Professor Kathy Lu's Group Publications

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Patents:

1. K. Lu, M. K. Mahapatra, "Barium Oxide, Calcium Oxide, Magnesia, and Alkali Oxide Free Glass," US8,541,327, September 2013.
2. K. Lu, F. Shen, Tri-Layer CO(3)O(4)-SDC Protective Coating for Solid Oxide Fuel Cell Interconnects, U.S. Patent Application No: 62/318,369, April 2016.

Publications:

Books:

1. 1. K. Lu, Nanoparticulate Materials-Synthesis, Characterization, and Processing, John Wiley & Sons, Inc., Hoboken, New Jersey, ISBN: 978-1-1182-9142-9, 464 pages, October 2012.
2. K. Lu, Materials in Energy Conversion, Harvesting, and Storage, John Wiley & Sons, Inc., Hoboken, New Jersey, ISBN: 978-1-118-88910-7, 448 pages, September 2014.

Books Edited:

1. N. P. Bansal, J. P. Singh, A. Bhalla, M. M. Mahmoud, N. Jose Manjooran, G. Singh, K. Lu, G. Brennecka, Processing and Properties of Advanced Ceramics and Composites VI, Ceramic Transactions, Volume 249, ISBN: 978-1-118-99549-5, 375 pages, September 2014, Wiley.
2. K. Lu, N. J. Manjooran, R. Murakam, and G. Pickrell, Advances in Synthesis, Processing and Applications of Nanostructures, Ceramic Transactions, Volume 238; ISBN: 978-1-1182-7327-2, August 2012, Wiley.
3. K. Lu, N. Manjooran, M. Radovic, G. Pickrell, E. Medvedovski, E. A. Olevsky, C. Li, G. Singh, and N. Chopra, Advances in Nanomaterials and Nanostructures, Ceramic Transactions, Volume 229, ISBN: 978-1-118-06002-5, August 2011, Wiley.
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1. K. Lu, W. Li, and B. Chen, "Sintering of Porous Materials," Sintering: Mechanisms of Convention Nanodensification and Field Assisted Processes, Editors: Ricardo H. R. Castro, Klaus van Benthem, Springer, Engineering Materials 35, 2013, Volume 35, 115-136, DOI: 10.1007/978-3-642-31009-6_6.

2. K. Lu, "Shaping of 3D Nanoceramics and Their Composites," *Handbook of Nanoceramics and Their Based Devices*, American Scientific Publishers, Edited by T.Y. Tseng and H. S. Nalwa, vol. 2, p 151-177, ISBN:1-58883-116-7, Stevenson Ranch, CA, 2009.
3. K. Lu and X. Zhu, "Liquid Nanoparticles: Synthesis and Characterization," *Encyclopedia of Nanoscience and Nanotechnology*, American Scientific Publishers, Stevenson Ranch, CA, 2010. Editor: H. S. Nalwa, ISBN: 1-58883-146-7, Volume 15, 537-574, 2010.

Journal papers:

1. K. Lu, "Hybrid Materials--A Review on Co-Dispersion, Processing, Patterning, and Properties," International Materials Reviews, accepted.
2. K. Bawane, K. Lu, Q. Li, R. Bordia, "High Temperature Oxidation Behaviors of SiON Coated AISI 441 in Ar+O2, Ar+H2O, and Ar+CO2 Atmospheres," Corrosion Science, 166 (15)108429 (7 pages), 2020.
3. K. Bawane, K. Lu, "Microstructure Evolution for Nanostructured Ferritic Alloy with and without Cr3C2 Coated Silicon Carbide at High Temperatures," Journal of Materials Science and Technology, 43(15) 126-134, 2020.
4. J. Zhao, H. Yang, Y. Li, K. Lu, "Photocatalytic Activity of CdS Nanoparticles Enhanced by the Interaction between Piezotronic Effect and Phase Junction," Journal of Alloys and Compounds, 815 (2020) 1524942 (9 pages).
5. K. Ning, K. Lu, H. Ju, "Sintering Behaviors of Micron-Sized Features Based on 3D Reconstruction," Journal of Materials Science, 54, 14635–14644, 2019.
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Conference Proceedings:

Technical papers:

1. K. Ning, Z. Hu, K. Lu, "Fabrication of New NFA-SiC Composites for Nuclear Applications," 2016 American Nuclear Society Winter Meeting Proceeding, ISBN: 978-0-89448-732-3.
2. K. Lu, W. Li, G. Li, "Understanding Diamond Nanoparticle Evolution During Zirconia Spark Plasma Sintering," Proceeding of the 38th Int'l Conf & Expo on Advanced Ceramics & Composites (ICACC 2014), Daytona Beach, Florida, January 26-31, 2014. Editors: A. Gyekenyesi, M. Halbig.
3. W. Li, M. Anderson, K. Lu, J. Y. Walz, "Fabrication of Porous Mullite by Freeze Casting and Sintering of Alumina-Silica Nanoparticles," Advances in Synthesis, Processing, and Applications of Nanostructures, Proceeding of Materials Science & Technology 2011 Conference and Exhibit (MS&T '11), October 16-20, 2011, Columbus, OH, Ceramic Transactions, Vol 238, John Wiley & Sons, 2012, Editors: K. Lu, N. Manjooran, R. Murakami, G. Pickrell, page 57-64.
4. K. Lu, B. Chen, "Single Nanometer TiO(2) Particle Synthesis and Soft Lithographic Molding," Proceedings of 2011 NSF Engineering Research and Innovation Conference, Atlanta, Georgia, January 4-7, 2011.

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8. J. Walz, K. Lu, "Properties of Freeze-Casted Composites of Silica and Kaolinite," Editors: K. Lu, C. Li, E. Medvedovski, E. A. Olevsky, Processing of Nanoparticle Materials and Nanostructured Films, Ceramic Transactions, Volume 223, 2010, ISBN 978-0-470-92731-1, *Wiley*-Blackwell, p79-86.
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10. K. Lu, Chase Hammond, "Nanoparticle-based Array Creation by Templating," Proceedings of 2009 NSF Engineering Research and Innovation Conference, Honolulu, Hawaii, June 22-25, 2009.
11. K. Lu, X. Zhu, "Ni-B Nanolayer Evolution on Boron Carbide Particle Surfaces at High Temperatures," Processing of Nanoparticle Structures and Composites: Ceramic Transactions, Vol. 208, 133-141, Editors: T. Hinklin, K. Lu, 2009, John *Wiley* & Sons.
12. K. Lu, C. Hammond, "Nanoparticle-based Bulk Material Templating," Processing of Nanoparticle Structures and Composites: Ceramic Transactions, Vol. 208, 1-10, Editors: T. Hinklin, K. Lu, 2009, John *Wiley* & Sons.
13. X. Zhu, K. Lu, H. Dong, C. Glomb, E. Logan, K. Nagarathnam, "Applying Nickel Nanolayer Coating onto B4C Particles for Processing Improvement," 32nd International Cocoa Beach Conference and Exposition on Advanced Ceramics and Composites, January, 2008, Daytona Beach, FL. Ceramic Engineering and Science Proceedings, 29(8), 117-129, 2008, Editors: Tatsuki Ohji, Andrew Wereszczak.
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15. M. K. Mahapatra, C. Story, K. Lu, W. T. Reynolds, "Glass-Ceramic Seal Stability Study for Solid Oxide Electrolyer/Fuel Cells," Proceeding of Materials Science and Technology 2007 Conference, September 16-20, 2007, Detroit, Michigan, Energy: Fuel Cells: Materials, Processing, Manufacturing and Power Management Technologies, Organized by P. Singh, A-M. Azad, D. C. Collins, P. N. Kumta, C. Legzdins, A. Manthiram, A. Manivannan, S. K. Sundaram, and Z. G. Yang. p371-380.
16. X. J. Zhu, K. Lu, "Electroless Nickel Coating of Boron Carbide Particles," Proceeding of 2006 Materials Science & Technology International Conference, Cincinnati, OH, October 15-19, 2006. Innovative Processing and Synthesis of Ceramics, Glasses and Composites, Organized by N.P. Bansal, and J.P. Singh, 421-431, vol. 4

17. K. Lu, "Carbon Nanotube and Alumina Nanoparticle Suspension and Freeze Casting Study," Proceeding of 2006 Materials Science & Technology International Conference, Cincinnati, OH, October 15-19, 2006. vol. 2, 463-471, Nanomaterials: Science and Technology, Organized by S. Mathur, R.M. Laine, M.Z. Hu, J. Vartuli, O.B. Koper.
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20. W. Yi, K. Lu, and R. M. German, "Shape Distortion and Dimensional Precision in Tungsten Heavy Alloy Liquid Phase Sintering." Proceeding of 15th International Plansee Seminar, G. Kneringer et. al, ed., Plansee AG, Reutte 2001.

Teaching papers:

1. C. B. Burgoyne, M. Roman, C. Evia, C. Suchicital, K. Lu, J. Jinscheck, "Work-in-Progress: Development and Implementation of a Web-Based Teaching Resource Site to Prepare International Teaching and Research Faculty for the American Classroom," Proceeding of ASEE/IEEE Frontiers in Education Conference (San Diego, CA, October 28-31, 2006), pp. M4G1-M4G2.
2. K. Lu, C. S. Kessler, "Nanotechnology Readiness among a Diverse Student Population," Proceeding of Mid-Atlantic Conference on the Scholarship of Diversity, Roanoke, VA, March 17-18, 2005.

Invited Talks:

1. 1. K. Lu, N. Yang, J. Zheng, "Effects of transition metals and external field on the evolution of polymer-derived Si-O-C ceramics," Materials Science and Engineering 2020 Conference, Pittsburgh, PA, October 4-8, 2020.
2. K. Lu, "Sintering behaviors of micron-sized features," Pan American Ceramics Congress and Ferroelectrics Meeting of Americas (PACC-FMAs 2020), Panama City, Panama, July 19-23, 2020.
3. N. Yang, K. Lu, "Porous SiOC bulk ceramic based on perhydropolysilazane (PHPS) and polysiloxane (PSO) pyrolysis," 44th International Conference and Expo on Advanced Ceramics and Composites (ICACC 2020), Daytona Beach, FL, January 26-31, 2020.
4. K. Lu, K. Bawane, N. Yang, "Polymer Derived Silicon Oxynitride (SiON) Coatings for Corrosion Protection of Steels," 44th International Conference and Expo on Advanced Ceramics and Composites (ICACC 2020), Daytona Beach, FL, January 26-31, 2020.
5. K. Lu, N. Yang, D. Erb, "Polymer Derived Functional High Temperature Materials," 44th International Conference and Expo on Advanced Ceramics and Composites (ICACC 2020), Daytona Beach, FL, January 26-31, 2020.
6. K. Lu, N. Yang, "Polymer Derived High Temperature Ti-SiOC," Materials Science & Technology 2019, Portland, Oregon, September 29-October 3, 2019.

7. K. Lu, "Porous Silicon Oxycarbide Without Foreign Additives," Eleventh International Conference on High-Performance Ceramics (CICC-11), Kunming, China, May 25-29, 2019.
8. K. Lu, "Phase Development of Silicon Oxycarbide Nanocomposites Under Different Conditions," Eleventh International Conference on High-Performance Ceramics (CICC-11), Kunming, China, May 25-29, 2019.
9. K. Lu, K. Bawane, K. Ning, "Nanostructured Ferritic Alloy-Silicon Carbide Composites for Nuclear Applications," 2019 TMS Annual Meeting & Exhibition, San Antonio, Texas, March 10-14, 2019.
10. K. Lu, D. Erb, L. Wang, and R. Ma, "Silicon Oxycarbide Through Flash Pyrolysis," 43rd International Conference and Exposition on Advanced Ceramics and Composites, Daytona Beach, FL, January 27-February 1, 2019.
11. K. Lu, "Sintering Behaviors of Micron- and Submicron-sized Features," Lehigh University MSE Departmental Seminar speaker, March 27, 2018.
12. K. Lu, Donald Erb, "Effect of Reactive Additives on Polysiloxane Derived SiOC Porous Ceramics," 42nd International Conference and Exposition on Advanced Ceramics and Composites, January 21-26, Daytona Beach, FL, 2018.
13. K. Lu, H. Ju, "Sintering Behaviors of Micron- and Submicron-Sized ZnO Features," International Conference on Sintering 2017, San Diego, CA, November 12-16, 2017
14. K. Lu, K. Ning, "SiC-NFA Composites for Nuclear Cladding Applications," Frontiers in Materials Processing Applications, Research and Technology, Bordeaux, France, July 9-12, 2017.
15. K. Lu, D. Erb, "Additive and Pyrolysis Atmosphere Effects on High Surface Area Silicon Oxycarbides," Frontiers in Materials Processing Applications, Research and Technology, Bordeaux, France, July 9-12, 2017.
16. K. Lu, "Solid Oxide Fuel Cell Interconnect Coatings," 12th Pacific Rim Conference on Ceramic and Glass Technology, Waikaloa, HI, May 21-26, 2017.
17. K. Lu, "Polysiloxane-Derived Porous SiOC Ceramics," 12th Pacific Rim Conference on Ceramic and Glass Technology, Waikaloa, HI, May 21-26, 2017.
18. K. Lu, K. Ning, K. Bawane, "Fabrication of Novel NFA-SiC Composites for Nuclear Applications," AFC Integration Meeting, Oak Ridge, TN, March 28-30, 2017.
19. K. Lu, "Polymer Derived Ceramics and a World of Possibilities on Research, Education, and Friendship," Humboldt Colloquium: Global Research in the 21st Century: Perspectives of the U.S. Humboldt Network, Washington D.C., March 2-4, 2017.
20. K. Lu, "Material Needs and Developments in Energy Conversion, Harvesting, and Storage," Fifth Biennial Conference of the Combined Australian Materials Societies 2016, Melbourne, Australia, December 6-8, 2016 (Keynote).
21. K. Lu, "Understanding Current State of Materials Education for a Successful Career Tomorrow," Materials Science & Technology 2016, Salt Lake City, UT, October 23-27, 2016.
22. K. Lu, K. Shen, "Study of Cathodes and Interconnect Coatings for Solid Oxide Fuel Cells," Materials Day Symposium-Ceramics for Energy, Darmstadt, Germany, April 29, 2016.
23. K. Lu, K. Shen, "Perovskite-type Cathode Materials and Coatings for Solid Oxide Fuel Cells," 2016 145th TMS Annual Meeting & Exhibition, Nashville, TN, February 14-18, 2016.

24. K. Lu, “FIB Guided Anodization Patterning, Morphology Control, and Feature Array Transfer,” University of North Carolina, Charlotte, 2/17/2016-2/18/2016.
25. K. Lu, “Growing Materials Education Diversity for a Successful Career Tomorrow,” Materials Science and Engineering 2015 Conference, Columbus, OH, October 4-8, 2015.
26. K. Lu, Z. Tang, Z. Hu, “Silicon Carbide and Oxide Dispersion Strengthened Steel Cladding Materials for Nuclear Applications,” Materials Science and Engineering 2015 Conference, Columbus, OH, October 4-8, 2015.
27. F. Shen, K. Lu, “Properties of Electrodeposition Co and Electrophoresis Sm0.2Ce0.8O1.9 Protective Layer on AISI 441 for Solid Oxide Fuel Cells,” Materials Science and Engineering 2015 Conference, Columbus, OH, October 4-8, 2015.
28. K. Lu, K. Shen, “Study of Different New Cathode Materials and Electrocatalyst Incorporation in Solid Oxide Fuel Cells,” The 11th International Conference of Pacific Rim Ceramic Societies (PacRim-11), Jeju Island, South Korea, August 30-September 4, 2015.
29. K. Lu, F. Shen, “(La0.6Sr0.4)xCo0.2Fe0.8O3 and Related Cathode Materials in Solid Oxide Fuel Cells,” 2015 TMS 144th Annual Meeting & Exhibition, Walt Disney World, Orlando, FL, March 15-19, 2015.
30. K. Lu, “3D Microstructure Characterization of Nanoparticle-based Material Sintering,” the International Conference on Sintering 2014, Dresden, Germany, August 24-28, 2014 (Keynote).
31. K. Lu, “Patterning, Morphology Control, and Feature Array Transfer through Focused Ion Beam Guided Anodization,” University of Virginia, Charlottesville, VA, April 14, 2014.
32. K. Lu, M. Gervasio, “Formation and Characterization of Nanoparticle based Sub-micron Structures,” 38th International Conference and Expo on Advanced Ceramics and Composites, Daytona Beach, FL, January 26-31, 2014.
33. K. Lu, “Development of a Nanoparticle-based Surface Templating Approach,” 12th International Conference on Ceramic Processing Science, Portland, Oregon, August 4-7, 2013.
34. K. Lu, W. Li, “Different Cathode Interactions and Performance Behaviors in Solid Oxide Fuel Cells,” 10th Pacific Rim Conference on Ceramic and Glass Technology, San Diego, California, June 2-7, 2013.
35. K. Lu, “Material Uses and Challenges in Solid Oxide Fuel Cells,” Departmental seminar at Technische Universität Darmstadt, Darmstadt, Germany, November 2012.
36. K. Lu, B. Chen, K. Ramsburg, “ZnO Nanoparticle-based Surface Templating,” 36th International Conference and Expo on Advanced Ceramics and Composites, Daytona Beach, Florida, January 22-27, 2012.
37. K. Lu, T. Jin, “Interactions of Electrolyte-(La0.8Sr0.2)xMnO3 Air Electrode Interconnect Tri-layers for Solid Oxide Fuel Cells,” 36th International Conference and Expo on Advanced Ceramics and Composites, Daytona Beach, Florida, January 22-27, 2012.
38. K. Lu, W. Li, J. Walz, “Understanding of Silica-Kaolinite Composite Sintering,” Materials Science & Technology 2011 Conference and Exhibit (MS&T '11), Columbus, OH, October 16-20, 2011.
39. K. Lu, “Search and Study of a Solid Oxide Fuel Cell Seal Material,” 2011 TMS Annual Meeting & Exhibition, San Diego, CA, February 27-March 3, 2011.
40. K. Lu, B. Chen, Z. Tian, “Understanding Effect of Surface Morphology during Focused Ion Beam Guided Anodization,” 35th International Conference & Exposition on Advanced Ceramics & Composites, Daytona Beach, FL, January 23-28, 2011,.

41. K. Lu, “Nanoparticle-Based Material Processing and Templating,” Ohio State University, Columbus, OH, May 22, 2009.
42. K. Lu, “Energy and Nanoscale Materials,” University of Maryland at Baltimore County, Baltimore, MD, May 9, 2008.
43. K. Lu, “Correlating Microscopic and Macroscopic Aspects in Solid-State Sintering,” Extrude Hone Corporation, Irwin, PA, November 30, 2004.
44. K. Lu, “Particle Packing, Strength Evolution, and Densification in Solid-State Sintering,” Naval Research Laboratory, Arlington, VA, October 22, 2004.
45. K. Lu, “Battery Research and Technology,” Advanced Materials Laboratory at Sandia National Lab, March 15, 2004