Eric J. Peterson Curriculum Vitae 10-29-18

EDUCATION

B.S. University of New Mexico Geology (Chemistry minor) Spring, 1978.
Ph.D. University of New Mexico Nanoscience and Microsystem Engineering (Chemical Engineering minor) Fall 2014

HONORS AND AWARDS

2009 Western States Catalysis Club 2nd place Student Talk Award
2011 North American Catalysis Society Kokes Award

EMPLOYMENT

1984-1993 Los Alamos National Laboratory, Chemical Technician
1993-2004 Los Alamos National Laboratory, Technical Staff Member
2008-2014 University of New Mexico, Research Assistant
2014-2015 University of New Mexico, Post Doc
2015-present University of New Mexico, Senior Research Scientist

PAST AREAS OF RESEARCH INTEREST

-Synthesis and characterization of ceramic high Tc superconductors
-Rietveld analysis**/** X-ray/Neutron diffraction
-High Tc superconductor crystal structure and microstructure
-Crystal structure of uranium alloys
-Crystal structure of Laves phases
-Analysis of oxide buffer-layer and superconducting films
-Texture analysis
-Size/strain analysis

CURRENT AREAS OF RESEARCH INTEREST

-Heterogeneous catalysis
-Synthesis, structure and properties of metallic and intermetallic nanoparticles for catalysis.
-Rietveld analysis**/** X-ray/Neutron diffraction
-X-ray absorption spectroscopy.
-Aerosol synthesis of bimetallic alloys for catalysis.
-Single-atom heterogeneous catalysis.

PRESENTATIONS (PRESENTING AUTHOR)

1. *Quantitative Analysis of Pt on Industrially-Relevant Catalyst Supports* 67th Denver X-Ray Conference 2018 Denver
2. *Stabilization of Pd sintering on La-stabilized gamma-alumina* 22nd North American Catalysis Society Meeting 2011 Detroit
3. *Stable Sub-Nanometer Pd Species on Alumina Surfaces* 21st North American Catalysis Society Meeting 2009 San Francisco
4. *Alumina-Supported Palladium Catalyst Crystallite Size Determination by EXAFS,* XRD, and TEM. 57th Denver X-Ray Conference 2008 Denver
5. *Synthesis and Characterization Of PdZn Catalyst For Steam Reforming Of Methanol.* American Chemical Society 2008 New Orleans

6. *Intensity Vs. Resolution And Peak Shape In X-Ray Diffraction: Single And Double Goebel Mirror Configurations Compared to Standard Parafocusing Optics.* ICDD Meeting 2003 Philadephia
7. *Rietveld Refinements of U-Nb Alloys.* 51st Denver X-Ray Conference 2002 Colorado Springs
8. *X-Ray Diffraction Mapping Of YBCO Superconducting Tape on a Mesostructural Scale.* Materials Research Society 2001 Boston
9. *Neutron Diffraction Analysis Of (Y,RE)Ba(2)Cu(3)O(7-x) (RE=Yb,Er, Ho,Dy).* Hippo Neutron Diffractometer Workshop 2001Santa Fe
10. *X-Ray Diffraction Analysis of BSCCO And YBCO Superconducting Films.* (Invited) American Ceramic Society Cincinnati 1997
11. *Thermo-Mechanical Processing Of Silver Alloy-Clad Tl-1223 Superconducting Tapes.* Materials Research Society Boston 1996
12. *Two-Compound Syntheses of Single Layer Thallium Superconductors. (Invited)* Materials Research Society Boston 1995
13. *Production of Thallium Single-Layer Superconductor Powders by the Two Zone Method* Materials Research Society Spring San Francisco 1994
14. *Bulk and Powder In Tube Processing Of Tl1-xPbx(Ba0.2Sr0.8)2Ca2Cu30x 1223 Superconductor*. Materials Research Society Boston 1993
15. *Precursor Route Synthesis And Characterization Of Tl1- xPbx(Ba0.2Sr0.8)2Ca2Cu30x1223 Superconductor*. Materials Research Society San Francisco 1993
16. *XRD Crystallite Size and Strain Analysis of BSCCO Superconducting Thin Films*. 41st Denver X-Ray Conference Colorado Springs 1992

PATENT

Superconducting structure including mixed rare earth barium-copper compositions
United States Patent PCT/US1999/020949 Issued September 14, 1999
C. Kwon; Q. Jia, S. R. Foltyn, J. L. Smith, E. J. Peterson, and W. L. Hults.

JOURNAL ARTICLES AND REPORTS

1. Riley, C.; Zhou, S.; Kunwar, D.; De La Riva, A.; Peterson, E.; Payne, R.; Gao, L.; Lin, S.; Guo, H.; Datye, A., Design of Effective Catalysts for Selective Alkyne Hydrogenation by Doping of Ceria with a Single-Atom Promotor. *Journal of the American Chemical Society* **2018**.
2. Pham, H. N.; Howe, J. Y.; Ghosh, A.; Melton, M.; Kunwar, D.; Peterson, E. J.; Datye, A. K., Using a Combination of HAADF and SE Imaging to Locate Pt Nanoparticles within a Mesoporous Silica Diesel Oxidation Catalyst. *Microscopy and Microanalysis* **2018,** *24* (S1), 1700-1701.
3. Arbulu, R. C.; Jiang, Y. B.; Peterson, E. J.; Qin, Y., Metal–Organic Framework (MOF) Nanorods, Nanotubes, and Nanowires. *Angewandte Chemie International Edition* **2018,** *57* (20), 5813-5817.
4. Carrillo, C.; Xiong, H.; DeLaRiva, A. T.; Kunwar, D.; Peterson, E. J.; Challa, S. R.; Qi, G.; Oh, S.; Wiebenga, M. H.; Hernandez, X. I. P., Designing catalysts for meeting the DOE 150° C challenge for exhaust emissions. *Microscopy and Microanalysis* **2017,** *23* (S1), 2028-2029.
5. Carrillo, C.; DeLaRiva, A.; Xiong, H.; Peterson, E. J.; Spilde, M. N.; Kunwar, D.; Goeke, R. S.; Wiebenga, M.; Oh, S. H.; Qi, G., Regenerative trapping: How Pd improves the durability of Pt diesel oxidation catalysts. *Applied Catalysis B: Environmental* **2017,** *218*, 581-590.
6. Blake, J. M.; De Vore, C. L.; Avasarala, S.; Ali, A.-M.; Roldan, C.; Bowers, F.; Spilde, M. N.; Artyushkova, K.; Kirk, M. F.; Peterson, E., Uranium mobility and accumulation along the Rio Paguate, Jackpile Mine in Laguna Pueblo, NM. *Environmental Science: Processes & Impacts* **2017,** *19* (4), 605-621.

7. Xiong, H.; Peterson, E.; Qi, G.; Datye, A. K., Trapping mobile Pt species by PdO in diesel oxidation catalysts: Smaller is better. *Catalysis Today* **2016,** *272*, 80-86.
8. Rodriguez-Freire, L.; Avasarala, S.; Ali, A.-M. S.; Agnew, D.; Hoover, J. H.; Artyushkova, K.; Latta, D. E.; Peterson, E. J.; Lewis, J.; Crossey, L. J., Post Gold King Mine spill investigation of metal stability in water and sediments of the Animas River watershed. *Environmental science & technology* **2016,** *50* (21), 11539-11548.
9. Jones, J.; Xiong, H.; DeLaRiva, A. T.; Peterson, E. J.; Pham, H.; Challa, S. R.; Qi, G.; Oh, S.; Wiebenga, M. H.; Hernández, X. I. P., Thermally stable single-atom platinum-on-ceria catalysts via atom trapping. *Science* **2016,** *353* (6295), 150-154.
10. Cerrato, J. M.; Blake, J. M.; Hirani, C.; Clark, A. L.; Ali, A.-M. S.; Artyushkova, K.; Peterson, E.; Bixby, R. J., Wildfires and water chemistry: effect of metals associated with wood ash. *Environmental Science: Processes & Impacts* **2016,** *18* (8), 1078-1089.
11. Lee, S.; Youngblood, N.; Jiang, Y.; Peterson, E.; Stark, C.; Detchprohm, T.; Wetzel, C.; Brueck, S., Incorporation of indium on cubic GaN epitaxially induced on a nanofaceted Si (001) substrate by phase transition. *Applied Physics Letters* **2015,** *107* (23), 231905.
12. Peterson, E. J.; DeLaRiva, A. T.; Lin, S.; Johnson, R. S.; Guo, H.; Miller, J. T.; Kwak, J. H.; Peden, C. H.; Kiefer, B.; Allard, L. F., Low-temperature carbon monoxide oxidation catalysed by regenerable atomically dispersed palladium on alumina. *Nature communications* **2014,** *5*, 4885.
13. Paiz, J.; Fitch, J.; Peterson, E.; Hough, T.; Barnard, W.; Datye, A., Synthesis of PdO-ZnO mixed oxide precursors for PdZn intermetallic catalysts. *Crystal Research and Technology* **2014,** *49* (9), 699-707.
14. Johns, T. R.; Gaudet, J. R.; Peterson, E. J.; Miller, J. T.; Stach, E. A.; Kim, C. H.; Balogh, M. P.; Datye, A. K., Microstructure of Bimetallic Pt Pd Catalysts under Oxidizing Conditions. *ChemCatChem* **2013,** *5* (9), 2636-2645.
15. Johns, T. R.; Gaudet, J. R.; Peterson, E. J.; Miller, J. T.; Kim, C. H.; Balogh, M. P.; Datye, A. K., Microstructure of Bimetallic Pt-Pd Nanoparticles Under Working Conditions. *Microscopy and Microanalysis* **2013,** *19* (S2), 1660-1661.
16. Gaudet, J. R.; de la Riva, A.; Peterson, E. J.; Bolin, T.; Datye, A. K., Improved low-temperature CO oxidation performance of Pd supported on La-stabilized alumina. *ACS Catalysis* **2013,** *3* (5), 846-855.
17. Pylypenko, S.; Peterson, E. J.; Halevi, B.; Champagne, E.; Olson, T. S.; Atanassov, P., Hierarchically Structured Pt–Alloy Ethanol Oxidation Electrocatalysts. *Electrocatalysis* **2012,** *3* (3-4), 334-345.
18. Halevi, B.; Peterson, E. J.; Roy, A.; DeLariva, A.; Jeroro, E.; Gao, F.; Wang, Y.; Vohs, J. M.; Kiefer, B.; Kunkes, E., Catalytic reactivity of face centered cubic PdZnα for the steam reforming of methanol. *Journal of catalysis* **2012,** *291*, 44-54.
19. Peterson, E. J.; Halevi, B.; Kiefer, B.; Spilde, M. N.; Datye, A. K.; Peterson, J.; Daemen, L.; Llobet, A.; Nakotte, H., Aerosol synthesis and Rietveld analysis of tetragonal (β1) PdZn. *Journal of Alloys and Compounds* **2011,** *509* (5), 1463-1470.
20. Halevi, B.; Peterson, E. J.; DeLaRiva, A.; Jeroro, E.; Lebarbier, V. M.; Wang, Y.; Vohs, J. M.; Kiefer, B.; Kunkes, E.; Havecker, M., Aerosol-derived bimetallic alloy powders: bridging the gap. *The Journal of Physical Chemistry C* **2010,** *114* (40), 17181-17190.
21. Burton, P. D.; Peterson, E. J.; Boyle, T. J.; Datye, A. K., Synthesis of high surface area ZnO (0001) plates as novel oxide supports for heterogeneous catalysts. *Catalysis letters* **2010,** *139* (1-2), 26-32.
22. Peterson, E.; Conant, T.; Burton, P.; De La Riva, A.; Gabaldon, J.; Houk, L.; Pham, H.; Lovato, K.; Paiz, J.; Datye, A., D-57 Alumina-Supported Palladium Catalyst Crystallite Size Determination by EXAFS, XRD, and TEM. *Powder Diffraction* **2008,** *23* (2), 173-173.

23. Hettinger, J.; Cooley, J.; Hackenberg, R.; Peterson, E.; Kelly, A.; Papin, P.; Smith, J.; de Visser, A.; Graf, M., Specific heat and materials analysis on U1− xThxPt3 for 0⩽ x⩽ 0.05. *Physica B: Condensed Matter* **2005,** *359*, 1066-1068.
24. Day, G. A.; Hoover, M. D.; Stefaniak, A. B.; Dickerson, R. M.; Peterson, E. J.; Esmen, N. A.; Scripsick, R. C., Bioavailability of beryllium oxide particles: an in vitro study in the murine J774A. 1 macrophage cell line model. *Experimental lung research* **2005,** *31* (3), 341-360.
25. Stefaniak, A. B.; Hoover, M. D.; Day, G. A.; Dickerson, R. M.; Peterson, E. J.; Kent, M. S.; Schuler, C. R.; Breysse, P. N.; Scripsick, R. C., Characterization of physicochemical properties of beryllium aerosols associated with prevalence of chronic beryllium disease. *Journal of Environmental Monitoring* **2004,** *6* (6), 523-532.
26. Teter, D.; Tubesing, P.; Thoma, D.; Peterson, E. *Density prediction of uranium-6 niobium ingots*; Los Alamos National Lab.: 2003.
27. Stefaniak, A. B.; Hoover, M. D.; Dickerson, R. M.; Peterson, E. J.; Day, G. A.; Breysse, P. N.; Kent, M. S.; Scripsick, R. C., THEORETICAL AND EXPERIMENTAL-Surface Area of Respirable Beryllium Metal, Oxide, and Copper Alloy Aerosols and Implications for Assessment of Exposure Risk of Chronic Beryllium Disease. *AHIA Journal* **2003,** *64* (3), 297-305.
28. Stefaniak, A. B.; Hoover, M. D.; Dickerson, R. M.; Peterson, E. J.; Day, G. A.; Breysse, P. N.; Kent, M. S.; Scripsick, R. C., Surface area of respirable beryllium metal, oxide, and copper alloy aerosols and implications for assessment of exposure risk of chronic beryllium disease. *Aiha Journal* **2003,** *64* (3), 297-305.
29. Shepard, K.; Kedzie, M.; Peterson, E.; Fürst, J.; Kelly, M., Superconducting 345 MHz Two-Spoke Cavity for RIA. **2003**.
30. Peterson, E.; Hults, W.; Valdez, J.; Cordes, H.; Litteer, J., D042 Intensity vs. Resolution and Peak Shape in X-ray Diffraction; Single and Double Goebel Mirror Configurations Compared to Standard Parafocusing Optics. *Powder Diffraction* **2003,** *18* (2), 178-178.
31. Drymiotis, F.; Lashley, J.; Fisk, Z.; Peterson, E.; Nakatsuji, S., Physical properties of the β-Ti6Sn5 system. *Philosophical Magazine* **2003,** *83* (27), 3169-3178.
32. Zhu, Y.; Shu, L.; Peterson, E.; Peterson, D.; Mueller, F., Rietveld refinement of crystal chemistry of RBa4Cu3O8. 5+ δ (R= rare earth). *Journal of Physics and Chemistry of Solids* **2002,** *63* (1), 23-29.
33. Shepard, K.; Kedzie, M.; Peterson, E.; Kelly, M.; Fuerst, J., A Prototype Superconducting 345 MHz Two-Cell Spoke Cavity. **2002**.
34. Schwenterly, S.; Mehta, S.; Walker, M.; Jones, R.; Itoh, K.; Kuroda, T.; Wada, H.; Noto, K.; Fujine, Y.; Sato, T., HTS tapes and cables–BSCCO and applications. **2002**.
35. Groves, J. R.; Arendt, P. N.; Foltyn, S. R.; Jia, Q.; Holesinger, T. G.; Kung, H.; DePaula, R. F.; Dowden, P. C.; Peterson, E. J.; Stan, L., Recent progress in continuously processed IBAD MgO template meters for HTS applications. *Physica C: Superconductivity* **2002,** *382* (1), 43-47.
36. Cooley, J. C.; Hults, W. L.; Dauelsberg, L. B.; Thoma, D. J.; Peterson, E. J.; Teter, D. F.; Smith, J. L.; Kelly, A. M.; Lashley, J. C. *Unanticipated results in the uranium niobium alloy system*; Los Alamos National Laboratory: 2002.
37. Thoma, D. J.; Chen, K. C.; Baskes, M. I.; Peterson, E. J. *The effect of stoichiometry in C15 HfCo [sub 2]*; Los Alamos National Laboratory: 2001.
38. Serquis, A.; Zhu, Y.; Peterson, E.; Coulter, J.; Peterson, D.; Mueller, F., Effect of lattice strain and defects on the superconductivity of MgB 2. *Applied Physics Letters* **2001,** *79* (26), 4399-4401.
39. Peng, E.-J.; Wang, W.; Jo, W.; Ohnishi, T.; Marshall, A. F.; Hammond, R. H.; Beasley, M. R.; Peterson, E. J.; Ericson, R. E., In situ high rate growth of high temperature superconductor tapes. *IEEE transactions on applied superconductivity* **2001,** *11* (1), 3375-3378.
40. Park, B.; Peterson, E.; Lee, J.; Zeng, X.; Si, W.; Xi, X.; Jia, Q., Dielectric properties of Ba0. 6Sr0. 4TiO3 thin films with various strain states. *Integrated Ferroelectrics* **2001,** *39* (1-4), 271-280.

41. Park, B.; Peterson, E.; Jia, Q.; Lee, J.; Zeng, X.; Si, W.; Xi, X., Effects of very thin strain layers on dielectric properties of epitaxial Ba 0.6 Sr 0.4 TiO 3 films. *Applied Physics Letters* **2001,** *78* (4), 533-535.
42. Jo, W.; Peng, L.-J.; Wang, W.; Ohnishi, T.; Marshall, A.; Hammond, R.; Beasley, M.; Peterson, E., Thermodynamic stability and kinetics of Y–Ba–Cu–O film growth at high rates in atomic and molecular oxygen. *Journal of crystal growth* **2001,** *225* (2-4), 183-189.
43. Hammond, M. R. B.; Peng, L. S.; Wang, W.; Jo, W.; Ohnishi, T.; Marshall, A. F.; Hammond, R. H.; Beasley, M. R.; Peterson, E. J.; Ericson, R. *In situ high rate growth of high temperature superconductor tapes*; Los Alamos National Laboratory: 2001.
44. Groves, J. R.; Yashar, P. C.; Arendt, P. N.; DePaula, R. F.; Peterson, E. J.; Fitzsimmons, M. R., Ultra-thin bi-axially textured IBAD MgO template layers resolved by grazing incidence X-ray diffraction. *Physica C: Superconductivity* **2001,** *355* (3-4), 293-298.
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46. Groves, J. R.; Arendt, P.; Foltyn, S.; Jia, Q.; Holesinger, T.; Kung, H.; Peterson, E.; DePaula, R.; Dowden, P.; Stan, L., High critical current density YBa 2 Cu 3 O 7δ thick films using ion beam assisted deposition MgO bi-axially oriented template layers on nickel-based superalloy substrates. *Journal of Materials Research* **2001,** *16* (8), 2175-2178.
47. Groves, J.; Arendt, P.; Foltyn, S.; Jia, Q.; Holesinger, T.; Kung, H.; Peterson, E.; DePaula, R.; Dowden, P.; Stan, L., RAPID COMMUNICATIONS-High critical current density YBa2Cu3O7-d thick films using ion beam assisted deposition MgO bi-axially oriented template layers on nickel-based superalloy substrates. *Journal of Materials Research* **2001,** *16* (8), 2175-2178.
48. Dickerson, R.; Scripsick, R.; Day, G.; Stefaniak, A.; Peterson, E., TEM of BeO Aerosols: Materials Aspects of Method Development in the Study of Chronic Beryllium Disease. *MICROSCOPY AND MICROANALYSIS-NEW YORK-* **2001,** *7* (2), 482-483.
49. Chen, K. C.; Peterson, E. J.; Thoma, D. J., HfCo2 Laves phase intermetallics—part I: solubility limits and defect mechanisms. *Intermetallics* **2001,** *9* (9), 771-783.
50. Brown, G. W.; Hawley, M. E.; Peterson, E. J.; Coulter, J. Y.; Dowden, P. C.; Arendt, P. N.; Foltyn, S. R.; Mueller, F. M. *Characterizing transport current defects in 1-cm-wide YBa [sub 2] Cu [sub 3] O [sub 7-delta] coated conductors*; Los Alamos National Laboratory: 2001.
51. Brown, G.; Hawley, M.; Peterson, E.; Coulter, J.; Dowden, P.; Arendt, P.; Foltyn, S.; Mueller, F., Characterizing Transport Current Defects in 1-cm-Wide YBa 2 Cu 3 O 7-δ Coated Conductors. *MRS Online Proceedings Library Archive* **2001,** *689*.
52. Brown, G., Characterizing Transport Current Defects in 1-cm-Wide YBa2Cu3O7-∂ Coated Conductors GW Brown, ME Hawley, EJ Peterson b, JY Coulter b, PC Dowden b, PN Arendt b, SR Foltyn b, and FM Mueller b. **2001**.
53. Ayala, A.; Holesinger, T. G.; Peterson, E. J.; Archuleta, M., Phase Diagram Studies in the SrO-CuO-TiO 2 System; Applications to YBCO Coated Conductors. *MRS Online Proceedings Library Archive* **2001,** *689*.
54. Arendt, P. N.; Foltyn, S. R.; Jia, Q.; DePaula, R. F.; Dowden, P. C.; Kung, H.; Holesinger, T. G.; Stan, L.; Emmert, L. A.; Peterson, E. J. *Ion-beam assisted deposition of MgO with in situ RHEED monitoring to control Bi-axial texture*; Los Alamos National Laboratory: 2001.
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58. Zhang, X.; Kung, H.; Foltyn, S.; Jia, Q.; Peterson, E.; Peterson, D., Speeding up Film Deposition Rate: Its Effects on Microstructures of YBa 2 Cu 3 O y Superconducting Thick Films. *Journal of materials research* **1999,** *14* (4), 1204-1211.
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62. Zhu, Y.; Peterson, E.; Baldonado, P.; Coulter, J.; Peterson, D.; Mueller, F., Crystal structure and chemistry of four new RBa4Cu3O8. 5+ δ (R= Ho, Er, Tm and Yb) compounds. *Journal of alloys and compounds* **1998,** *281* (2), 137-145.
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64. Zhu, Y.; Baldonado, P.; Peterson, E.; Park, Y.; Manthiram, A.; Butt, D.; Peterson, D.; Mueller, F., Variation of oxygen content and crystal chemistry of YBa4Cu3O8. 5+ δ. *Physica C: Superconductivity* **1998,** *298* (1-2), 29-36.
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68. Cooley, J.; Hults, W., L; Peterson, E.; Smith, J., PrBa2Cu3O x Superconducting Powders. *International Journal of Modern Physics B* **1998,** *12* (29n31), 3254-3258.
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