

VALERIE J. LEPPERT

Professor
Materials Science and Engineering
University of California, Merced

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PROFESSIONAL PREPARATION

University of California, Davis	Mater. Sci. and Eng.	Postdoctoral Res. Assoc.	1995
Northwestern University	Mater. Sci. and Eng.	Ph.D.	1994
Sonoma State University	Physics/Chemistry	B.A. (with distinction)	1987
Sonoma State University	Biology	B.A.	1986

APPOINTMENTS

08/17 - present Faculty Equity Advisor, UC Merced, School of Engineering
07/16 - present Professor, Founding Faculty, UC Merced, School of Engineering
08/12 - 08/14 Faculty Accreditation Organizer (ABET), UC Merced, Mat. Sci. and Eng.
07/05 - 6/16 Associate Professor, Founding Faculty, UC Merced, School of Engineering
07/04 - 09/15 Founding Director, Imaging and Microscopy Facility (First Campus Centralized Research Facility), UC Merced, School of Engineering
08/06 - 08/09 Associate Director for Outreach and Education, NSF NSEC "Center Of Integrated Nanomechanical Systems"
07/04 - 08/07 Founding Director, Engineering Service Learning Program, UC Merced, School of Engineering
07/03 - 07/05 Assistant Professor, Founding Faculty, UC Merced, School of Engineering
07/03 - 07/05 Visiting Assistant Professor, UC Davis, Dept. Chem. Eng. and Mat. Sci.
08/01 - 07/03 Assistant Professional Researcher, UC Davis, Dept. Chem. Eng. and Mat. Sci.
11/99 - 08/01 Assistant Adjunct Professor, UC Davis, Dept. Chem. Eng. and Mat. Sci.
03/95 - 11/99 Lecturer and Post-Graduate Researcher, UC Davis, Dept. Chem. Eng. And Mat. Sci.
09/87 - 12/93 Research Assistant, Northwestern University, Dept. Mat. Sci. and Eng.
12/84 - 09/87 Biologist, Anatec Laboratories, Santa Rosa, CA
12/81 - 12/87 Sergeant, Combat Medic (91B), US Army Reserves, 6253d United States Army Hospital, Hamilton Field, Novato, CA

AREAS OF PROFESSIONAL EXPERTISE

- Synthesis and characterization of technological and environmental nano/microphases, with an emphasis on transmission electron microscopy and electron energy-loss spectroscopy
- Structure-property-performance-biological response relationships of nano/microphases
- Integration of research and education
- Problem-based learning and team learning/science
- Curriculum development (undergraduate, graduate) and assessment (ABET, WASC)

ACADEMIC INTERESTS AND ACTIVITIES

1. Research Facility Development:

- Founding Director for UC Merced Imaging and Microscopy Facility (first centralized research facility at UC Merced)
- Co-Founder of Electron Microscopy Materials Science Central Facilities at UC Davis (transfer of staff and equipment from Office of Research)

2. Curriculum Innovation:

- Founding Director of Engineering Service Learning program
- PI for NSF CLC seed grant to establish UC Merced EPICS (Engineering Projects in Community Service) program
- Partnered with Dean Jeff Wright to obtain \$1.2M endowment for Engineering Service Learning program (co-wrote proposal and presented it to donor)

3. Integration of Research and Teaching:

- UC Merced PI for NSF NSEC (duration = 10 years) that focused on providing summer research opportunities in nanoscale science and engineering at UC Merced and UC Berkeley to 20-25 UC Merced undergraduate students per year

4. Professional Activities:

- Advisory Board Member, UC Toxic Substances Research and Teaching Program
- Advisory Board Member, UC Presidents Postdoctoral Fellowship Program (goal of program is to prepare exceptional underrepresented scientists and engineers for a career in academia)
- Proposal Review Committee Member, Center for Functional Nanomaterials, Brookhaven National Laboratory
- Proposal Review Committee Member, National Center for Electron Microscopy
- Proposal Review Board Member, Molecular Foundry
- Users' Executive Committee Member, Molecular Foundry
- Ad-hoc Reviewer for SLAC National Accelerator Laboratory
- NSF Mail-In and Panel Reviewer

5. Mentoring and Outreach:

- UC Merced Engineering Service Learning mentor for students who constructed nanotechnology exhibits for the Castle Science and Technology Center in Atwater, CA
- Team transitioned in 2010 to building demonstration kits for science classes at Cruikshank Middle School in Merced, CA

PH.D. AND POST-DOCTORAL ADVISORS

R.P.H. Chang (Ph.D.), R.P. Van Duyne (Ph.D.), S.H. Risbud (Post-doctoral)

STUDENTS AND POST-DOCS SUPERVISED

Post-docs (2) – **Lilian Davila** (7/6 – 6/8, UC Merced, Asst. Prof., Engineering, UCM), **Jacek Jasinski** (3/4 – 6/8, UC Merced, Materials Characterization Theme Leader, Center for Renewable Energy, U. Louisville)

Graduate (7) – **Kennedy Nguyen** (M.S. UC Merced 2016 “Speciation and Health Risks of Atmospheric Nanoparticles”, UC Merced), **Aaron Cowles** (M.S. UC Merced 2015, Avogy), **Kevin Mercurio** (M.S. UC Merced 2014 “Guiding Cell Behavior in 2D, 3D, and Dynamic Environments”, Northrup-Grumman), **Gayatri Premehekharan** (Ph.D. UC Merced 2012 “Inflammatory mechanism induced by natural and engineered silica particles in human-derived macrophages at low non-cytotoxic doses”, Post-doctoral Researcher, UCSF), **Ashley Harvey** (Ph.D. UC Davis 2005 “Synthesis and atomic-level characterization of rare earth oxide nanoparticles with EELS and XAS”, Quallion), **Rebecca Chacon** (M.S. UC Davis 2004 “Characterization of electrochemically deposited PbTe thermoelectric nanowires”, Intel), **Geoff McCool** (M.S. UC Davis 2004 “Synthesis and characterization of sulfide and selenide nanoparticles”, Nanostellar)

Undergraduate (37) – UC Merced: Paul Sherrill, Ben Sherrill, Anthony Hayes, Ryan Dewitt, Kip Hensley, Nathan Graves, Matthew Nelson, Cameron Hoyle, Brian Kelley, Anita Ghia, Jaime Mendez, Mario Tirado, Kwyn Meagher, Jacob Peterson, Jose Mendez, Kevin Mercurio, Heather Jackson, Alex Yuen, Deborah Corvaglia, David Maginetti, Ariel Parker, Michael Urner, Shelby Skelton, Ome Herr, Joseph Silva, Moses Chun, Ian Ojeda-Vasquez, Matthew Robinson, Maeve O’Brien, Salvador Padilla, Annaliza Torres

UC Davis: Christina Zhang, Bridget Bonner, John Tseng, Cameron Shelton, Derek Shon, Jack Ostrowski

PH.D. AND MASTERS COMMITTEES

UC Merced: PhD - Rob Root, Emily Reed (Chair), Alicia Blancas (Chair), Gayatri Premehekharan, Miguel Diaz, Tessa Pinon, Silin Sa (Chair), Anley Tefera, Jasmine Armstrong; MS – Anley Tefera, Theresa Stelter, Aaron Cowles (Chair), Yang Liu, Kevin Mercurio (Chair), Kennedy Nguyen (Chair), Erin Ray

UC Davis: PhD - Kathy Pettigrew, Jill Johnson, Ivy Chu, Lia Stanciu, Joseph Woolman, Dan Hewitt, Robert Wright, Erik Woodbury

HONORS AND AWARDS

- 2018 Outstanding Woman Faculty Award, Women’s Programs, UC Merced
- 2017 Selected Participant, Kinetic Keynote Speaker, National Academies Keck Futures Initiative Workshop – Beyond Boundaries: 15 Years of Exploring Intersections in Science, Engineering and Medicine, Irvine, CA
- 2017 Participant, National Academy of Engineering 3rd Global Grand Challenges Summit, Washington, DC
- 2015 Invited Participant, National Academics Workshop on Integrating the Arts and Humanities into Science, Engineering and Medicine, Washington, DC
- 2015 Selected Participant, National Academies Keck Futures Initiative Workshop – Art, Science, Engineering and Medicine Frontier Collaborations: Ideation, Translation and Realization. Irvine, CA

- 2015 Participant, National Academy of Engineering 2nd Global Grand Challenges Summit, Beijing, China
- 2014 Selected Participant, Executive Leadership Academy: "Ten Years From Now: Leading In a Multicultural Environment", Center for Studies in Higher Education, UC Berkeley
- 2013 Dr. Fred Spiess Award for Distinguished Senate Service, UC Merced
- 2008 Invited Participant, National Academy of Engineering Japan-America Frontiers of Engineering Symposium, Kobe, Japan
- 2008 Invited Participant, "Senior TechLeaders: Leadership, the Final Frontier", Anita Borg Institute 2008 Senior TechLeaders Workshop, Georgia Tech, Atlanta, Georgia
- 2005 Research Fellowship, International Center for Young Scientists, Japan National Institute for Materials Science, Tsukuba, Japan
- 2004 Invited Participant, National Academy of Engineering 10th Annual Symposium on Frontiers of Engineering, Irvine, CA
- 2003 Finalist, UC Davis Academic Federation Award for Excellence in Research
- 2002 NSF Advance Fellows Award "Electron Microscopy of Nanomaterials"
- 1992 Alpha Sigma Mu - National Metallurgical and Materials Engineering Honor Society
- 1987 Graduation with Distinction in Chemistry, SSU

ORGANIZATIONS

- Materials Research Society
- American Chemical Society
- American Society of Engineering Education

PUBLICATIONS

1. F. Xiong, Y.Y. Wang, V. Leppert and R.P.H. Chang, Pulsed Laser Deposition of Amorphous Diamond-like Carbon Films with ArF (193 nm) Excimer Laser at Room Temperature, *J. Mater. Res.* **8**, 2265 (1993)
2. C. Jelen, S. Charriere, M. Razeghi, V. Leppert, R.P. Van Duyne and R.P.H. Chang, Growth of InSb/GaAs Layers on YIG-Coated GGG Substrate, in *Symposium D: Semiconductor Heterostructures for Photonic and Electronic Applications*, edited by Derek C. Houghton, Charles W. Wu, and Raymond T. Tung (*Mat. Res. Symp. Proc.* **281**) Warrendale, PA, 381 (1993)
3. S. Mahamuni, B.S. Bendre, V.J. Leppert, C.A. Smith, D. Cooke, S.H. Risbud and H.W.H. Lee, ZnO Nanoparticles Embedded in Polymeric Matrices, *Nanostructured Materials* **7**, 659 (1996)
4. T.J. Goodwin, V.J. Leppert, C.A. Smith, S.H. Risbud, M. Niemeyer, P.P. Power, H.W.H. Lee and L.W. Hrubesh, Synthesis of Nanocrystalline Gallium Nitride in Silica Aerogels, *Appl. Phys. Lett.* **69**, 3230 (1996)
5. V.J. Leppert, S.H. Risbud and M.J. Fendorf, High-Resolution Electron Microscopy and Microanalysis of ZnSe Quantum Dots in Glass Matrices, *Phil. Mag. Lett.* **75**, 29 (1997)

6. T.J. Goodwin, V.J. Leppert, S.H. Risbud, I.M. Kennedy and H.W.H. Lee, Synthesis of Gallium Nitride Quantum Dots Through Reactive Laser Ablation, *Appl. Phys. Lett.* **70**, 3122 (1997)
7. A. Navrotsky, S.H. Risbud, J.J. Liang and V.J. Leppert, Thermochemical Insights Into Rapid Solid-State Reaction Synthesis of Beta-SiAlON, *J. of Phys. Chem.* **101**, 9433 (1997)
8. N. Kumbhojkar, S. Mahamuni, V. Leppert and S.H. Risbud, Quantum Confinement Effects in Chemically Grown, Stable ZnSe Nanoclusters, *NanoStruct. Mat.* **10**, 117 (1998)
9. S. Guha, V.J. Leppert, S.H. Risbud and I. Kang, Observation of Excitonic States in PbSe Nanocrystals, *Solid State Commun.* **105**, 695 (1998)
10. V.J. Leppert, S. Mahamuni, N.R. Kumbhojkar and S.H. Risbud, Structural and Optical Characteristics of ZnSe Nanocrystals Synthesized in the Presence of a Polymer Capping Agent, *Mat. Sci. and Eng. B* **52**, 89 (1998)
11. V.J. Leppert, C.J. Zhang, H.W.H. Lee, I.M. Kennedy and S.H. Risbud, Observation of Quantum Confined Excited States of GaN Nanocrystals, *Appl. Phys. Lett.* **72**, 3035 (1998)
12. S. Guha, V.J. Leppert and S.H. Risbud, Identification of the Electronic States of Se₂⁻ Molecules Embedded in Borosilicate Glasses and in Se-Based Nanometer Sized Crystals, *J. of Non-Cryst. Sol.* **240**, 43 (1998)
13. S.H. Risbud and V.J. Leppert, Nanometer Characterization of Rapidly Densified Ceramics and Glass-Semiconductor Composites, in *Ceramic Microstructures: Control at the Atomic Level*, edited by Antoni P. Tomsia and Andreas M. Glaeser, Springer Publishing Company, New York, NY, pp. 199-207, (1998)
14. S. Mahamuni, K. Borgohain, B.S. Bendre, V.J. Leppert and S.H. Risbud, Spectroscopic and Structural Characterization of Electrochemically Grown ZnO Quantum Dots, *J. Appl. Phys.* **85**, 2861 (1999)
15. Y. Yang, V.J. Leppert, S.H. Risbud, B. Twamley, P.P. Power and H.W.H. Lee, Blue Luminescence from Amorphous GaN Nanoparticles Synthesized *In Situ* in a Polymer, *Appl. Phys. Lett.* **74**, 2262 (1999)
16. C.A. Smith, H.W.H. Lee, V.J. Leppert, and S.H. Risbud, Ultraviolet-Blue Emission and Electron-Hole States in ZnSe Quantum Dots, *Appl. Phys. Lett.* **75**, 1688 (1999)
17. J. Liang, A. Navrotsky, V.J. Leppert, M.J. Paskowitz, S.H. Risbud, T. Ludwig, H.J. Seifert, F. Aldinger and M. Mitomo, Thermochemistry of Beta-SiAlON (Si_{6-z}Al_zO_zN_{8-z}, Z= 0-3.6) Materials, *J. Mat. Res.* **14**, 4630 (1999)
18. J.C. Ostrowski, A.K. Murali, D.J. Duval, V.J. Leppert and S.H. Risbud, Processing of GaN Powders Suspended in a Silica Sol-Gel, *Abstracts of Papers of the American Chemical Society* **217**, U492, (1999)
19. H.W.H. Lee, C.A. Smith, V.J. Leppert and S.H. Risbud, Quantum Confined Electron-Hole States in ZnSe Quantum Dots, in *Semiconductor Quantum Dots*, edited by S.S. Moss, D. Ila, H.W.H. Lee and D.J. Norris, (Mater. Res. Soc. Symp. Proc. **571**), Warrendale, PA, 259 (2000)
20. I. Molodetsky, A. Navrotsky, M. Paskowitz, V. Leppert and S. Risbud, Energetics of X-ray Amorphous Zirconia and the Role of Surface Energy in its Formation, *J. of Non-Cryst. Sol.* **262**, 106 (2000)
21. Y. Yang, C. Tran, V. Leppert and S.H. Risbud, From Ga(NO₃)₃ to Nanocrystalline GaN: Confined Nanocrystal Synthesis Inside Silica Xerogels, *Mat. Lett.* **43**, 240 (2000)

22. A.K. Murali, V.J. Leppert and S.H. Risbud, Gallium Nitride Quantum Dots in a Silica Xerogel Matrix. *Mat. Sci. and Eng. B* **76**, 206 (2000)
23. M.R. Ranade, F. Tessier, A. Navrotsky, V.J. Leppert, S.H. Risbud, F.J. DiSalvo and C.M. Balkas, Enthalpy of Formation of Gallium Nitride, *J. of Phys. Chem. B* **104**, 4060 (2000)
24. B.R. Madewell, S.M. Griffey, M.C. McEntee, V.J. Leppert and R.J. Munn, Feline Vaccine-Associated Fibrosarcoma: An Ultrastructural Study of 20 Tumors (1996-1999), *Vet. Path.* **38**, 196 (2001) - cover article
25. A. Murali, A. Barve, V.J. Leppert, S.H. Risbud, I.M. Kennedy and H.W.H. Lee, Synthesis and Characterization of Indium Oxide Nanoparticles, *Nano. Lett.* **1**, 287 (2001)
26. V.J. Leppert, A.K. Murali, S.H. Risbud, M. Stender, P.P. Power, C. Nelson, P. Banerjee, and A.M. Mayes, High-Resolution Electron Microscopy and Microanalysis of Ordered Arrays of Size-Controlled Amorphous Gallium Nitride Nanoparticles Synthesized In-situ in a Block Copolymer Matrix, *Phil. Mag. B* **82**, 1047 (2002)
27. V.J. Leppert, A.S. Harvey, G.D. McCool, F.T. Quinlan, J. Feng, G. Shan, P. Stroeve, S.H. Risbud, B.D. Hammock, and I.M. Kennedy, Long-wavelength-emitting nanocrystals for bioassay applications, in *Nanoscale Optics and Applications*, edited by G. Cao, W.P. Kirk (SPIE Proceedings **4809**), Bellingham, WA, pp.110-121 (2002)
28. L.P. Davila, V.J. Leppert, and S.H. Risbud, Microstructure and Microchemistry of Silicon Particles Formed During Electrical-Discharge Machining, *J. of Mat. Sci. – Mat. in Elect.* **14**, 507 (2003)
29. Y.M. Zhou, C.Y. Zhong, I.M. Kennedy, V.J. Leppert, and K.E. Pinkerton, Oxidative Stress and NF_κB Activation in the Lungs of Rats: A Synergistic Interaction Between Soot and Iron Particles, *Toxic. and Appl. Pharm.* **190**, 157 (2003)
30. Y.M. Zhou, A. Aust, I.M. Kennedy, V.J. Leppert, S.V. Teague, and K.E. Pinkerton, Reduced Lung Cell Proliferation Following Short-Term Exposure to Ultrafine Soot and Iron Particles in Neonatal Rats: Key to Impaired Lung Growth?, *Inhal. Toxic.* **16**, 1 (2004)
31. J. Jasinski, I.M. Kennedy, K.E. Pinkerton, and V.J. Leppert, Surface Oxidation State of Combustion-Synthesized γ -Fe₂O₃ Nanoparticles Determined by Electron Energy-Loss Spectroscopy in the Transmission Electron Microscope, *Sensors and Actuators B: Chem.* **109**, 19 (2005)
32. V.J. Leppert, J. Jasinski, and K.E. Pinkerton, Surface Chemistry of Combustion-Synthesized Iron Oxide Nanoparticles Determined by Electron Energy-Loss Spectroscopy, in *Electron Microscopy of Molecular and Atom-Scale Mechanical Behavior, Chemistry and Structure*, edited by David C. Martin, David A. Muller, Paul A. Midgley, and Eric A. Stach (Mater. Res. Soc. Symp. Proc. **839**), Warrendale, PA, P2.7, (2005)
33. A. Harvey, B. Guo, I. Kennedy, S. Risbud, and V. Leppert, A Systematic Study of the Oxygen K-edge in the Cubic and Less Common Monoclinic Phases of the Rare Earth Oxides (Ho, Er, Tm, Yb) by Electron Energy Loss Spectroscopy, *J. of Phys. Cond. Mat.* **18**, 1 (2006)
34. S.C. Mui, J. Jasinski, V.J. Leppert, M. Mitomi, D.R. Sadoway, and A.M. Mayes, Microstructure Effects on the Electrochemical Kinetics of Vanadium Pentoxide Thin-Film Cathodes *J. Electrochem. Soc.* **153**, A1372 (2006)

35. J. Jasinski, I.M. Kennedy, K.E. Pinkerton, and V.J. Leppert, Spatially-Resolved Electron Energy-Loss Spectroscopy Studies of Iron Oxide Nanoparticles, *Microsc. Microanal.* **12** , 424 (2006)
36. J. Jasinski, V. J. Leppert, Si-Ty Lam, G. A. Gibson, K. Nauka, C. C. Yang, Zhang-Lin Zhou, Rapid Oxidation of InP Nanoparticles in Air, *Solid State Comm.* **141**, 624 (2007)
37. S. Newsam, E. Pernice, J. Jasinski, V. Leppert, Using Transmission Electron Microscopy to Quantify the Spatial Distribution of Nanoparticles Suspended in a Film, in *Computational Imaging V*, edited by C.A. Bouman, E.L. Miller, and I. Pollak (SPIE Proceedings **6498**), Bellingham, WA, 649812 (2007)
38. P. Dagtepe, V. Chikan, J. Jasinski, V.J. Leppert, Quantized Growth of CdTe Quantum Dots; Observation of Magic Sized CdTe Quantum Dots, *J. Phys. Chem. C* **111**, 14977 (2007)
39. J. Jasinski, V. J. Leppert, D. Zhang, J. Parra, and V. Katkanant, Application of Channeling-Enhanced Electron Energy-Loss Spectroscopy for Polarity Determination in ZnO Nanopillars, *Appl. Phys. Lett.* **92**, 093104 (2008)
40. D. Zhang, J. Jasinski, M. Dunlap, M. Badal, V.J. Leppert, V. Katkanant, Synthesis and Characterization of Silica Nanosprings by a Low Temperature Chemical Vapor Deposition, *Appl. Phys. A* **92**, 595 (2008)
41. N. Dahal, V. Chikan, J. Jasinski, and V.J. Leppert, Synthesis of Water Soluble Gold/Iron Alloy Nanoparticles, *Chem. Mat.* **20**, 6389 (2008)
42. G. Premasekharan, H.J. Forman and V.J. Leppert, Role of Surface Characteristics in the Production of Reactive Oxygen Species by Ambient Crystalline Silica and Engineered Silica Particles, *J. Free Rad. Bio. Med.* **45**, S22 (2008)
43. Lilian P. Dávila, Valerie J. Leppert, Eduardo M. Bringa, The mechanical behavior and nanostructure of silica nanowires via simulations, *Scripta Materialia* **60**, 843-846 (2009)
44. Z.J. Jiang, V. Leppert and D.F. Kelley, Static and Dynamic Emission Quenching in Core/Shell Nanorod Quantum Dots with Hole Acceptors, *J. Phys. Chem. C* **113**, 19161 (2009)
45. G. Premasekharan, H.J. Forman, and V. Leppert, Role of Particle Surface Characteristics in the Production of Reactive Oxygen Species and Cytokines by Engineered and Ambient Crystalline Silica, *J. Free Rad. Bio. Med* **47**, S129 (2009)
46. G. Premasekharan, K.D. Nguyen, H.J. Forman and V. Leppert, Engineered nano- and micron-sized silica particle-macrophage interactions: Effect of particle size and surface iron impurities on reactive oxygen species and lipid peroxidation production, *Abstracts of Papers of the American Chemical Society* **241**, 142-COLL (2011)
47. G. Premasekharan, K. Nguyen, J. Contreras, V. Ramon, V.J. Leppert, and H.J. Forman, Iron-mediated lipid peroxidation and lipid raft disruption in low-dose silica-induced macrophage cytokine production, *Free Rad. Bio. Med.* **51**, 1184 (2011)
48. K. Nguyen, G. Premasekharan, A. Yuen, H.J. Forman, and V.J. Leppert, Effect of Engineered Solid and Mesoporous Silica Particles Physical Properties on In Vivo Toxicity, in *Symposium LL: Biomimetic Engineering of Nano- and Microparticles*, edited by D. Discher (Mater Res. Soc. Symp. Proc. **1357**), Warrendale, PA, 1504 (2011)
49. X. Cai, H. Mirafzal, K. Nguyen, V. Leppert, and D.F. Kelley, Spectroscopy of CdTe/CdSe Type-II Nanostructures: Morphology, Lattice Mismatch, and Band-Bowing Effects, *J. Phys. Chem. C* **116**, 8118 (2012)

50. R. Hatano, K. Mercurio, J.I. Luna, D.E. Glaser, V.J. Leppert, and K.E. McCloskey, Endothelial cells derived from embryonic stem cells respond to cues from topographical surface patterns, *J. Biol. Engr.* **7**, 1 (2013)
51. K. Nguyen and V.J. Leppert, Analysis of Air Particulate Emissions Collected Downwind of an Automobile Shredding Operation: Implications for the Environment and Human Health, *MRS Advances* **1** (2016) DOI: <http://dx.doi.org/10.1557/adv.2016.520>
52. H. Zhang, L. Zhou, J. Yuen, N. Birkner, V. Leppert, P.O. O'Day, H.J. Forman, Delayed Nrf2-regulated antioxidant gene induction in response to silica nanoparticles, *Free Rad. Bio. Med.* **108**, 311 (2017) DOI: <https://doi.org/10.1016/j.freeradbiomed.2017.04.002>.
53. G. Premshkharan, K. Nguyen, H. Zhang, H.J. Forman, V.J. Leppert, Low Dose Inflammatory Potential of Silica Particles in Human-Derived THP-1 Macrophage Cell Culture Studies - Mechanism and Effects of Particle Size and Iron, *Chem. Biol. Interact.* **272**, 160 (2017)
54. K. Mercurio, W. Turner, K.E. McCloskey, V.J. Leppert, A Dynamic Rotation Device for Cell Attachment in Circular PDMS Microchannels, *Tissue Eng. Part C: Methods*, submitted.
55. K. Mercurio, A. Burns, J.I. Luna, K.E. McCloskey, V.J. Leppert, Crazing Pre-Stressed Polystyrene (PSP) Sheets for Cell Culture and Biological Applications, *J. of Mat. Sci. C*, submitted.
56. A. Pattammattel, V.J. Leppert, H.J. Forman and P.O. O'Day, Surface Oxidation and Iron Speciation on Carbon Nanoparticles for Realistic Environmental Nanotoxicity Assessments, in preparation.

INVENTION DISCLOSURES

1. Kevin Mercurio* and Jesus Luna, UC Case No. 2012-619, *Crazing Pre-Stressed polymer sheets for Biological and Cell Culture Applications*, dated March 13, 2012
2. Kevin Mercurio* and Jesus Luna, UC Case No. 2012-703, *Multifunctional Cell Culture Platform*, dated April 3, 2012
3. Kevin Mercurio* and William Turner, UC Case No. 2014-561, *Dynamic Rotational Device for Biological Studies*, dated December 19, 2013

GRANTS

- NSF "ADVANCE PLAN IHE: Center for Research, Excellence and Diversity in Team Science (CREDITS)", \$749,623, (Sub-contract from UCSB), Grant #HRD-1464064, (10/01/15 – 09/30/20). UCM PI, *UC Merced*
- NIH "Human Models of the Nanoparticulate-Induced Inflammatory/Antioxidant Axis in Aging", University of Southern California Lead Institution, UC Merced Subcontract \$543,343, R01 Grant #ES023864 (02/09/2015 - 02/08/2020). UCM Co-PI, *UC Merced*
- NIH "Human Models of the Nanoparticulate-Induced Inflammatory/Antioxidant Axis in Aging", \$42,347 (UC Merced Budget – Subcontract from University of Southern California), R56 Grant #ES023864 (06/01/2014-5/31/2015), UCM Co-PI, *UC Merced*
- San Joaquin Valley Air Pollution Control District, for Study of SJV Air Particulates, ~10K for graduate student (07/01/2012-06/30/2015), Characterization of San Joaquin air particulates to guide mitigation measures. Investigator, *UC Merced*

- NSF “ADVANCE/IT Catalyst GROW-STEM: Gaining Representation of Women (GROW) – Systemically Transforming Excellence in Merced (STEM)”, \$199,962, Grant #HRD-1008044 (09/01/10-08/31/12). Co-PI, *UC Merced*
- NSF IGERT: “Cellular and Molecular Mechanics and Bionanotechnology”, \$450,626 UC Merced subcontract, Grant #0965918 (08/01/10-07/31/16). Lead institution is the University of Illinois. Funding for 2 IGERT fellows per year. UCM PI, *UC Merced*
- NSF “Luminescent Solar Concentrators Based on Semiconductor Nanorods”, \$1,318,996, Grant #CHE-0934615 (09/01/09-08/31/14). Co-PI, *UC Merced*
- NSF NSEC “Center Of Integrated Nanomechanical Systems” \$12M to UC Berkeley, \$525,000 to UC Merced, Grant #EEC-0832819 (09/01/09-08/31/14 - renewal). UCM PI, *UC Merced*
- NSF “Development of a Screening Tool for Nanotoxicology”, \$99,923, Grant #CBET-0854574 (07/15/09-07/14/11), PI, *UC Merced*
- NSF “Rationally design bimetallic nanocatalysts for 1D nanomaterial synthesis”, \$263,653, Grant #CBET-0854537 (02/01/09-01/01/14). Co-PI, *UC Merced*
- NSF NUE “Bridging Education and Research: Practical Applications of Nanotechnology Grant”, \$199,926, #EEC-0741503 (01/01/08-12/31/9). Co-PI, *UC Merced*
- NSF Instrumentation for Materials Research grant: "IMR: Acquisition of Cryogenic Capabilities for Microanalysis of Hard-Soft Nanoscale Materials in the Transmission Electron Microscope", \$246,526, #DMR-0521685 (09/01/06-08/31/08). PI, *UC Merced*
- NSF Major Research Instrumentation grant: “MRI: Acquisition of a Powder X-ray Diffractometer for Environmental and Materials Research at UC Merced”, \$187,000, (08/01/06-07/31/08). Funded X-Ray Diffractometer for UC Merced Imaging and Microscopy Facility. Co-PI, *UC Merced*
- University of California, Office of the President, Presidents Postdoctoral Fellowship for Lilian Davila, \$80K, (07/01/2006-6/30/2008). Guided research design. Advisor, *UC Merced*
- University of California, Office of the President, Toxic Substances Research & Teaching Program Lead Campus Grant "Atmospheric Aerosols and Health", \$1,619,980 UC Davis, my support \$120,000 (7/01/05-6/30/2011). Investigator, *UC Merced*
- NSF Major Research Instrumentation grant: “Acquisition of a Scanning Electron Microscope for Environmental, Biological, and Materials Research and Education at UC Merced”, \$324K, #EAR-0420982 (7/01/05-6/30/07). Co-PI. *UC Merced*
- Hewlett-Packard, Two-year contract for the study of semiconductor quantum dots with electron microscopy, \$300K, (3/17/05-3/16/07), PI, *UC Merced*
- Private Gift to establish the "Foster Family Center for Engineering Service Learning - A National EPICS Site" at UC Merced, \$1.2M. Award announced 12/08/04 and comprised of \$1M endowment and \$200K in operating expenses over 5 years. Team effort with University Advancement and Dean of Engineering. *UC Merced*
- NSF Nanoscale Science and Engineering Center: "Center Of Integrated Nanomechanical Systems", \$12M, #EEC-0425914 (9/01/04-8/31/09). \$525K sub-award from UC Berkeley. UCM PI, *UC Merced*
- NSF Department-Level Reform of Undergraduate Engineering Education (DLR) grant: "Implementing Student Excellence - A Unique Opportunity," \$100K, #EEC-0431972

(8/01/04-7/31/06). Funded assessment of UC Merced Engineering Service Learning program. Co-PI, *UC Merced*

NASA Graduate Student Research Fellowship for Rebecca Chacon, stipend support to conduct research under my supervision, 2004, Advisor, *UC Merced*

NSF Engineering Projects in Community Service, competitive sub-award from Purdue University to establish UC Merced Engineering Service Learning Program, \$112K, #DUE-0231361 (2/01/03-1/31/08). PI, *UC Merced*

NSF Major Research Instrumentation: "Acquisition of an Atomic Resolution TEM for Advanced Analysis of Nanomaterials in the Environment, Agriculture and Technology", \$1.4M, #CTS-0321356, (10/01/3-9/30/06). Co-PI, *UC Davis*

Keck Foundation grant to Sonoma State University (*alma mater*) for a new microanalytical facility to support a new engineering M.S. program, \$500K (awarded 4/15/02). Contributed microscopy expertise and coauthored proposal with Dean of Natural Sciences Saeid Rahimi. *UC Davis*

NSF Advance Fellow: "Electron Microscopy of Nanomaterials", \$450K, #0137922 (4/01/02 - 3/31/06). Develop new techniques for characterization of nanomaterials. PI, *UC Davis*

NSF Nanoscale Interdisciplinary Research Team: "Applications of Semiconductor Quantum Dots in Environmental and Cell Biology", \$1M, #DBI-0102662 (7/01/01-6/31/06). Co-PI. *UC Davis*

TEACHING

Curriculum Development, UC Merced (*led or co-led development): (1) Materials Science and Engineering*, (2) Biological Engineering*, (3) General Education, (4) Biological Engineering and Small-scale Technologies Graduate Emphasis, (5) Engineering Service Learning Program*.

UC Merced Courses (*led or co-led development): **Core 1:** The World at Home I*, **Core 100:** The World at Home II*, **ENGR 045:** Introduction to Materials*, **MSE 095:** Lower Division Undergraduate Research, **ENGR 097/197 EPICS** – Engineering Service Learning*, **MSE 110:** Solid State Materials Properties*, **MSE 113:** Characterization of Materials*, **MSE 195:** Upper Division Undergraduate Research, **ENGR 170:** Introduction to Electron Microscopy*, **ENGR 170L:** Introduction to Electron Microscopy Laboratory*, **BEST 210:** Structure and Properties of Materials*, **ENGR 270:** Introduction to Electron Microscopy*, **ENGR 270L:** Introduction to Electron Microscopy Laboratory*, **BEST 292:** Group Meeting, **QSB 292:** Group Meeting, **BEST 293:** Journal Club, **BEST 295:** Graduate Research.

UC Davis Courses (*led or co-led development): **E-45:** Structure and Properties of Materials, **EMS-230:** Electron Microscopy Lecture*, **EMS-230L:** Laboratory for Electron Microscopy*, **EMS-232L:** Laboratory for Advanced Transmission Electron Microscopy*, California State Summer School for Mathematics and Science*.

REVIEWER SERVICES

Journals: *ACS Nano, Inorganic Chemistry, Scripta Materialia, The Journal of Physical Chemistry, Tissue Engineering, Journal of Luminescence Journal of Colloid and Interface Science, Journal of Materials, Journal of Physics A, Journal of Materials Research, Journal of Physical Chemistry Chemical Physics, Analyst, Materials Chemistry and Physics, Environmental Science and Technology, Journal of Materials Research, Journal of the Taiwan Institute of Chemical Engineers, Journal of Tissue Engineering, Crystal Growth and Design,*

Ultramicroscopy, Nanotechnology, Atmospheric Environment.

Funding Agencies: *National Science Foundation (Panel and Mail-In), Petroleum Research Foundation, National Center for Electron Microscopy (LBL), Molecular Foundry (LBL), Center for Functional Nanomaterials (BNL), Stanford Linear Accelerator, UC President's Postdoctoral Fellowship Program*

SELECT PROFESSIONAL AND UNIVERSITY SERVICE

Committees Chaired (Selected)

Chair	Venture Lab Atwater Facility Advisory Committee	2016-pres.
Chair	Graduate Education, School of Engineering Strategic Planning Retreat	2016-2017
Chair and/or member	UC Merced Faculty Search Committees for Chemistry, Bioengineering, Materials Science and Engineering, Adaptive and Functional Matter (Cross-Disciplinary in Natural Sciences and Engineering)	2003-2017
Chair	UC Systemwide Coordinating Committee on Graduate Affairs	2015-2016
Vice-Chair	UC Systemwide Coordinating Committee on Graduate Affairs	2014-2015
Co-Chair	Chancellor's Advisory Committee on the Status of Women	2014-2015, 2008-2010
Chair	UC Merced Graduate (and Research) Council	2012-2014, 2008-2009
Chair	Biological Engineering and Small-scale Tech. Graduate Emphasis	2010-2013
Vice-Chair	Executive Committee, School of Engineering	2009-2010
Vice-Chair	Graduate and Research Council	2006-2007

Committees Served (Selected)

Member	Search Committee for UC Vice-President for Research and Graduate Studies	2016
Member	UC President's UC Mexico Workgroup on Innovative Energy Materials	2015-2016
Member	UC Systemwide Academic Planning Council	2015-2016
Member	UC Systemwide Academic Council	2015-2016
Member	UC Systemwide Committee on Academic Computing/Communications	2015-2016
Member	UC Systemwide Committee on Agriculture and Natural Resources	2014-2016
Member	UC Systemwide Advisory Committee on the Status of Women	2015-2016
Member	CCGA Representative, UC Council of Graduate Deans	2014-2015
Member	UC Systemwide Coordinating Committee on Graduate Affairs	2013-2014
Member	Senate-Admin. Taskforce on Strategic Academic Focusing	2013-2014

Member	Academic Honesty Task Force	2013-2014
Member	Senate Administration Enrollment Management Committee	2012-2014
Member	Senate Administration Council on Assessment & Planning	2012-2014
Member	Divisional Council	2012-2014
Member	Graduate Dean Search Committee	2012-2013
Member	UC Systemwide Coordinating Committee on Graduate Affairs	2012-2013
Member	Science and Engineering II Building Committee	2005-2013
Member	Provost/Executive Vice-Chancellor Search Committee	2012
Member	School of Natural Sciences Dean Search Committee	2011
Member	School of Engineering Dean Search Committee	2010
Member	School of Engineering Resources Committee	2009-2010
Member	School of Engineering Executive Committee	2008-2009
Member	UC Systemwide Coordinating Committee on Graduate Affairs	2008-2009
Member	Committee on Academic Planning and Resource Allocation	2008-2009
Member	Divisional Council	2008-2009
Member	Committee on Committees (mid-year replacement)	2007-2008
Member	Rules and Elections	2005-2006
Member	UC Systemwide Strategy Group on Civic and Academic Engagement	2005
Member	Graduate and Research Council	2004-2006
Member	Core Course Planning Committee	2003-2006
Member	Holiday Parade Planning Committee	2003-2004