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Assistant Professor, Department of Mechanical Engineering, University of South Carolina
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SUMMARY

My research vision is to build a vigorous research program in high temperature materials and solid-state electrochemistry with a focus on energy conversion and storage technologies. My teaching goal is to integrate research program with teaching efforts by emphasizing the fundamental principles and training the students with problem-solving skills. I am also expecting to proactively involve in the professional services to contribute to the society.

EDUCATION

Georgia Institute of Technology, Atlanta, GA August 2001
Ph. D in Materials Science & Engineering GPA: 3.74/4.0

Dissertation: Synthesis and characterization of nanostructured materials for electrochemical and catalytic applications.

Advisor: Prof. Meilin Liu

University of Science and Technology of China, Hefei, China July 1995
M. S. in Materials Science and Engineering GPA: 3.82/4.0

Thesis: Preparation and characterization of hydrogen permeable materials.

Advisor: Prof. Guangyao Meng and Prof. Dingkun Peng

Anhui University, Hefei, China July 1992
B. S. in Chemistry GPA: 3.80/4.0

PROFESSIONAL EXPERIENCE

<u>Dates</u>	<u>Firm/Institution</u>	<u>Rank/Position</u>
2007.8 – present	University of South Carolina	Assistant Professor
2001.12 – 2007.8	United Technologies Research Center	Senior Staff Engineer/Task Leader
2001.9 – 2001.11	Lawrence Berkeley National Laboratory	Visiting Scientist
1997.6 – 2001.8	Georgia Institute of Technology	Graduate Research Assistant
1996.1 – 1997.4	Riso National Laboratory, Denmark	Visiting Scientist

CV updated 11-8-2010

1992.9 – 1995.12 University of Sci. & Tech of China Graduate Research Assistant

HONORS AND AWARDS

- Young Investigator Research Award, the College of Engineering and Computing, University of South Carolina, 2010.
- Promising Investigator Research Award, University of South Carolina, 2010.
- Rising Star Faculty Award, University of South Carolina, 2010.
- Summer Faculty Fellowship from Air Force Research Laboratory, 2009, 2010.
- Research Featured in the National Hydrogen Association Conference, Columbia, SC, 2008
- Great Job Award for 75-Cell SOFC Stack Electrochemical Performance Evaluation, United Technologies Research Center, 2007
- Outstanding Achievement Award for 1kW SOFC Stack Demonstration, United Technologies Research Center, 2005
- Great Job Award for Achieving the First UTRC SOFC Module Test, United Technologies Research Center, 2002
- Fellowship at Georgia Tech Molecular Design Institute Sponsored by the Office of Naval Research, 1999–2001
- Student Travel Grant from the Electrochemical Society (ECS), Phoenix, AZ, 2000
- Fellowship from the Danish International Development Assistance for Overseas Scholars Program, 1996–1997
- Guanghua Scholarship for Excellent Graduate Students, University of Science and Technology of China, 1992–1995
- First-Class Renmin Scholarship for Excellent Undergraduate Students, Anhui University, 1988–1992

COURSES TAUGHT

EMCH 371 – Engineering Materials, Spring 2010, Fall 2009, Spring 2009, Fall 2008, Spring 2008.

This is a junior-level core course for the mechanical engineering major.

EMCH 576 - Fundamentals and Applications of Fuel Cells, Fall 2010, Fall 2009.

This is a graduate and senior undergraduate course developed by F. Chen.

JOURNAL PUBLICATIONS

1. G. Xiao and F. Chen, "Ni modified ceramic anodes for direct-methane solid oxide fuel cells", *Electrochemistry Communications*, in press, doi:10.1016/j.elecom.2010.11.012. (Journal impact factor=4.243, corresponding author).
2. L. Zhang, F. Chen and C. Xia (corresponding author), "Spin-coating derived solid oxide fuel cells operated at temperatures of 500 °C and below", *International Journal of Hydrogen Energy*, 35 (2010) 13262-13270. (Journal impact factor=3.945).

3. Y. Zhang, Y. Wang, Y. Wang, F. Chen and C. Xia (corresponding author), "Random-packing model for solid oxide fuel cell electrodes with particle size distributions", *Journal of Power Sources*. doi: 10.1016/j.jpowsour.2010.09.098. (Journal impact factor =3.792)
4. X. Dong, P. Gardner, T.L. Reitz, K. Huang and F. Chen, "Strontium and manganese-doped lanthanum gallate as a potential anode material for intermediate temperature solid oxide fuel cells ", *Journal of the American Ceramic Society*, DOI: 10.1111/j.1551-2916.2010.04221.x. (Journal impact factor=1.944, corresponding author).
5. G. Xiao, X. Dong, K. Huang and F. Chen, "Synthesis and characterizations of A-site deficient perovskite $\text{Sr}_{0.9}\text{Ti}_{0.8-x}\text{Ga}_x\text{Nb}_{0.2}\text{O}_3$ ", *Materials Research Bulletin*. doi: 10.1016/j.materresbull.2010.09.044. (Journal impact factor=1.989, corresponding author).
6. C. Yang, C. Jin and F. Chen, "Performances of micro-tubular solid oxide cell with novel asymmetric porous hydrogen electrode", *Electrochimica Acta*, 56 (2010) 80–84. (Journal impact factor=3.352, corresponding author).
7. B. Liu, Z. Jiang, B. Ding, F. Chen and C. Xia (corresponding author), " $\text{Bi}_{0.5}\text{Sr}_{0.5}\text{MnO}_3$ as cathode material for intermediate-temperature solid oxide fuel cells", *Journal of Power Sources*, 196 (2011) 999–1005. (Journal impact factor =3.792).
8. D. Cui, C. Yang, K. Huang and F. Chen, "Effects of testing configurations and cell geometries on the performance of a SOFC: a modeling approach", *International Journal of Hydrogen Energy*, 35 (2010) 10495-10504. (Journal impact factor=3.945, corresponding author).
9. Q. Liu, C. Yang, X. Dong and F. Chen, "Perovskite $\text{Sr}_2\text{Fe}_{1.5}\text{Mo}_{0.5}\text{O}_{6-\delta}$ as electrode materials for symmetrical solid oxide electrolysis cells", *International Journal of Hydrogen Energy*, 35 (2010) 10039-10044. (Journal impact factor=3.945, corresponding author).
10. C. Jin, C. Yang, F. Zhao, A. Coffin and F. Chen, "Direct-methane solid oxide fuel cells with $\text{Cu}_{1.3}\text{Mn}_{1.7}\text{O}_4$ spinel internal reforming layer", *Electrochemistry Communications*, 12 (2010) 1450-1452. (Journal impact factor=4.243, corresponding author).
11. C. Jin, C. Yang and F. Chen, "Effects on microstructure of NiO-YSZ anode support fabricated by phase-inversion method", *Journal of Membrane Science*, 363 (2010) 250-255. (Journal impact factor=3.203, corresponding author).
12. F. Zhao, C. Jin, C. Yang, S. Wang and F. Chen, "Fabrication and characterization of anode-supported micro-tubular SOFC based on $\text{BaZr}_{0.1}\text{Ce}_{0.7}\text{Y}_{0.1}\text{Yb}_{0.1}\text{O}_{3-\delta}$ electrolyte", *Journal of Power Sources*, 196 (2010) 688-691. (Journal impact factor =3.792, corresponding author).
13. G. Xiao, Q. Liu, X. Dong, K. Huang and F. Chen, " $\text{Sr}_2\text{Fe}_{4/3}\text{Mo}_{2/3}\text{O}_6$ as anodes for solid oxide fuel cells", *Journal of Power Sources*, 195 (2010) 8071–8074. (Journal impact factor =3.792, corresponding author).
14. Q. Liu, X. Dong, G. Xiao, F. Zhao and F. Chen, "A novel electrode material for symmetrical SOFCs", *Advanced Materials*, 2010. doi:10.1002/adma.201001044. (Journal impact factor =8.379, corresponding author).
15. S. Wang, F. Zhao, L. Zhang, K. Brinkman and F. Chen, "Stability and electrical property of $\text{Ba}_{1-x}\text{Sr}_x\text{Ce}_{0.8}\text{Y}_{0.2}\text{O}_{3-\delta}$ high temperature proton conductor", *Journal of Alloys and Compounds*, 506 (2010) 263-267. (Journal impact factor =2.135, corresponding author).

16. R. Tian, F. Zhao, F. Chen and C. Xia (corresponding author), "Sintering of samarium-doped ceria powders prepared by a glycine-nitrate process", *Solid State Ionics*, 2010. doi:10.1016/j.ssi.2010.08.003. (Journal impact factor =2.162).
17. L. Zhang, L. Li, F. Zhao, F. Chen and C. Xia (corresponding author), "Sm_{0.2}Ce_{0.8}O_{1.9}/Y_{0.25}Bi_{0.75}O_{1.5} bilayered electrolytes for low temperature-SOFCs with Ag-Y_{0.25}Bi_{0.75}O_{1.5} composite cathodes", *Solid State Ionics* (2010). doi:10.1016/j.ssi.2010.06.015. (Journal impact factor =2.162).
18. H. Zhang, F. Zhao, F. Chen and C. Xia (corresponding author), "Nano-structured Sm_{0.5}Sr_{0.5}CoO₃ electrodes for intermediate-temperature SOFCs with zirconia electrolytes", *Solid State Ionics*, 2010. doi:10.1016/j.ssi.2010.05.024. (Journal impact factor =2.162).
19. F. Zhao and F. Chen, "Performance of solid oxide fuel cells based on proton-conducting BaCe_{0.7}In_{0.3-x}Y_xO_{3-□} electrolyte", *International Journal of Hydrogen Energy*, 35 (2010) 11194-11199. (Journal impact factor=3.945, corresponding author).
20. Z. Jiang, Z. Lei, B. Ding, C. Xia (corresponding author), F. Zhao and F. Chen, "Electrochemical characteristics of solid oxide fuel cell cathodes prepared by infiltrating (La,Sr)MnO₃ nanoparticles into yttria-stabilized bismuth oxide backbones", *International Journal of Hydrogen Energy*, 35 (2010) 8322–8330. (Journal impact factor=3.945).
21. Z. Jiang, C. Xia (corresponding author) and F. Chen, "Efficient thickness of the solid oxide fuel cell composite electrode", *Chinese Journal of Chemical Physics*, 23 (2010) 217-225. (Journal impact factor =0.489).
22. F. Zhao, S. Wang, K. Brinkman and F. Chen, "Layered perovskite PrBa_{0.5}Sr_{0.5}Co₂O_{5+δ} as high performance cathode for solid oxide fuel cells using proton conducting electrolyte", *Journal of Power Sources*, 195 (2010) 5468-5473. (Journal impact factor =3.792, corresponding author).
23. C. Yang, C. Jin and F. Chen, "Characterization of infiltrated (La_{0.75}Sr_{0.25})_{0.95}MnO₃ as oxygen electrode for solid oxide electrolysis cells", *International Journal of Hydrogen Energy*, 35 (2010) 5187-5193. (Journal impact factor=3.945, corresponding author).
24. C. Yang, C. Jin and F. Chen, "Micro-tubular solid oxide fuel cells fabricated by phase-inversion method", *Electrochemistry Communications*, 12 (2010) 657-660. (Journal impact factor=4.243, corresponding author).
25. Q. Liu and F. Chen, "Self-rising approach to synthesize porous hollow metal oxides", *Journal of Nanoscience and Nanotechnology*, 10 (2010) 4317-4321. (Journal impact factor=1.99, corresponding author).
26. C. Yang, A. Coffin and F. Chen, "High temperature solid oxide electrolysis cell employing porous structured (La_{0.75}Sr_{0.25})_{0.95}MnO₃ with enhanced oxygen electrode performance", *International Journal of Hydrogen Energy*, 35 (2010) 3221–3226. (Journal impact factor=3.945, corresponding author, citation=2).
27. F. Zhao, Q. Liu, S. Wang, K. Brinkman and F. Chen, "Synthesis and characterization of BaIn_{0.3-x}Y_xCe_{0.7}O_{3-δ} (x=0, 0.1, 0.2, 0.3) proton conductors", *International Journal of Hydrogen Energy*, 35 (2010) 4258-4263. (Journal impact factor=3.945, corresponding author).

28. D. Cui, Q. Liu and F. Chen, "Modeling of anode-supported SOFCs with SDC electrolytes operating at 500–600 °C", *Journal of Power Sources*, 195 (2010) 4160–4167. (Journal impact factor =3.792, corresponding author).
29. Z. Jiang, C. Xia (corresponding author) and F. Chen, "Nano-structured composite cathodes for intermediate-temperature solid oxide fuel cells via an infiltration/impregnation technique", *Electrochimica Acta*, 55 (2010) 3595–3605. (Journal impact factor =3.325).
30. L. Zhang, C. Xia (corresponding author), F. Zhao and F. Chen, "Thin film ceria-bismuth bilayer electrolytes for intermediate temperature solid oxide fuel cells with $\text{La}_{0.85}\text{Sr}_{0.15}\text{MnO}_3\text{-Y}_{0.25}\text{Bi}_{0.75}\text{O}_{1.5}$ cathodes", *Materials Research Bulletin*, 45 (2010) 603–608. (Journal impact factor =1.989)
31. Q. Liu, X. Dong, C. Yang, S. Ma and F. Chen, "Self-rising synthesis of Ni-SDC cermets as anodes for SOFCs", *Journal of Power Sources*, 195 (2010) 1543-1550. (Journal impact factor =3.792, corresponding author).
32. Q. Liu, and F. Chen, "Self-rising approach to synthesize hierarchically porous metal oxides", *Materials Research Bulletin*, 44 (2009) 2056-2061. (Journal impact factor =1.989, corresponding author, citation=1).
33. Q. Liu, F. Zhao, X. Dong, C. Yang, and F. Chen, "Synthesis and application of porous $\text{Sm}_{0.2}\text{Ce}_{0.8}\text{O}_{1.9}$ nanocrystal aggregates", *Journal of Physical Chemistry C*, 113 (2009) 17262-17267. (Journal impact factor =3.396, corresponding author, citation=1).
34. F. Zhao, L. Zhang, Z. Jiang, C. Xia (corresponding author) and F. Chen, "A high performance intermediate temperature solid oxide fuel cell using impregnated $\text{La}_{0.6}\text{Sr}_{0.4}\text{CoO}_3\text{-}\square$ cathode", *Journal of Alloys and Compounds*, 487 (2009) 781-785. (Journal impact factor =2.135, citation=1).
35. Z. Jiang, C. Xia (corresponding author), F. Zhao and F. Chen, " $\text{La}_{0.85}\text{Sr}_{0.15}\text{MnO}_3\text{-}\square$ infiltrated $\text{Y}_{0.5}\text{Bi}_{1.5}\text{O}_3$ cathodes for intermediate-temperature solid oxide fuel cells", *Electrochemical and Solid-State Letters*, 12 (2009) B91-B93. (Journal impact factor =2.109, citation=2).
36. F. Zhao, Z. Wang, M. Liu, L. Zhang, C. Xia (corresponding author) and F. Chen, "Novel nano-network cathodes for solid oxide fuel cells", *Journal of Power Sources* 185 (2008) 13-18. (Journal impact factor =3.792, contribution=35%, citation=12).
37. J. Arbiol (corresponding author), E. Rossinyol, A. Cabot, F. Peiro, A. Cornet, J. R. Morante, F. Chen and M. L. Liu, "Noble metal nanostructures synthesized inside mesoporous nanotemplate pores", *Electrochemical and Solid State Letters*, 7 (2004) J17-J19. (Journal impact factor =2.109, citation=7).
38. A. Cabot (corresponding author), J. Arbiol, J. R. Morante, F. Chen and M. L. Liu, "Synthesis of Tin Oxide Nanostructures with Controlled Particle Size using Mesoporous Frameworks". *Electrochemical and Solid State Letters*, 7 (2004) G93-G97. (Journal impact factor =2.109, citation=7).
39. A. Cabot (corresponding author), J. Arbiol, R. Ferre, J. R. Morante, F. Chen and M. L. Liu, "Surface states in template synthesized tin oxide nanoparticles". *J. Appl. Phys.*, 95 (2004) 2178-2180. (Journal impact factor =2.072, citation=10).

40. A. Cabot (corresponding author), J. Arbiol, A. Cornet, J. R. Morante, F. Chen, and M. L. Liu, "Mesoporous catalytic filters for semiconductor gas sensors". *Thin Solid Films*, 436 (2003) 64-69. (Journal impact factor =1.727, citation=34).
41. J. Arbiol (corresponding author), A. Cabot, J. R. Morante, F. Chen and M. L. Liu. "Distributions of noble metal Pd and Pt in mesoporous silica". *Applied Physics Letters*, 81 (2002) 3449-3451. (Journal impact factor =3.554, citation=31).
42. C. R. Xia, W. L. Rauch, F. Chen and M. L. Liu (corresponding author, Ph.D thesis advisor), "Sr_{0.5}Sm_{0.5}CoO₃ cathodes for low-temperature SOFCs", *Solid State Ionics*, 149 (2002) 11-19. (Journal impact factor=2.162, citation=154).
43. F. Chen, C. R. Xia and M. L. Liu (corresponding author, Ph.D thesis advisor), "Preparation of ordered macroporous Sr_{0.5}Sm_{0.5}CoO₃ as cathode for solid oxide fuel cells". *Chemistry Letters*, 30 (2001) 1032-1033. (Journal impact factor=1.478, citation=11).
44. C. R. Xia, F. Chen and M. L. Liu (corresponding author, Ph.D thesis advisor), "Reduced-temperature solid oxide fuel cells fabricated by screen printing". *Electrochemical and Solid-State Letters*, 4 (2001) A52-A54. (Journal impact factor=2.109, citation=114).
45. F. Chen and M. L. Liu (corresponding author, Ph.D thesis advisor), "Preparation of yttria-stabilized zirconia (YSZ) films on La_{0.85}Sr_{0.15}MnO₃ (LSM) and LSM-YSZ substrates using electrophoretic deposition (EPD) process". *Journal of the European Ceramic Society*, 21 (2001) 127-134. (Journal impact factor=2.090, citation=36).
46. F. Chen and M. L. Liu (corresponding author, Ph.D thesis advisor), "Preparation of mesoporous yttria-stabilized zirconia (YSZ) and YSZ-NiO using a triblock copolymer as surfactant". *Journal of Materials Chemistry*, 10 (2000) 2603-2605. (Journal impact factor=4.795, citation=36).
47. F. Chen, Z. Shi, and M. L. Liu (corresponding author, Ph.D thesis advisor), "Preparation of mesoporous SnO₂-SiO₂ composite as electrodes for lithium batteries". *Chemical Communications*, 2095-2096, 2000. (Journal impact factor=5.504, citation=21).
48. W. S. Huang, P. Shuk, M. Greenblatt (corresponding author), M. Croft, F. Chen and M. L. Liu, "Structural and electrical characterization of a novel mixed conductor-CeO₂-Sm₂O₃-ZrO₂ solid solution". *Journal of The Electrochemical Society*, 147 (2000) 4196-4202. (Journal impact factor=2.48, citation=16).
49. F. Chen and M. L. Liu (corresponding author, Ph.D thesis advisor), "Preparation and characterization of mesoporous tin oxide for electrochemical applications". *Chemical Communications*, 1829-1830, 1999. (Journal impact factor=5.504, citation=85).
50. F. Chen and M. L. Liu (corresponding author, Ph.D thesis advisor), "Study of transition metal oxide doped LaGaO₃ as electrode materials for LSGM-based solid oxide fuel cells". *Journal of Solid State Electrochemistry*, 3 (1998) 7-14. (Journal impact factor=1.821, citation=47)
51. F. Chen, O. T. Sorensen, G. Y. Meng and D. K. Peng, "Thermal decomposition of BaC₂O₄·0.5H₂O studied by stepwise isothermal analysis and non-isothermal thermogravimetry". *Journal of Thermal Analysis and Calorimetry*, 53 (1998) 397-410. (Journal impact factor=1.587, citation=7)

52. F. Chen, O. T. Sorensen, G. Y. Meng and D. K. Peng, "Preparation of Nd-doped BaCeO₃ proton-conducting ceramic and its electrical properties in different atmospheres". *Journal of the European Ceramic Society*, 18 (1998) 1389-1395. (Journal impact factor=2.090, citation=13)
53. H. T. Wang, X. Q. Liu, F. Chen, G. Y. Meng and O. T. Sorensen, "Kinetics and mechanism of a sintering process for macroporous alumina ceramics by extrusion". *Journal of the American Ceramic Society*, 81 (1998) 781-784. (Journal impact factor=5.504, citation=14)
54. F. Chen, O. T. Sorensen, G. Y. Meng and D. K. Peng, "Preparation of Nd-doped barium cerate through different routes". *Solid State Ionics*, 100 (1997) 63-72. (Journal impact factor=2.162, citation=14)
55. F. Chen, O. T. Sorensen, G. Y. Meng and D. K. Peng, "Synthesis of Nd-doped barium cerate proton conductor from oxalate coprecipitate precursor". *Journal of Thermal Analysis*, 49 (1997) 1255-1261. (Journal impact factor=1.587, citation=5)
56. F. Chen, P. Wang, O. T. Sorensen, G. Y. Meng and D. K. Peng, "Preparation of Nd-doped BaCeO₃ proton-conducting ceramics by homogeneous oxalate coprecipitation". *Journal of Materials Chemistry*, 7 (1997) 1533-1539. (Journal impact factor =4.795, citation=13)
57. F. Chen, O. T. Sorensen, G. Y. Meng and D. K. Peng, "Chemical stability study of BaCe_{0.9}Nd_{0.1}O₃ high-temperature protonic-conducting ceramic". *Journal of Materials Chemistry*, 7 (1997) 481-485. (Journal impact factor =4.795, citation=22)

PEER REVIEWED PROCEEDING VOLUMES

1. X. Dong, P. Gardner, T. Reitz and F. Chen, "Perovskite materials for use as sulfur tolerant anodes in SOFCs", in *Advances in Solid Oxide Fuel Cells VI*, Ceramic Engineering and Science Proceedings Volume 31, Issue 4, 2010, pp 31-41. Published by John Wiley & Sons, Inc., Hoboken, New Jersey. Proceeding volume of the 34th International Conference on Advanced Ceramics & Composites, The American Ceramic Society, January 24-29, 2010, Daytona Beach, FL.
2. K.S. Brinkman, E.B. Fox, P. Korinko, R. Lascola, Q. Liu, and F. Chen, "Structure/property relations in bulk versus solution derived proton conducting ceramics of the form SrCe_{0.95}Yb_{0.05}O_{3-δ} with applications in membrane separations", *Materials Research Society Symposium Proceeding Vol. 1256*, 2010 Materials Research Society, paper no: 1256-N16-30, 7 pages.
3. Q. Liu, F. Chen and W. Song, "Synthesis, characterization and application of nanostructured porous metal oxides", *ECS Transactions*, 19 (15) 1-8 (2009), Proceedings volume of the 215th Electrochemical Society Meeting, May 24-29, 2009, San Francisco, CA.
4. F. Zhao, F. Chen and C.R. Xia, "Infiltrated electrodes for intermediate-temperature solid oxide fuel cells", *ECS Transactions*, 19 (18) 43-50 (2009), Proceedings volume of the 215th Electrochemical Society Meeting, May 24-29, 2009, San Francisco, CA 2010.
5. F. Chen, E. Sun, J. Yamanis, J. Hawkes, J. Smeggil, S. Warriar and J.-W. Kim, "Cr poisoning effect for solid oxide fuel cells", *Fuel Cells and Energy Storage Systems: Materials, Processing, Manufacturing and Power Management Technologies*, Materials

Science and Technology (MS&T) 2006. Edited by P. Singh, D. Collins, G. Yang, P.N. Kumta, C.F. Legzdins, S.K. Sundaram, and A. Manthiram, P303-311.

6. J. Hawkes, E. Sun, J. Yamanis, F. Chen, R. Braun, and S. Warrier, "SOFC Stack and System Development at United Technologies Research Center," *Fuel Cell Seminar*, Honolulu, HI, 2006, pp. 203-206.
7. S. Warrier, J. Yamanis, E. Sun, F. Chen, J. Hawkes, J. Smeggil, S. Arsenault, R. Bailey and M. Jaworowski, "SOFC Stack Development at United Technologies Corporation". *Solid Oxide Fuel Cells (SOFC IX)*, PV 2005-07, The Electrochemical Society. Edited by S. C. Singhal and J. Mizusaki, P141-146.
8. J. Arbiol, A. Cabot, J.R. Morante, F. Chen and M. Liu, "Noble metal distribution in mesoporous silica as a selective active filter for semiconductor gas sensors", *Design and Nature*, 6 (2004) 433-436. Design and Nature II: Comparing Design in Nature with Science and Engineering; Editors: Collins M.W., Brebbia C.A.; Sponsors: Wessex Institute of Technology, Southampton, UK, ONRIFO, Office of Naval Research International Field Office; Rhodes; 28 June 2004 through 30 June 2004.
9. F. Chen and M. L. Liu, "Preparation of mesoporous yttria-stabilized zirconia (YSZ) and YSZ-NiO using dodecylbenzenesulfonic acid (DBSA) as surfactant", in *Proceedings of the 4th International Symposium on Ionic and Mixed Conductors*, San Francisco, CA, September 2-7, 2001.
10. F. Chen, C. R. Xia and M. L. Liu, "Meso- and macro-porous materials for advanced power sources and gas sensing", in the *Proceedings of First International Symposium on Nanomaterials*, Beijing, China, July 15-18, 2001, pp.55-64.
11. F. Chen and M. Liu, "Mesoporous SnO₂ for gas sensors", Solid State Ionic Devices II, PV 2000-32, The Electrochemical Society, Phoenix, AZ, October 22-27, 2000. Edited by E. D Wachsman, W. Weppner, E. Traversa, M. Liu, P. Vanysek, and N. Yamazoe, pp417-423.
12. F. Chen, W. L. Rauch, Z. Shi, and M. Liu, "Preparation of mesoporous electrodes for electrochemical and catalytic applications", *Ceramic Transactions*, 115 (2000) 469-479.
13. M. L. Liu, B. Rauch, and F. Chen, "Transport and catalytic properties of rare earth metal oxide-containing materials in solid state ionic devices". In *proceedings of the International Conference on Rear Earth Metal and Oxides*, Chicago, IL, July 10-15, 1999.
14. W. L. Rauch, F. Chen and M. L. Liu, "Development of mixed-conducting electrodes for solid oxide fuel cells". In *Proceeding of DOE/EPRI/GRI workshop on Fuel Cells*, San Francisco, California, May 1998, pp. 1-15.
15. F. Chen, O. T. Sorensen, G. Y. Meng and D. K. Peng, "Wet chemical synthesis of Nd-doped BaCeO₃ proton conductor", In High temperature Electrochemistry: Ceramics and Metals. Riso National Laboratory, Roskilde, Denmark, 1996. Eds. F. W. Poulsen, N. Bonanos, S. Linderoth, M. Mogensen and B. Zachau-Christiansen. pp.199-204.

PRESENTATIONS:

1. G. Xiao, X. Li, F. Chen and K. Huang, "Mixed Oxide-Ion and Carbonate-Ion Conductors (MOCCs) as Electrolyte Materials for Solid Oxide Fuel Cells", The 8th Symposium on Solid

- State Ionic Devices, The 218th Electrochemical Society Meeting, Las Vegas, Nevada, October 10-15, 2010.
2. X. Dong, K. Huang and F. Chen, "La_{0.9-x}Ca_xCe_{0.1}CrO_{3-δ} As a Potential Anode for SOFCs", The 8th Symposium on Solid State Ionic Devices, The 218th Electrochemical Society Meeting, Las Vegas, Nevada, October 10-15, 2010.
 3. F. Zhao and F. Chen, "Performance of SOFC with Proton-Conductor BaCe_{0.7}In_{0.2}Yb_{0.1}O₃ Electrolyte", The 15th Solid State Proton Conductors conference, Santa Barbara, CA, August 15-20, 2010.
 4. S. Wang and F. Chen, "Synthesis and Characterization of BaCe_{0.7}Zr_{0.1}Y_{0.1}Yb_{0.1}O_{3-δ} Proton Conducting Ceramic", The 15th Solid State Proton Conductors conference, Santa Barbara, CA, August 15-20, 2010.
 5. Q. Liu and F. Chen, "Sulfur Tolerance of Perovskite Sr₂Fe_{1.5}Mo_{0.5}O₆ as Ceramic Anodes for SOFCs", Eighth International Fuel Cell Science, Engineering & Technology Conference, Brooklyn, NY, June 14-16, 2010.
 6. F. Zhao and F. Chen, "Fabrication and Characterization of BaIn_{0.3-x}Y_xCe_{0.7}O_{3-δ} Proton Conductor", The 7th Symposium on Ionic and Mixed Conducting Ceramics, The 217th Electrochemical Society Meeting, Vancouver, Canada, April 25-30, 2010.
 7. C. Yang and F. Chen, "Preparation and Performance of Oxygen Electrode for Solid Oxide Electrolysis Cells", The 7th Symposium on Ionic and Mixed Conducting Ceramics, The 217th Electrochemical Society Meeting, Vancouver, Canada, April 25-30, 2010.
 8. K. Brinkman and F. Chen, "Structure/Property Relations in Bulk Versus Solution Derived Proton Conducting Ceramics of the Form SrCe_{0.95}Yb_{0.05}O_{3-δ} with Applications in Membrane Separations", Symposium N: Functional Oxide Nanostructures and Heterostructures, Materials Research Society (MRS) Spring Meeting, San Francisco CA, April 5-9, 2010.
 9. P. Gardner, X. Dong, T. Rietz and F. Chen, "Perovskite Materials for Use as Sulfur Tolerant Anodes in SOFCs", The 34th International Conference and Exposition on Advanced Ceramics and Composites, Daytona Beach, FL, USA, Jan. 24-29, 2010.
 10. Q. Liu and F. Chen, "Self-Rising Approach to Synthesize Hierarchically Porous Metal Oxides", The 34th International Conference and Exposition on Advanced Ceramics and Composites, Daytona Beach, FL, USA, Jan. 24-29, 2010.
 11. L. Zhang, C. Xia, F. Zhao and F. Chen, "Sm_{0.2}Ce_{0.8}O_{1.9}/Y_{0.25}Bi_{0.75}O₃ Bilayered Electrolytes For Low Temperature-SOFCs With Ag-Y_{0.25}Bi_{0.75}O₃ Composite Cathodes", The 17th Conference on Solid State Ionics, Toronto, Canada, June 29-July 3, 2009.
 12. R. Tian, C. Xia, F. Zhao and F. Chen, "Sintering of Samarium-Doped Ceria Powders Prepared by A Glycine-Nitrate Process", The 17th Conference on Solid State Ionics, Toronto, Canada, June 29-July 3, 2009.
 13. H. Zhang, C. Xia, F. Zhao and F. Chen, "Nano-structured Sm_{0.5}Sr_{0.5}CoO₃ Electrodes for Intermediate-temperature SOFCs with Zirconia Electrolytes", The 17th Conference on Solid State Ionics, Toronto, Canada, June 29-July 3, 2009.

14. F. Zhao, F. Chen and C. Xia, "Infiltrated Electrodes for Intermediate-temperature Solid Oxide Fuel Cells", 215th Electrochemical Society Meeting, San Francisco, CA, May 24-29, 2009.
15. Q. Liu, F. Chen and W. Song, "Synthesis, Characterization and Application of Nanostructured Porous Metal Oxides", 215th Electrochemical Society Meeting, San Francisco, CA, May 24-29, 2009.
16. K. Reifsnider, F. Chen, C. Xue, "Multiphysics foundations for durability of solid oxide fuel cells", The 32nd International Conference & Exposition on Advanced Ceramics & Composites, Daytona Beach, FL, January 27-February 1, 2008.
17. F. Chen, E. Sun, J. Yamanis, J. Hawkes, J. Smeggil, S. Warriar and J.-W. Kim, "Cr Poisoning Effect for Solid Oxide Fuel Cells", Materials Science and Technology 2006 Conference and Exhibition (MS&T 06), Cincinnati, OH, October 15-19, 2006.
18. J. Hawkes, E. Sun, J. Yamanis, F. Chen, R. Braun and S. Warriar, "SOFC Stack and System Development at United Technologies Research Center," Fuel Cell Seminar, Honolulu, HI, November 13-17, 2006.
19. S. Warriar, J. Yamanis, E. Sun, F. Chen, J. Hawkes, J. Smeggil, S. Arsenault, R. Bailey and M. Jaworowski, "SOFC Stack Development at United Technologies Corporation", The Ninth International Symposium on Solid Oxide Fuel Cells (SOFC IX), Quebec City, Canada, May 15-20, 2005.
20. F. Chen and M. L. Liu, "Preparation of Mesoporous Yttria-stabilized Zirconia (YSZ) and YSZ-NiO using Docecylbenzensulfonic Acid (DBSA) as Surfactant", in the 4th International Symposium on Ionic and Mixed Conductors, San Francisco, CA, September 2-7, 2001.
21. F. Chen, C. R. Xia and M. L. Liu, "Meso- and Macro-porous Materials for Advanced Power Sources and Gas Sensing", in the First International Symposium on Nanomaterials, Beijing, China, July 15-18, 2001, pp.55-64.
22. M. L. Liu, W. L. Rauch and F. Chen, "Transport and Catalytic Properties of Rare Earth Metal Oxide-containing Materials in Solid State Ionic Devices", in the International Conference on Rear Earth Metal and Oxides, Chicago, IL, July 10-15, 1999.
23. W. L. Rauch, F. Chen and M. L. Liu, "Development of Mixed-conducting Electrodes for Solid Oxide Fuel Cells", in the DOE/EPRI/GRI workshop on Fuel Cells, San Francisco, California, May 24, 1998.

PATENTS

1. G. Xiao and F. Chen, "Ni Modified Ceramic Anodes For Direct-Methane Solid Oxide Fuel Cells", US Provisional Patent Application, USCRF #00873, 2010.
2. K. Brinkman, P. Korinko, E. Fox and F. Chen, "Enhanced Hydrogen Permeation in Nanocrystalline Proton Conducting Ceramic of the Form SrCeO_3 ", US Provisional Patent Application, USCRF #00828, 2010.
3. Q. Liu and F. Chen, "Novel Mixed Ionic and Electronic Conductor Based on $\text{Sr}_2\text{Fe}_{2-x}\text{Mo}_x\text{O}_6$ Perovskite", US Provisional Patent Application, USCRF#00820, 2010.

4. C. Yang, C. Jin and F. Chen, "A Novel Method to Fabricate High Performance Tubular Solid Oxide Fuel Cells", US Provisional Patent Application, USCRF#00819, 2010.
5. Q. Liu and F. Chen, "Novel Electrode Design for Low Temperature Direct-Hydrocarbon Solid Oxide Fuel Cells", US Patent Application, 12/634,092, 2009.
6. F. Zhao, Q. Liu and F. Chen, "Novel Electrode Design for Low Temperature Direct-Hydrocarbon Solid Oxide Fuel Cells", US Patent Application, 12/898,794, 2010.

FUNDED GRANTS AS PRINCIPAL INVESTIGATOR (PI)

1. NASA-Experimental Program to Stimulate Competitive Research (EPSCoR), "Development of High Power Density Regenerative Bi-electrode Supported Solid Oxide Cells to Support NASA's Planetary Exploration Missions", \$750,000, 10/1/2010 - 9/30/2013. Co-PIs: K. Reifsnider (USC); J. Weidner (USC), H. zur Loye (USC).
2. Department of Energy-Nuclear Energy University Program (NEUP), "Novel Methods of Tritium Sequestration: High Temperature Gettering and Separation Membrane Materials Discovery for Nuclear Energy Systems", \$1,366,626, 10/1/2010 - 9/30/2013. Co-PIs: K. Reifsnider (USC); K. Brinkman (SRNL); T. Adams (SRNL); D. Sholl (Georgia Tech); N. Ding (Claflin University).
3. NextGenEn, Inc., "Fabrication of Solid Oxide Fuel Cell Button Cells", \$2,696, 5/1/2010 - 7/31/2010.
4. NSF-CMMI, "Self-Rising Approach to Synthesize Hierarchically Porous Mixed Ionic and Electronic Conducting Cathodes for Solid Oxide Fuel Cells", \$280,000, 5/1/2010-4/30/2013. Co-PI: X. Xue (USC).
5. NSF-CBET, "Development of High Performance Cathode for Intermediate-Temperature Solid Oxide Fuel Cells via Impregnation", \$232,248, 4/15/2010 - 3/31/2013.
6. University of South Carolina VP Office of Research, Promising Investigator Research Award, "High Performance Cathode for Reduced Temperature Solid Oxide Fuel Cells", \$20,000, 4/15/2010 - 7/15/2011.
7. Air Force Research Laboratory Summer Faculty Fellow Program, "Development of Sulfur-tolerant Redox-stable Mixed Ionic and Electronic Conducting Anodes for Solid Oxide Fuel Cells", \$5,229 for 3 weeks; 6/21/2010 – 7/9/2010.
8. DARPA through ENrG, Inc, "Bi-Electrode Supported Solid Oxide Fuel Cell System: Phase II", \$100,000, 3/01/2010 - 2/28/2011. Co-PI: K. Reifsnider (USC).
9. SC Space Grant Consortium, Palmetto Academy 2010, "Novel Intermediate Temperature Unitized Regenerative Solid Oxide Cell Technology to Support NASA's Planetary Exploration Missions", \$16,000, 2/01/2010 - 9/30/2010.
10. DoE-Nuclear Energy University Program (NEUP), "Tritium Sequestration in Gen IV NGNP Gas Stream via Proton Conducting Ceramic Pumps", \$497,500, 10/1/2009 - 9/30/2011. Co-PIs: K. Reifsnider (USC); K. Brinkman (SRNL); T. Adams (SRNL).
11. NASA EPSCoR – SC Space Grant Consortium, "Improvement of Performance and Durability of Unitized Regenerative Solid Oxide Fuel Cell via Development of Electrode Compositions and Microstructures", \$35,000; 5/1/2009 – 4/30/2010.

12. Air Force Research Laboratory Summer Faculty Program, "Development of Sulfur-tolerant Redox-stable Mixed Ionic and Electronic Conducting Anodes for Solid Oxide Fuel Cells", \$12,636 for 8 week program; 6/1/2009 – 7/31/2009.
13. South Carolina Universities Research and Education Foundation - Savannah River National Laboratory, "Nanocrystalline Ceramics Synthesis and Characterization", \$25,000.
14. SC Space Grant Consortium Palmetto Academy 2009, "Development of Unitized Regenerative Solid Oxide Fuel Cell Technology to Support NASA's Planetary Exploration Missions", \$16,000, 2/01/2009 - 9/30/2009.

FUNDED GRANTS AS Co-PI

1. Department of Energy, "High Temperature Hydrogen Generation Systems", \$300,000, 8/30/2010 – 8/31/2011, K. Reifsnider (PI), Co-PIs: F. Chen (USC) and J. Weidner (USC). (\$45,000 allocated to F. Chen).
2. US Army, "Hydrogen Batteries for the War-fighter", K. Reifsnider (PI), F. Chen (Co-PI); \$2,000,000; 11/1/2009 – 10/31/2010. (\$70,000 allocated to F. Chen).
3. University of South Carolina NanoCenter and Future Fuels Initiative, "Catalytic Liquid-Phase Deoxygenation of Biomass to Hydrocarbon Fuels for Transportation and Stationary Applications", C. Williams (PI); Co-PIs: F. Chen (USC) and A. Heyden (USC); \$150,000, 10/1/2009 – 9/30/2010. (\$50,000 allocated to F. Chen).
4. Department of Energy - Energy Frontier Research Center, "Science Based Nano-Structure Design and Synthesis of Heterogeneous Functional Materials for Energy Systems", \$12,500,366, 8/01/2009 – 7/31/2014, K. Reifsnider (PI), Co-PIs: F. Chen (USC), X. Xue (USC), A. Heyden (USC), H. zur Loye (USC), M. Liu (Georgia Tech), W. Chiu (University of Connecticut), D. Cormier (Rochester Institute of Technology), A. Carter (Princeton), A. Virkar (Utah), F. Liu (Utah), R. McMeeking (UC-Santa Barbara), K. Brinkman (SRNL), T. Straatsma (PNNL). (\$817,853 allocated to F. Chen).
5. Department of Energy, "Hydrogen Fuel Cell Development in Columbia SC", \$1,476,000, 8/01/2008 – 7/31/2010, K. Reifsnider (PI); Co-PIs: F. Chen (USC), X. Xue (USC), B. Popov (USC), B. Chao (USC), J. Van Zee (USC). (\$230,000 allocated to F. Chen).
6. South Carolina Research Authority, "A Next Generation SOFC Technology Demonstration for High Temperature Electrolysis", \$200,000; 8/1/2008 – 7/31/2009, K. Reifsnider (PI), Co-PIs: F. Chen (USC), X. Xue (USC). (\$30,000 allocated to F. Chen).

PROFESSIONAL ACTIVITY

1. November 2010—present, Assistant Subject Editor, International Journal of Hydrogen Energy.
2. May 2005—present, Executive Committee Member in the High Temperature Materials Executive Committee of the Electrochemical Society.
3. May 2006—present, SOFC Working Group member, US Fuel Cell Council.
4. October 2010—present, Executive Committee Member in the New Technology Subcommittee of the Electrochemical Society.

5. October 14, 2010, Session Chair in Nanotechnology, the 218th Electrochemical Society Meeting in Las Vegas, Nevada, October 10-15, 2010.
6. October 12, 2010, Session Chair in both Interconnect Session and Anode Session, the 8th Symposium on Solid State Ionic Devices in the 218th Electrochemical Society Meeting in Las Vegas, Nevada, October 10-15, 2010.
7. June 14-16, 2010, Session Organizer and Session Chair in Materials for Solid Oxide Fuel Cell Session, the 8th International Fuel Cell Science, Engineering & Technology Conference, The American Society of Mechanical Engineers, Brooklyn, New York, June 14–16, 2010.
8. April 27, 2010, Session Chair in the Dense Separation Membranes Session of Symposium B11 of the 7th International Symposium on Ionic and Mixed Conducting Ceramics, the 217th Electrochemical Society Meeting in Vancouver, Canada, April 25-30, 2010.
9. January 28, 2010, Session Chair in the Electrode Materials & Microstructure Session of the 7th International Symposium on Solid Oxide Fuel Cells (SOFCs): Materials, Science and Technology, the 34th International Conference on Advanced Ceramics & Composites in Daytona Beach, FL, January 24-29, 2010.
10. May 26, 2009, Session Chair in the Advanced Materials and Concepts for Energy Harvesting Symposium at the 215th Electrochemical Society Meeting - San Francisco, CA, May 24-29, 2009.
11. NSF Review Panelist for the following panel reviews: SBIR/STTR Panel on Batteries and Capacitors (2010), CMMI Surface Science and Engineering program (2008 and 2010); CBET Process and Reaction Engineering program (2008), and Division of Engineering Interdisciplinary Research Panel on Sustainability (2008).
12. Ad hoc proposal reviewers for NSF Division of Material Research, DoE-Nuclear Energy University Program and NASA-EPSCoR.
13. Reviewer for the following journals: International Journal of Hydrogen Energy, Journal of the Electrochemical Society, Electrochemical and Solid-State Letters, Journal of Power Sources, Journal of Alloys and Compounds, Electrochemistry Communications, Journal of Fuel Cell Science and Technology, Journal of the American Chemical Society, Journal of Materials Chemistry, Journal of Nanoparticle Research, Journal of Membrane Science, Industrial & Engineering Chemistry Research, Electrochimica Acta, International Journal of Applied Ceramic Technology, Journal of Materials Science, and Materials Research Bulletin.

UNIVERSITY SERVICE

1. December 2007—present, Undergraduate Scholarship Committee for the College of Engineering and Computing at the University of South Carolina.
2. December 2007—present, Student Judiciary Committee at the University of South Carolina.
3. May, 2008—present, Faculty Senator at the University of South Carolina.
4. January, 2008—June 2009, Faculty Search Committee of the Department of Mechanical Engineering, University of South Carolina.