

Professor Kathy Lu's Group Publications and Invited Talks

Updated June 5, 2019

Books:

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.
4. 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.
5. T. Hinklin, K. Lu, Processing of Nanoparticle Structures and Composites: Ceramic Transactions, Volume 208, ISBN: 978-0-470-40846-9, August 2009, Wiley.

Book Chapters:

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:

159. K. Ning, K. Lu, "Understanding ion irradiation resistance of a silicon diffused nanostructured ferritic alloy-chromium carbide-carbon composite," Composites Part B, accepted.
158. Y. Bai, J. Zhao, Y. Li, Z. Lv, K. Lu, "Preparation and photocatalytic performance of TiO₂/PbTiO₃ fiber composite enhanced by external force induced piezoelectric field," Journal of the American Ceramic Society, accepted.

157. 158. K. Bawane, D. Erb, K. Lu, "Carbon Content and Pyrolysis Atmosphere Effects on Phase Development in SiOC Systems," *Journal of the European Ceramic Society*, 39, 2846–2854, 2019.
156. K. Lu, D. Erb, K. Bawane, N. Yang, "Comparison of Traditional and Flash Pyrolysis of Different Carbon Content Silicon Oxycarbides," *Journal of the European Ceramic Society*, 39 (10), 3035-3041, 2019.
155. Y. Lin, K. Lu, R. Davis, "Patterning of ZnO Quantum Dot and PMMA Hybrids with a Solvent Assisted Technique," *Langmuir*, 35 (17) 5855-5863, 2019.
154. L. Wang, K. Lu, R. Ma, "Effects of Different Polymer Precursors on the Characteristics of SiOC Bulk Ceramics," *Applied Physics A*, 125, 395 (13 pages), 2019.
153. K. Lu, M. Gervasio, "Simulation Study of Nanoparticle-Polymer Organic Suspension Stability," *Advanced Theory and Simulations*, 2, 1900010 (14 pages), 2019. <https://doi.org/10.1002/adts.201900010>.
152. L. Wang, K. Lu, "Phase Development of Silicon Oxycarbide Nanocomposites During Flash Pyrolysis," *Journal of Materials Science*, 54(8), 6073-6087, 2019.
151. M. Gervasio, K. Lu, "Monte Carlo Simulation Modeling of Nanoparticle-Polymer Co-Suspensions," *Langmuir*, 35 (1), 161–170, 2019.
150. K. Ning, K. Lu, R. Bortner, "High dose self-ion irradiated silicon carbide with nanostructured ferritic alloy aid," *Journal of Materials Science*, 54(1), 605–612, 2019.
149. M. Gervasio, K. Lu, "Sub-Micron Features from Polymer-Derived SiOC via Imprint Lithography," *Journal of the European Ceramic Society*, 39, 825-831, 2019.
148. K. Shen, K. Lu, "Comparison of Different Perovskite Cathodes in Solid Oxide Fuel Cells," *Fuel Cells*, accepted, 18(4), 2018, 457–465. DOI: 10.1002/fuce.201800044
147. K. Ning, H. Ju, K. Lu, "Effects of Ceramic Types on Evolution of Micron-Sized Features During Sintering," *Journal of the American Ceramic Society*, 102(2) 569-577, 2019.
146. J. Zhao, Y. Liu, Y. He, K. Lu, "Li₄Ti₅O₁₂ epitaxial coating on LiNi_{0.5}Mn_{1.5}O₄ surface for improving the electrochemical performance through solvothermal-assisted processing," *Journal of Alloys and Compounds*, 779 (30) 978-984, 2019.
145. H. Ju, K. Ning, K. Lu, "Atmosphere Effects on Micron-Sized ZnO Ridges During Sintering," *Journal of the European Ceramic Society*, 38 (15), 5007-5014, 2018.
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143. K. Ning, K. Lu, "Fundamental Understanding of Centrifugal Micromolding for High Fidelity Patterns," *Journal of the European Ceramic Society*, 38 (15), 5167-5173, 2018.
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139. K. Lu, L. Wang, "Accelerated Polymer to SiOC Nanocomposite Conversion," *Annals of Materials Science and Engineering*, 2018; 3(1): 1030 (4 pages).
138. K. Ning, K. Lu, "Water Vapor Thermal Treatment of Silicon Carbide-Nanostructured Ferritic Steel Alloy (SiC-NFA) Composite Materials," *Applied Surface Science*, 452, 248-

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137. K. Ning, D. Bai, K. Lu, "Study of Self-Ion Irradiated Nanostructured Ferritic Alloy (NFA) and Silicon Carbide-Nanostructured Ferritic Alloy (SiC-NFA) Cladding Materials," *Nucl. Instr. Meth. Phys. Res. B*, 427, 44-52, 2018.
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117. F. Shen, K. Lu, "Co₃O₄/Sm-doped CeO₂ (SDC)/Co₃O₄ Tri-layer Coating on AISI 441 Interconnect for Solid Oxide Fuel Cells," *ACS Applied Materials & Interfaces*, 9 (7), 6022–6029, 2017.
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111. F. Shen, K. Lu, "Perovskite-type La_{0.6}Sr_{0.4}Co_{0.2}Fe_{0.8}O₃, Ba_{0.5}Sr_{0.5}Co_{0.2}Fe_{0.8}O₃, and Sm_{0.5}Sr_{0.5}Co_{0.2}Fe_{0.8}O₃ Cathode Materials for Solid Oxide Fuel Cells," *Electrochemical Acta*, 211, 445–452, 2016.
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107. F. Shen, K. Lu, "Comparative Study of La_{0.6}Sr_{0.4}Co_{0.2}Fe_{0.8}O₃, Ba_{0.5}Sr_{0.5}Co_{0.2}Fe_{0.8}O₃ and Sm_{0.5}Sr_{0.5}Co_{0.2}Fe_{0.8}O₃ Cathodes and the Effect of Sm_{0.2}Ce_{0.8}O₂ Block Layer in Solid Oxide Fuel Cells," *International Journal of Hydrogen Energy*, 40, 16457-16465, 2015.
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Conference Proceedings:

Technical papers:

22. 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.
21. 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.
20. 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. Manjooan, R. Murakami, G. Pickrell, page 57-64.
19. K. Lu, B. Chen, "Single Nanometer TiO₂ Particle Synthesis and Soft Lithographic Molding," *Proceedings of 2011 NSF Engineering Research and Innovation Conference*, Atlanta, Georgia, January 4-7, 2011.
18. K. Lu, B. Chen, Z. Tian, "Directed Patterning: Focused Ion Beam Guided Anodization," *Proceedings of 2011 NSF Engineering Research and Innovation Conference*, Atlanta, Georgia, January 4-7, 2011.
17. W. Li, K. Lu, J. Y. Walz, "Freezing Behavior and Properties Of Freeze Cast Kaolinite-Silica Porous Nanocomposite," *Ceramic Transactions*, *Proceeding of Materials Science & Technology 2010 Conference and Exhibit (MS&T '10)*, October 17-21, 2010, Houston, TX, John Wiley & Sons, 2011, p57-68.
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Teaching papers:

2. 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.
1. 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

37. K. Lu, "Porous Silicon Oxycarbide Without Foreign Additives," Eleventh International Conference on High-Performance Ceramics (CICC-11), Kunming, China, May 25-29, 2019.
36. 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.
35. 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.
34. 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.
33. K. Lu, "Sintering Behaviors of Micron- and Submicron-sized Features," Lehigh University MSE Departmental Seminar speaker, March 27, 2018.
32. 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.
31. 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.
30. 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.
29. 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.
28. K. Lu, "Solid Oxide Fuel Cell Interconnect Coatings," 12th Pacific Rim Conference on Ceramic and Glass Technology, Waikaloa, HI, May 21-26, 2017.
27. K. Lu, "Polysiloxane-Derived Porous SiOC Ceramics," 12th Pacific Rim Conference on Ceramic and Glass Technology, Waikaloa, HI, May 21-26, 2017.

27. 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.
26. 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.
25. 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).
24. 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.
23. 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.
22. 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.
21. K. Lu, "FIB Guided Anodization Patterning, Morphology Control, and Feature Array Transfer," University of North Carolina, Charlotte, 2/17/2016-2/18/2016.
22. K. Lu, "Growing Materials Education Diversity for a Successful Career Tomorrow," Materials Science and Engineering 2015 Conference, Columbus, OH, October 4-8, 2015.
20. 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.
19. F. Shen, K. Lu, "Properties of Electrodeposition Co and Electrophoresis $\text{Sm}_{0.2}\text{Ce}_{0.8}\text{O}_{1.9}$ Protective Layer on AISI 441 for Solid Oxide Fuel Cells," Materials Science and Engineering 2015 Conference, Columbus, OH, October 4-8, 2015.
18. 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.
17. K. Lu, F. Shen, " $(\text{La}_{0.6}\text{Sr}_{0.4})_x\text{Co}_{0.2}\text{Fe}_{0.8}\text{O}_3$ and Related Cathode Materials in Solid Oxide Fuel Cells," 2015 TMS 144th Annual Meeting & Exhibition, Walt Disney World, Orlando, FL, March 15-19, 2015.
16. K. Lu, "3D Microstructure Characterization of Nanoparticle-based Material Sintering," the International Conference on Sintering 2014, Dresden, Germany, August 24-28, 2014 (Keynote).
15. K. Lu, "Patterning, Morphology Control, and Feature Array Transfer through Focused Ion Beam Guided Anodization," University of Virginia, Charlottesville, VA, April 14, 2014.
14. 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.
13. 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.
12. K. Lu, "Development of a Nanoparticle-based Surface Templating Approach," 12th International Conference on Ceramic Processing Science, Portland, Oregon, August 4-7, 2013.

11. K. Lu, "Material Uses and Challenges in Solid Oxide Fuel Cells," Departmental seminar at Technische Universität Darmstadt, Darmstadt, Germany, November 2012.
10. 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.
9. K. Lu, T. Jin, "Interactions of Electrolyte-(La_{0.8}Sr_{0.2})_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.
8. 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.
7. 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,.
6. 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.
5. K. Lu, "Nanoparticle-Based Material Processing and Templating," Ohio State University, Columbus, OH, May 22, 2009.
4. K. Lu, "Energy and Nanoscale Materials," University of Maryland at Baltimore County, Baltimore, MD, May 9, 2008.
3. K. Lu, "Correlating Microscopic and Macroscopic Aspects in Solid-State Sintering," Extrude Hone Corporation, Irwin, PA, November 30, 2004.
2. K. Lu, "Particle Packing, Strength Evolution, and Densification in Solid-State Sintering," Naval Research Laboratory, Arlington, VA, October 22, 2004.
1. K. Lu, "Battery Research and Technology," Advanced Materials Laboratory at Sandia National Lab, March 15, 2004.