. Oyarzabal, R.S. Miller, W.F. Gale and D.E. Conner, “Multidisciplinary Teams for Engineering in Food Safety Applications – Bridges between Engineering and Biology,” *ASEE Southeastern Section Meeting Proc.* (2008).
29. S. Scott-Harris and J.W. Fergus, “Building Bridges: Providing Special Programs for Minority Retention,” *ASEE Southeastern Section Meeting Proc.* (2008).
30. J.W. Fergus, “Electrochemical Sensors for Use in High-Temperature Gases and Molten Metals,” *Proc. 12th International Meeting on Chemical Sensors*, 2008.
31. J.W. Fergus, “High Temperature Electrochemical Sensors,” in G. Kale, S. Akbar, E. Traversa, K. Yao and M. Gupta (Editors), *Materials for Advanced Sensors and Detectors – Proceedings of the ICMAT 2007* (Pan Stanford Publishing, Singapore, 2007).
32. J.W. Fergus, C.J. Long, C.M. Callender and W.F. Gale, “Effect of Copper Additions on the Isothermal Oxidation Behavior of Gamma Titanium Aluminide Alloys,” *ECS Transactions* **3**[14] (2007) 13-18.
33. J.W. Fergus, “Effect of Cathode and Electrolyte Transport Properties on Chromium Poisoning in Solid Oxide Fuel Cells,” in Z.G. Yang, K.S. Weil and M.P. Brady (Eds.), *Applications, Corrosion, and Protection Materials in Clean Power System*s (The Metals, Minerals and Materials Society, Warrendale, PA, 2006) 93-102.
34. V.G. Krishnardula, R. Aluru, N.I. Sofyan, J.W. Fergus, W.F. Gale,, “Solid-State Diffusion Bonding of MA956 and PM2000,” in S.A. David. T. DebRoy, J.C. Lippold, H.B. Smartt and J.M. Vitek (Eds.) *Proceeding of the 7th International Conference on Trends in Welding Research* (ASM International, Materials Park, OH, 2006) 885-888.
35. V.G. Krishnardula, N.I. Sofyan, J. W. Fergus, W.F. Gale, “Effect of Substrate Grain Size and Orientation on the Transient Liquid-Phase Bonding of Ferritic Oxide Dispersion Strengthened Alloys Meeting,” in S.A. David. T. DebRoy, J.C. Lippold, H.B. Smartt and J.M. Vitek (Eds.) *Proceeding of the 7th International Conference on Trends in Welding Research* (ASM International, Materials Park, OH, 2006) 861-865.
36. R. Aluru, N. Sofyan, J.W. Fergus, W.F. Gale, “Wide-Gap Transient Liquid Phase Bonding of Single Crystal to Polycrystalline Nickel-base Superalloys: Microstructural Development and Mechanical Properties Meeting,” in S.A. David. T. DebRoy, J.C. Lippold, H.B. Smartt and J.M. Vitek (Eds.) *Proceeding of the 7th International Conference on Trends in Welding Research* (ASM International, Materials Park, OH, 2006) 879-883.
37. M. Irimia-Vladu and J.W. Fergus, “Emeraldine Based Thin Film Carbon Dioxide Sensor,” *Mater. Res. Soc. Symp. Proc.* **Vol. 889** [Electroresponsive Polymers and Their Applications] (2005) 73-78.
38. J.W. Fergus, “Effect of Water Vapor and Hydrogen on the Oxidation of Metallic Interconnect Materials for Solid Oxide Fuel Cells,” *Proceedings of the Electrochemical Society* **2005-07** [SOFC IX] (2005) 1806-1815.
39. J.W. Fergus, V.L. Salazar, C.J. Long, N.L. Harris and W.F. Gale, “Cyclic Oxidation of Gamma Met PX,” *Proceedings of the Electrochemical Society* **2004-16** [High Temperature Corrosion and Materials Chemistry V](2005) 16-23.
40. J.W. Fergus, “Electrochemical Measurement of Dissolved Gases in Molten Metals,” in M.E. Schlesinger (Ed.), *EPD Congress 2004* (The Minerals, Metals & Materials Society, 2004) 19-38.
41. D.R. Taarea, W.F. Gale and J.W. Fergus, “Reactions between Constituents of Two Molten Nickel-Base Superalloys and Ceramics Materials,” in *ASM Conf. Proc.: Joining of Advanced and Specialty Materials* (ASM Internationals, Materials Park, OH, 2004) 71-75.
42. J.W. Fergus, A.S. Upadhyaya, H.S. Gale and R.H. Zee, “Fracture Toughness of Beta-Alumina / Zirconia Composites, in *10th International Conference on Composites Engineering* ed. D. Hui (International Community for Composites Engineering, New Orleans, LA, 2003) 181-182.
43. V. Krishnan and J.W. Fergus, “Characterization of Indium-Doped Calcium Zirconate at Low Oxygen Partial Pressures Using Impedance Spectroscopy” *Proceedings of the Electrochemical*  **2002-26** [Solid State Ionic Devices III] (2003) 471-477.
44. J.W. Fergus, “Effect of Chromium and Niobium Additions on the Resistance of Gamma Titanium Aluminide Alloys to Cyclic Oxidation,” *Proceedings of the Electrochemical*  **2003-16** [High Temperature Corrosion and Materials Chemistry IV] (2003) 84-95.
45. J.W. Fergus, N.L. Harris, C.J. Long, V.L. Salazar, T. Zhou and W.F. Gale, “The Effect of Copper on the Cyclic Oxidation of Ti-48Al-2Cr-2Nb” *Gamma Titanium Aluminides 2003* Ed. Y.-W. Kim, H. Clemens and A.H. Rosenberger (The Minerals, Metals and Materials Society, Warrendale, PA, 2003) 575-577.
46. J.W. Fergus, T. Zhao, B. Dang and W.F. Gale, “Oxidation Resistance of Transient Liquid Phase (TLP)-Bonded Gamma Titanium Aluminides,” *Proceeding of the 6th International Conference on Trends in Welding Research* ed. S.A. David, (ASM International, Materials Park, OH, 2003) 799-803.
47. V. Krishnan, J.W. Fergus and F. Fasoyinu, “Solid Electrolyte Based Hydrogen Sensor for Molten Aluminum,” *Advances in Aluminum Casting Technology II* ed. M. Tiryakioglu and J. Campbell (ASM International, Materials Park, OH, 2002) 155-158.
48. J.W. Fergus, “Solid Electrolyte Based Sensors for Use in Processing Molten Aluminum,” *Proceedings of the Electrochemical Society* **2002-05** [High Temperature Materials: Proceedings of the Symposium in Honor of the 65th Birthday of Professor Wayne L. Worrell] (2002) 148-156.
49. A.H. Setiawan and J.W. Fergus, “Preparation and Characterization of In-Doped CaZrO3 as the Electrolyte in Hydrogen Sensors for Use in Molten Aluminum,” *Ceramics Transactions* **Vol. 130**, ed. G. Kale, S. Akbar and M. Liu (American Ceramic Society, Westerville, OH, 2002) 47-56.
50. J.W. Fergus, “Remote Health Monitoring for Bridges and Missiles Using MEMS Devices,” *Structural Health Monitoring: The Demands and Challenges 2001, Proc. 3rd International Workshop on Structural Health Monitoring*, ed. F.K. Chang (CRC Press, New York, NY, 2001) 1118-1124.
51. J.W. Fergus, “Preparing Materials Engineers for Cross-Disciplinary Careers,” *2001 ASEE Annual Conference Proceedings*, (ASEE, Washington, DC, 2001) Session 2464.
52. J.W. Fergus, B. Dang and W.F. Gale, “Effect of Alloying Additions on Ionic Transport and Phase Distribution in Oxide Scales Formed During the Oxidation of Gamma Titanium Aluminide Alloys,” *Proceedings of the Electrochemical Society* **2001-12** [High Temperature Corrosion and Materials Chemistry III] (2001) 38-48.
53. W.F. Gale, X. Wen, Y. Shen, Y. Xu and J.W. Fergus, “Diffusion Brazing of Titanium Aluminide – Wettability, Microstructural Development and Mechanical Properties,” in *Advanced Brazing and Soldering Technology* ed. P.T. Vianco and M. Singh (American Welding Soc., Miami, FL, 2000) 42-49.
54. J.W. Fergus, W.F. Gale and B. Dang, “Oxidation Resistance of Transient Liquid Phase (TLP) Bonded Gamma Titanium Aluminides”, *Joining of Advanced and Specialty Materials II* ed. M. Singh, J.E. Indacochea, J.N. DuPont, K. Ikeuchi and J. Martínez-Fernández (ASM International, 2000) 72-76
55. J.W. Fergus, “Chemical Sensors for Use in the Processing of Molten Aluminum Alloys”, in *Advanced Sensors for Metals Processing* ed. B.W. Brusey, J.F. Bussière, M. Dubois and A. Moreau (The Metallurgical Society of CIM, 1999) 303-314.
56. J.W. Fergus, “Sensors for Use in Systems Containing Multiple Reactive Metals,” in *Light Metals 1999* ed. C. Edward Eckert (The Minerals, Metals and Materials Society, Warrendale, PA, 1999) 1131-1134.
57. V.Y Kodash and J.W. Fergus, “Influence of Calcium on High Temperature Oxidation of Molybdenum Aluminosilicate,” in *Proceedings of the Electrochemical Society* **98-9** [High Temperature Corrosion and Materials Chemistry] (1998) 438-445.
58. J.W. Fergus and S. Hui, "Solid-State Aluminum Sensor for Use in Molten Zinc," in *Sensors and Modeling in Materials Processing: Techniques and Applications* ed. S. Viswanathan, R.G. Reddy and J.C. Malas (The Minerals, Metals and Materials Society, Warrendale, PA, 1997) 381-395.
59. J.W. Fergus and S. Hui, "Solid Electrolyte Based Sensor for Monitoring the Magnesium Level during the Reclamation of Aluminum Scrap," in *Light Metals 1996* ed. W. Hale (The Minerals, Metals and Materials Society, Warrendale, PA, 1996) 1061-1064.
60. J.W. Fergus, "Current and Potential Applications of Chemical Sensors for Use in the Smart Processing of Molten Metal Alloys," in *Diversity into the Next Century - International SAMPE Technical Conference* **Vol. 27** ed. R.J. Martinez, H. Arris, J.A. Emerson and G. Pike (SAMPE, Covina, CA, 1995) 245-255.
61. J.W. Fergus and W.L. Worrell, "The High Temperature Oxidation of Chemically Vapor Deposited Silicon Carbide," *Ceramic Transactions* **10** (1990) 43‑51.

## Professional Contributions

Editor of *Electrochemical Society (ECS) Transactions*.

Lead editor, J.W. Fergus, R. Hui, X. Li, D. Wilkinson and J. Zhang (Eds.) *Solid Oxide Fuel Cells: Materials Properties and Performance* (CRC Press, Taylor Francis Group, Boca Raton, FL, 2009).

Co-editor, D.P. Wilkinson, J. Zhang, R. Hui, J. Fergus and X. Li (Eds.) *Proton Exchange Membrane Fuel Cells: Materials Properties and Performance* (CRC Press, Taylor Francis Group, Boca Raton, FL, 2010).

Guest Editor, *ECS Interface*

* Spring 2012, special issue on education in electrochemistry
* Winter 2013, high temperature materials division focus issue

Member of the Editorial Review Board for *Metallurgical and Materials Transactions B*

Contributing Editor for *NIST – Phase Equilibria Diagrams*

Reviewer for: *ACS Applied Materials and Interfaces*

*Acta Materialia*

*Advanced Energy Materials*

*Advanced Engineering Materials*

*Advanced Functional Materials*

*Advanced Materials*

*Advanced Powder Technology*

*Applied Energy*

*Applied Nanoscience*

*Applied Physics A*

*ASEE Annual Conference Proceedings*

*ASME Journal of Fuel Cell Science and Technology*

*ASME ICEME*

*Arabian Journal of Science and Engineering*

*Bellstein Journal of Nanotechnology*

*Ceramics International*

*Chemical Engineering Science*

*Chemical Reviews*

*Chemistry of Materials*

*Chemical Communications*

*Chemosensors*

*ChemElectroChem*

*ChemPlusChem*

*ChemSusChem*

*Composite Interfaces*

*Comptes Rendus Chimie*

*Corrosion Science*

*ECS Electrochemistry Letters*

*Electrochemical Communications*

*Electrochemical and Solid-State Letters*

*Electrochemical Transactions*

*Electrochimica Acta*

*Energies*

*Energy Conversion and Management*

*Energy and Environmental Science*

*Energy and Fuel*

*Energy Technology*

*Environmental Technology*

*EPL (Europhysics Letters)*

*Fuel Cells*

*Indian Journal of Engineering and Materials Science*

*Inorganic Chemistry*

*International Journal of Applied Ceramic Technology*

*International Journal of Environmental Analytical Chemistry*

*International Journal of Hydrogen Energy*

*Ionics*

*Iraqi Journal of Applied Physics*

*Journal of Alloys and Compounds*

*Journal of the American Ceramic Society*

*Journal of Applied Electrochemistry*

*Journal of Catalysis A*

*Journal of Chemical and Engineering Data*

*Journal of Electroceramics*

*Journal of the Electrochemical Society*

*Journal of Electronic Materials*

*Journal of Electrostatics*

*Journal of Materials Chemistry A*

*Journal of Materials Research*

*Journal of Material Science*

*Journal of Micromechanics and Microsystems*

*Journal of Nanomaterials*

*Journal of New Materials for Electrochemical Systems*

*Journal of Particulate Science and Technology*

*Journal of Physical Chemistry*

*Journal of Physics D: Applied Physics*

*Journal of the Physics and Chemistry of Solids*

*Journal of Power Sources*

*Journal of Sensors*

*Journal of the Taiwan Institute of Chemical Engineers*

*Macromolecular Chemistry and Physics*

*Materials Chemistry and Physics*

*Materials and Corrosion*

*Materials Letters*

*Materials Research Bulletin*

*Materials Science and Engineering A*

*Materials Science and Engineering B*

*Materials Science and Technology*

*Measurement Science and Technology*

*Metallurgical and Materials Transactions A*

*Metallurgical and Materials Transactions E*

*MICMAT*

*Nano Energy*

*Nanotechnology*

*Nanoscale*

*New Journal of Chemistry*

*Nuclear Instruments and Methods in Physics Research Section B*

*Open Corrosion Journal*

*Oxidation of Metals*

*Particulate Science and Technology*

*Phase Transitions*

*Philosophical Magazine*

*Physica E*

*Physica Scripta*

*Polymer*

*Polymer International*

*Polymer Technology*

*Powder Technology*

*Proceedings of the Royal Society A*

*Progress in Materials Science*

*PSS Rapid Research Reports*

*Recent Patents on Materials Science*

*Recent Patents on Nanotechnology*

*Research on Chemical Intermediates*

*RSC Advances*

*Science*

*Science of Advanced Materials*

*Scientific Reports*

*Scripta Materialia*

*Sensor Letters*

*Sensors*

*Sensors and Actuators B*

*Sensors Journal of IEEE*

*Smart Materials and Structures*

*Solid State Ionics*

*Solid State Science*

*Surface Coatings Technology*

*Synthetic Metals*

*Talanta*

*Thermochimica Acta*

*Thin Solid Films*

*Zeitschrift für Metallkunde*

**Conference Organization**

*Primary Organizer*

Continuous Improvement of Academic Programs (and Satisfying ABET Along the Way), Materials Science & Technology (MS&T) 2013, 27-31 October 2013, Montréal, Quebec, Canada.

Continuous Improvement of Academic Programs (and Satisfying ABET Along the Way), Materials Science & Technology (MS&T) 2012, 7-11 October 2012, Pittsburgh, PA.

Continuous Improvement of Academic Programs (and Satisfying ABET Along the Way), Materials Science & Technology (MS&T) 2011, 16-20 October, 2011 Columbus, OH.

Symposium on High Temperature Materials Chemistry IX – A Symposium in Honor of Professor Robert A. Rapp, 220th Meeting of the Electrochemical Society, 9-14 October 2011, Boston, MA.

Symposium on High Temperature Materials Chemistry, 204th Meeting of the Electrochemical Society, 12-16 October 2003, Orlando, FL.

*Member of Organizing Committee*

Symposium on High Temperature Corrosion and Materials Chemistry XI, 227th Meeting of the Electrochemical Society, 24-28 October 2015, Chicago, IL.

Engineering Solutions for Sustainability: Materials and Resources (ESS: M&R II), TMS 2015, 15-19 March 2015, Orlando, FL.

CSM-TMS Energy Conference, 4-6 November 2014, Xi’an, China.

Continuous Improvement of Academic Programs (and Satisfying ABET Along the Way), Materials Science & Technology (MS&T) 2014, 4-8 October 2014, Pittsburgh, PA.

High Temperature Corrosion, 226th Meeting of the Electrochemical Society, 5-10 October 2014, Cancun, Mexico.

Thermal Energy Harvesting, 226th Meeting of the Electrochemical Society, 5-10 October 2014, Cancun, Mexico.

SOFC Promise, Progress and Priorities Workshop, NSF Workshop, 11-12 July 2013, Arlington, VA.

Materials in Clean Power Systems VIII: Durability of Materials, TMS 2013, 142nd Annual Meeting, 3-7 March 2013, San Antonio, TX.

Industrial Involvement in Academia: Anthony Pengidore Memorial Symposium, 7-11 October 2012, Pittsburgh, PA.

Symposium on Sodium Batteries, 222nd Meeting of the Electrochemical Society, 7-12 October 2012, Honolulu, HI.

Symposium on High Temperature Corrosion and Materials Chemistry X, 222nd Meeting of the Electrochemical Society, 7-12 October 2012, Honolulu, HI.

Symposium on High Temperature Batteries, 221st Meeting of the Electrochemical Society, 6-11 May 2012, Seattle, WA.

Materials in Clean Power Systems VII: Clean Coal-, Hydrogen Based-Technologies, and Fuel Cells, TMS 2012, 141st Annual Meeting, 11-15 March, 2012, Orlando, FL.

Symposium on High Temperature Corrosion and Materials Chemistry VIII, 216th Meeting of the Electrochemical Society, 5-10 October 2009, Vienna, Austria

Symposium on High Temperature Corrosion and Materials Chemistry VII, 214th Meeting of the Electrochemical Society, 12-17 October 2008, Honolulu, HI.

Symposium on High Temperature Corrosion and Materials Chemistry VI, 210th Meeting of the Electrochemical Society, 29 Oct.–03 November 2006, Cancun, Mexico.

Symposium on High Temperature Corrosion and Materials Chemistry V, 206th Meeting of the Electrochemical Society, 03-08 October 2004, Honolulu, HI.

**External Research Funding**

Current/past PI on $4 M and co-PI on $4.6M in externally funded research projects. Current and recently completed project are listed below.

Reduced Cost Bond Layers for Multi-Layer Thermal/Environmental Barrier Coatings, J.W. Fergus (PI), Department of Energy, 07/17/13 – 07/16/16, $300,000.

Effect of SOFC Interconnect-Coating Interactions on Coating Properties and Performance, J.W. Fergus (PI), Department of Energy, 06/15/08 – 06/14/12, $449,952.

Investigation of Lithium-Ion Polymer (Li-P) Batteries Degradation under Thermal Fatigue, ARDI, S.I. Choe (PI) and J.W. Fergus (Co-PI), $397,483, 02/01/11-1/31/13.

Scholarships for Engineering Students from Underrepresented Groups, J.W. Fergus (PI), S. Scott-Harris (Co-PI), National Science Foundation, $599,527, 08/08-07/13.

MRI: Acquisition of a State-of-the-Art X-ray Diffraction System for Investigation of Nano/Micro/Bio-Materials and Devices, Z.-Y. Cheng (PI), J.W Fergus, M.L. Auad, and G. Mills, S. Jeelani (Co-PIs), National Science Foundation $292,866, 08/09-07/11.

The Effect of Hydrogen and Water Vapor on the Oxidation of Chromia-Forming Alloys, J.W. Fergus (PI), National Science Foundation, $224,890, 8/06-7/10,

REU Site: Interdisciplinary Studies for Sensor and Biosensor Development, O.A. Oyarzabal (PI), J.W. Fergus (Co-PI), National Science Foundation, $210,078, 5/08-4/10.

**EDUCATIONAL ACTIVITIES**

**Education-Related Presentations**

* J.W. Fergus, “Assembly and Preparation of Accreditation Teams,” 2nd World Summit on Accreditation, Indian National Board of Accreditation, 8-10 March 2014.
* J.W. Fergus, “Preparation of Self-Study for Engineering,” 2014 ABET Symposium, Pittsburgh, PA, 3-4 April, 2014.
* J.W. Fergus, “Statement Writing Session,” 2014 ABET Symposium, Pittsburgh, PA, 3-4 April, 2014.
* J.W. Fergus, “Energy Education for Engineering: Needs and Opportunities, 2014 TMS Annual Meeting, San Diego, CA, 17-21 February, 2014.
* J.W. Fergus, “Challenges and Opportunities in Preparing Scientists and Engineers for Work in Electrochemical Science and Technology,” 64th Annual Meeting of the International Society of Electrochemistry, Santiago de Querétaro, Mexico, 8-13 September, 2013.
* J.W. Fergus, “Materials Engineering as a Catalyst for Sustainability Education,” 2013 ASEE Annual Conference, Atlanta, GA, 23-26 June 2013.
* J.W. Fergus and S. Scott-Harris, “Design of a Scholarship Program for Optimal Impact,” 2013 ASEE Annual Conference, Atlanta, GA, 23-26 June 2013.
* J.W. Fergus, “Program Evaluators: The Key to an Effective and Consistent Accreditation Process,” 2013 ABET Symposium, Portland, OR, 12-13 April 2013
* J.W. Fergus, “Courses on Sustainability Issues in Materials Engineering,” 2013 TMS Annual Meeting, TMS 2013, San Antonio, TX, 3-7 March 2013.
* J.W. Fergus and C. Twigge-Molecey, “Report on Subcommittee on Sustainability in Materials Education,” 2013 TMS Annual Meeting, TMS 2013, San Antonio, TX, 3-7 March 2013.
* J.W. Fergus, “Program Evaluators: The Key to an Effective and Consistent Accreditation Process,” 2012 ABET Symposium, St. Louis, 19-21 April 2012.
* J.W. Fergus, “Demonstrating the Societal Impact of Materials Science and Engineering,” 2nd North American Materials Education Symposium, Worcester, MA, 25 March 2011
* J.W. Fergus, “Program Evaluators – The Key to an Effective and Consistent Accreditation Process,” Materials Science & Technology (MS&T) 2011, 16-20 October, 2011 Columbus, OH.
* J.W. Fergus, W.F. Gale, O.A. Oyarzabal, R.S. Miller and D.E. Conner, “Multidisciplinary Teams for Engineering in Food Safety Applications – Bridges between Engineering and Biology,” 2001 ASEE Southeastern Section Conference, Memphis, TN, 7-8 April, 2008.
* J.W. Fergus, “Preparing Materials Engineers for Cross-Disciplinary Careers,” 2001 ASEE Annual Conference, Albuquerque, NM, 24-27 June 2001.
* J.W. Fergus, “Effective Use of a Small Faculty for Maintenance of a Comprehensive Materials Engineering Program, 1997 TMS Annual Meeting, Orlando, FL, 9-13 February, 1997.

**Courses Taught and Developed**

###### Undergraduate Courses Taught

Introduction to Sustainability

Introduction to Engineering

Minerals Resources: Processing and Availability

Materials and the Environment

Materials for Sustainable Energy Production and Storage

Structure of Materials

Materials and Properties (I and II)

Phase Diagrams

Crystallography

X-Ray Diffraction Laboratory

Physical Analysis of Materials

Ferrous Metallurgy

Introduction to Materials Science

Engineering Materials – Ceramics

Corrosion

###### Graduate Courses Taught

Crystallography

X-Ray Diffraction Laboratory

Corrosion

Solid State Electrochemistry and Sensor Materials

High Temperature Electrochemical Devices

### New Courses Developed

The following three one-hour undergraduate courses have been approved for use as an elective in the university minor in sustainability.

* Minerals Resources: Processing and Availability
* Materials and the Environment
* Materials for Sustainable Energy Production and Storage

Graduate elective courses

* + - Solid State Electrochemistry and Sensor Materials
    - High Temperature Electrochemical Devices

“Corrosion: Prevention and Control" - 3-hour video lecture through the Engineering Professional Development (EPD) Program. The video course is taken by professional engineers to fullfill continuing education requirements.

Introduction to Engineering Problem Solving. Developed with Tom Shumpert and Dennis Weatherby.

Review course for materials science portion of FE exam (2 hours).

Lecture on materials selection for ENGR 3510: Introduction to Business and Education (1.5 hours)

Lecture on Energy Use and Waste for HONR 1037: Sustainability and the Modern World

### Study Abroad

Sustainable Technologies and Practices in Northern Spain, 4-week, 6-credit-hour program in Pamplona, Spain.

**Honors and Awards**

Outstanding Materials Engineering Professor - Auburn University

1994, 1999, 2003 and 2006

Graduate Student Graduated / Current

Ph.D.

Major Professor: 8.5 / 2

Committee: 63 / 10

M.S. (Masters with thesis)

Major Professor: 6 / 1

Committee: 42 / 2

M.Mtl. (non-thesis Master’s)

Major Professor: 15 / 2

Committee: 13 / 1

## Other Educational Contributions

Review of numerous textbooks and textbook proposals.

**EXTENSION AND OTHER PROFESSIONAL SERVICE**

## Diversity Activities

## Member of Commission on Women in Academic Careers

## Member of Advisory Board for the Alabama Power Academic Excellence Program (AP-AEP)

Member of Executive Committee, Alabama Alliance for Students with Disabilities in STEM

PI on NSF S-STEM Project for Scholarships for Engineering Students from Underrepresented Groups

Co-PI on Sloan Foundation project to increase Ph.D.in materials science and engineering

## University Committees and Service

Member and Chair, Search Committee for Coordinator of Alabama Power Academic Excellence Program, 2014-15

Member, Search Committee for Director of Alabama Power Academic Excellence Program, 2014-15

Member, Search Committee for Vice-President of Alumni Affairs, 2014

Member, Search Committees for Director of Biggio Center

First director: 2003

Second director: 2014

Member, University Promotion and Tenure Committee, 2011-2014

Member, University Scholarship Committee, 2008-2014

Member, Academic Sustainability Advisory Committee, 2012-2015

Member, Task Force on Undergraduate Research Fellowships, 2013-2014

Member, President’s Graduate Opportunity Program (PGOP) 2001-2013

(Chair, 2009-2010)

Member, Program Coordinator Faculty Search Committee, Alabama Power Academic Excellence Program, 2013-present

Member, Program Review Committee, April 2012

Member, Faculty Search Committee, Polymer and Fiber Engineering, 2011-2012

Member, Undergraduate Research Fellowship Evaluation Committee, 2011-2014

Member, Competitive Research Grant Committee, 2009-2012

Member, Internship Task Force, 2010-2011

Member, Retention Committee, 2007-2010

(Chair 2008-2010)

Member, Interdisciplinary Studies Degree Faculty Oversight Committee, 2009-2011

Member, Program Committee for Diversity Research Initiative, 2009-2011

Member, Radiological Safety Committee, 2007-2010

Member, University International Student Committee, 1994-1997

(Chair, 1996-1997)

Member, University Senate Teaching Effectiveness Committee, 1998-2001, 2007-2010

(Chair, 2000-2001)

Member, Faculty Committee for Southeastern Association of College and Schools (SACS) Self-Study, 2003

Member, Search Committee for Special Assistant to the Associate Provost for Multicultural Affairs

Member, Multicultural Diversity Commission, 2002-2005

Biggio Center for the Enhancement of Teaching and Learning

Mentor/Facilitator, New Faculty Scholars Program, 2004-2006, 2007-8

Small group facilitator for symposium on How People Learn: Research & Application (02 February 2007)

Member, College of Engineering Scholarship Committee, 2007-present

Member, College of Engineering Curriculum Committee, 1997-present

Member, College of Engineering ABET EC 2000 Committee 1998-present

Member, Search Committee for Academic Advisor College of Engineering

Materials Engineering Administrative Positions and Responsibilities

Academic Advisor (1997-present)

Graduate Program Officer (1997-2012)

ABET Coordinator - develop and coordinate program outcome assessment plan

Course scheduler

Graduate Admissions Committee (1992-present)

Undergraduate recruitment

## Service to Professional Organizations

The Electrochemical Society (ECS)

Editor of ECS Transactions (2013-present)

Member of Publications Committee (2002-2005, 2013-present)

Member of High Temperature Materials Executive Committee (2003-present)

Secretary/Treasurer (2005-2007)

Junior Vice-Chair (2007-2009)

Senior Vice-Chair (2009-2011)

Chair (2011-2013)

Board of Directors (2011-2013)

Member of Education Committee (2008-2013)

Chair (2012-2013)

Member of New Technology Subcommittee (2007-2010)

Member of Interface Advisory Board (2008-2010)

Faculty Advisor for Auburn University Student Chapter (2007-present)

Chair of Georgia Section (2004-2005)

The Metals, Minerals and Materials Society (TMS)

Member of Board of Directors: Professional Development Director

Member of Accreditation Committee (2003-present)

Chair (2011-2013)

ABET program evaluator (2003-present)

Representative to ABET Engineering Accreditation Commission (2008-2013)

Member of Materials and Society Committee (2012-present)

Co-Chair of Subcommittee on Sustainability in Materials Education (2012-present)

Representative on AIME Sustainability Steering Committee (2012-present)

Member of Professional Registration Committee (2000-present)

Chair (2006-2008)

Representative to NCEES-EPE Committee (2006-2008)

Member of Undergraduate Education Coordinating Committee (2010-2011)

Member of ad-hoc Committee on Education (2011-2012)

The American Ceramic Society (ACerS)

Established and served as Faculty Advisor for Auburn University Student Branch

Member of Phase Equilibrium Committee (2008-2011)

Chair (2009-2011)

Member of Publications Committee (2009-2011)

Member of Presidential Committee on the ACerS Phase Equilibria Program (2009-2010)

ABET

EAC Executive Committee Member-at-Large (2013-present)

EAC Commissioner (2008-2013)

Lead Facilitator for program evaluator face-to-face training (2014-present)

Support Facilitator for program evaluator face-to-face training (2011-2014)

Program evaluator Mentor (2010-present)

Member of Accreditation Council Training Committee (2012-present)

Chair of New Team Chair Training Task Group (2012-present)

International Society of Electrochemistry (ISE): Member

The American Society for Engineering Education (ASEE): Member

Alpha Sigma Mu (International Honor Society for Materials and Metallurgical Engineering)

Board of Trustees (1996-1999), President, 1997-1998

Faculty advisor for Auburn University Chapter

# Other Professional Service and Recognition

Member of External Advisory Committee for the Partnership for Research and Education in Materials (PREM) of Xavier University of Louisiana (2012-2013)

Served on external review team for Romanian National Authority for Scientific Research (2012)

Licensed Professional Engineer (AL No. 22261)

Write / review questions for the Metallurgical and Materials Engineering PE Examination

Proposal Review

National Science Foundation (NSF)

U.S. Department of Energy (DOE)

Alfred P. Sloan Foundation

U.S. Civilian Research and Development Foundation (CRDF)

American Association for the Advancement of Science (AAAS) (Inland Northwest Research Alliance (INRA))

University Research for Graduate Education (URGE) project (World Bank)

Engineering and Physical Sciences Research Council (ESPRC) (UK)

Natural Sciences and Engineering Research Council (NSERC) (Canada)

U.S. Department of Agriculture (USDA)

Army Research Laboratory (ARO)

The International Copper Association (ICA) Center for Advanced Interdisciplinary Research in Materials (CIMAT) Program

German Israeli Foundation (GIF)

NASA Postdoctoral Program

Ontario Centres of Excellence Inc (OCE)

Czech Science Foundation (CSF)

Georgian National Science Foundation (GNSF)

Kentucky Science and Engineering Foundation R&D Excellence Awards

Research Council of Romania

CASIS: Materials Testing in the Extreme Environment of Space

**Consulting**

Hoerbiger Drive Tech.

Rheem Manufacturing

Schlumberger Industries

G&M Industries

Southern Wildlife Systems

Alabama Specialty Products

U.S. Filter Wheelabrator

Rushton, Stakely, Johnston and Garrett

Sharpe and Reynolds

Southern Glassline Equipment

Talladega Engineering

Nanotek Instruments, Inc.

Griffith Sikes

Intermet

Farrier

Mando

CSP Technologies

Greg Davis

Research Quality & Design Engineering