MARTHA LYNN MECARTNEY

Curriculum Vitae

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Birthplace Prairie du Chien, Wisconsin

Education

Ph.D.	Materials Science & Engineering, Stanford University, 1984 "High Temperature Reactions between Silicon Nitride and Silicate Glasses."
M.S.	Materials Science & Engineering, Stanford University, 1980
B.S.	Metallurgical Engineering and Materials Science, Case Institute of Technology, Case Western Reserve University, 1979
B.A.	Classics, Western Reserve College, Case Western Reserve University, 1979

Professional Experience

2014-	Professor, Step VI, Chemical Engr. & Materials Science, UC Irvine
2002 -2014	Professor of Chemical Engineering & Materials Science, UC Irvine
2012-2013	Sabbatical Leave, University of Michigan, Ann Arbor
2010-2012	Director, Program for Diversity in Engineering Education, UCI
2010-2012	Faculty Assistant to the Dean/ADVANCE Equity Advisor, UCI/HSSoE
2001-	Affiliated Faculty Member with the Newkirk Center for Science and Society
2000-	Affiliated Faculty Member with the National Fuel Cell Research Center
1999-	Affiliated Faculty Member with the Integrated Nanosystems Research Facility
1998–2000	Associate Dean of Graduate Studies, UC Irvine (50% position)
1994- 2001	Associate Professor, Chemical Engineering and Materials, UC Irvine
1995	Visiting Scientist, Los Alamos National Laboratory (summer)
1992-1994	Courtesy appointment in Chemical and Biochemical Engineering, UC Irvine
1990-1994	Associate Professor, Mechanical Engineering and MSE, UC Irvine
1989 -	Graduate faculty appointment in Interfacial Engineering UMN
1988 -	Appointed member of the graduate faculty in Ancient Studies UMN
1985-1990	Assistant Professor, Chemical Eng. and Materials Science, U. of Minnesota. (Official leave of absence from the University of Minnesota 1990-1992)
Winter 1989	Visiting Scientist, Rockwell Science Center, Thousand Oaks, CA.
1984–1985	Visiting Scientist, Max-Planck-Institut, Stuttgart, Germany

Current Research Areas

Design of multiphase ceramic materials
Influence of grain boundaries on ionic conductivity in solid oxide fuel cell electrolyte
(single and multi-cation doped zirconia, Ln-apatites, Sr-doped La-monazite)
Ceramics for use as nuclear waste host material and for composite nuclear fuel

Role of grain boundaries in superplastic deformation of ceramics
Atomic force microscopy metrology and nanoparticle characterization
Analytical transmission electron microscopy

Honors, Awards and Biographical Listings

Fellow, American Ceramics Society, 2013
Fariborz Maseeh Best Teaching Award, School of Engineering, UCI, 2008
Professor of the Year, Award for Excellence in Undergraduate Teaching, UCI, 2006
Presidential Award for Excellence in Math, Science, and Engineering Mentoring (White House/NSF) 2003
Crystal Award from MANA (Orange County Hispanic women's mentoring organization) for mentoring activities at UCI, 2001
UCI School of Engineering Teaching Award 1999
David and Lucille Packard Fellowship in Science and Engineering, 1988
3M Non-tenured Faculty Grant Award, 1987, 1988, 1989
Fellowship for Faculty Study Visit to the Federal Republic of Germany, from German Academic Exchange Service (DAAD), Summer 1986
Emma Maud Perkins Award for Excellence in Latin, CWRU, May 1978

Professional Association Memberships

American Association for the Advancement of Science
American Ceramic Society
Microscopy Society of America
Materials Research Society

Research Funding and Collaborations (past and current)

Honeywell, 3M, HRL, Hughes Microelectronics, Rockwell Science Center, Aerospace Corp., Dow Chemical, Material Methods, EmiSense, Pacific Nanotechnology, Oak Ridge National Laboratory, Los Alamos National Laboratory, Sandia National Laboratory, Corona Naval Surface Warfare Systems, AFOSR, ONR, NSF, U.S. Dept. of Education, Packard Foundation

Professional Services and Activities

- Member, Meetings Committee for the American Ceramic Society, 2014-2017
- Chair, Membership Committee, American Ceramic Society, 2014-2015, member 2011-2014
- Chair, 2012 Gordon Conference on Solid State Studies in Ceramics
- Committee of Visitors, NSF DMR, 2011
- Member External Advisory Committee for Chemical Engineering and Materials Science, Stevens Institute of Technology, 2008 - 2015
- Member External Advisory Committee for Materials Science and Engineering, Case Western Reserve University, 2008 – 2015
- Chair of the Basic Science Division of the American Ceramic Society, 2007/2008 (Election to this position entails a four year commitment, becoming Secretary in 2004, Vice-Chair in 2005, and Chair-Elect in 2006, and Chair in 2007, and being a member of the Long Range Planning Committee for the Basic Science Division of ACerS.)
- Organizer of the Design, Simulation and Computation Modeling of Interfaces Symposium for PACRIM 2009 (American Ceramic Society).
- Proposal Review Committee for the Oak Ridge National Laboratory ShaRE User Facility (March 2007)
- Executive Committee for SHaRE program at Oak Ridge National Labs (1996-98)

- Organizer of American Ceramic Society Pacific Coast Regional Meeting /Basic Science Division Meeting, October 1998
- Co-organizer, Better Ceramics Through Chemistry Symposium, Materials Research Society, Spring 1994
- Organizer and Session Chair of Microstructural Development, ISIF 1994
- Committee on Lectureships, Sigma Xi, 1991-1993
- Committee on Public Relations, American Ceramics Society, 1991-1993
- Served as Reviewer for NSF, DOE, MICRO Individual Proposals
- Panel Reviewer for NSF
  NSF Industry/University Cooperative Research
  NSF Ceramics/Division of Materials Research
  NSF Integrated Graduate Education, Research, and Training (IGERT)
  NSF DMR Instrumentation Program Review
  NSF Academic Research Infrastructure Instrumentation
  NSF Combined Research-Curriculum Development
  NSF Engineering Directorate, Chemical and Thermal Sciences (CTS)
  NSF Engineering Directorate, Materials and Manufacturing Innovation (DMMI)
  NSF Materials World Network (DMR)
  NSF Partnerships for Research and Education in Materials (PREM)
  NSF Research Experiences for Undergraduates (REU)
  NSF Material Research Science and Engineering Centers (MRSEC)
  NSF International Collaborative Proposals (DMR)
  NSF Major Research Instrumentation
- Served as Reviewer of Manuscripts for
  Acta Mater., J. Am. Ceramics Society, J. of Materials Research, J. of Applied Physics, Phil. Mag., Met. and Materials Trans., J. Materials Synthesis and Processing, Chemistry of Materials, Materials Science and Engineering, AIChE Journal, John Wiley and Sons (textbooks), Journal of Materials Synthesis

Department of Chemical Engineering and Materials Science

- DECADE graduate diversity mentor for ChE and MSE, 2015 - present
- Graduate Advisor, Materials Science and Engineering Ph.D. and M.S. program Fall 2004-2006, Fall 2007- 2011 (including chair of MSE admissions, and member of HSSoE Graduate Studies Committee)
- Chair of the ChEMS Graduate Admissions Committee, 2006/2007, member 2004-2013
- Teaching Committee, member, 2010-2013
- Advisor and founder Alpha Sigma Mu, MSE Honors Society, 2011 - present
- Advisor, Materials Advantage student club, 2013- present

School of Engineering Service

- Faculty Director, Program for Diversity in Engineering Education, UCI, 2010 - 2012
- Faculty Assistant to the Dean/ADVANCE Equity Advisor, UCI/HSSoE, 2010 - 2012
- Member, Executive Committee, 2007-2009, 2013-present.
- Chair of the HSSoE Faculty, 2004/2005
- Chair, SOE Library Committee 1996-98
- Faculty advisor to undergraduate chapter of Society for Women Engineers 1997/98
- Secretary for SOE Faculty, member of SOE Executive Committee, 1996/97
- Sexual Harassment Advisor for SOE 1992-1994

- Representative Assembly, 1991-1994

UCI Campus Service

- Diversity Advisory Council member for the Graduate Division, UC Irvine, Fall 2007-2012, 2013 – present
- Member, Academic Senate Council on Faculty Welfare, Diversity, and Affirmative Action, 2015-2016
- Chair (2006/7) and Chair-Elect (2005/2006) of the Academic Senate, UC Irvine
- Chair of the UCI Advisory Child Care Committee 2001-2002, member 2002-2005
- Chair of the Graduate Council 1997/98, member Graduate Council 1992-1994, 1996-1998, 2002/2003
- Associate Dean of Graduate Studies for UCI, 1998-2000
- UCI faculty representative for UC/UAW TA collective bargaining 1999-2000
- Regents' Professors and Lecturers Advisory Committee 1995-1998
- Undecided/Undeclared Undergraduate Board 1995-1997, Chair 1997/98
- Panel Participant California Minority Graduate Education Forum (May 1995, 1996, 1997)
- Academic Planning Council (advisory group to the Executive Vice Chancellor) 1993-1994
- Lecturer in UCI's Summer Chemistry Institute 1999 (Outreach program)

University of California Service (Systemwide)

- UC President's Postdoctoral Fellowship evaluator and participant 2001-2003, 2010, 2014-2016
- UC LEADS Steering Committee 2011-2012, UC LEADS judge 2011- 2014,
- UC Provost Academic Planning Group 2006/2007
- UC/CSU Joint Graduate Board Special Committee on Instructional/Research Postdoctoral Scholars for UC/CSU 2000-2001
- Chair of the Coordinating Committee for UC's Minority Graduate Education program (renamed Alliance for Graduate Education Program) 1999-2000
- California Alliance for Minority Participation (CAMP) Statewide Advisory Board 1999-2003

List of Graduate Students and Post-doctoral Researchers

Ph.D. Students	Degree	Year Graduated

1. Yung-Jen Lin — Ph.D. Mat.Sci.& Eng. — 1990
   "*Silicate Grain Boundary Phases in Yttria Zirconia*"
   Current Employment - Professor, Tatung Institute of Technology, Taiwan, (Former Dean of Engineering, Currently Vice President for Student Affairs)
2. Joseph Bailey — Ph.D. Mat.Sci.& Eng. — 1991
   "*Microstructural Development During the Chemical Processing of Ceramics*"
   Last Employment known - 3M, St. Paul, Minnesota
3. Cheng-Chen Hsueh — Ph.D. Mat.Sci.& Eng. — 1991
   "*Processing, Microstructural Development, and Electrical Properties of PZT*"
   Current Employment – VP, Macronix International, HsinChu, Taiwan
4. Carl Blair — Ph.D. Ancient Studies — 1992
   "*Ancient Smelting Practices*" *(Secondary advisor, primary advisor Peter Wells)*
   Last Employment known- Visiting Assistant Professor, Michigan Tech. University
5. Vikram Joshi — Ph.D. Mat.Sci.& Eng. — 1993
   "*$LiNbO_3$ Thin Films by Sol-Gel Processing for Electrooptical Applications*"
   Current Employment – Manager, Device Integration, Cavendish Kinetics, San Jose, CA
6. Garo Dederian — Ph.D. Eng. (Mat.Sci.) — 1994

"*Sol-Gel Processing of $KNbO_3$ Thin Films*"
Current Employment –Micron Technology, Boise, Idaho

7. Maria Gust Ph.D. Eng. (Mat.Sci.) 1996
"*Sol-Gel Processing of Ferroelectric $BaTiO_3$ Thin Films*"
Current Employment –Western Digital, Irvine
8. Adel Sharif Ph.D. Eng. (Mat.Sci.) 1998
"*Grain Boundary Control of Grain Growth and Superplasticity in Oxide Ceramics*"
Current Employment - Associate Professor, Cal State LA
9. Andrew Shapiro Ph.D. Eng. (Mat.Sci.) 1998
"*Process Studies of Recrystallizing Glass/Ceramics for Dielectric Applications*"
Current Employment - JPL and UCI Adjunct Assistant Professor
10. A. Yavuz Oral Ph.D. Eng. (Mat.Sci.) 2000
" *Oriented Thin Films of Anisotropic Ferroelectrics via Sol-Gel Processing*"
Current Employment - Associate Professor, Gebze Institute of Technology
11. Michael Martin Ph.D. Eng. (Mat.Sci.) 2003
"Grain boundary analysis and ionic conductivity of superplastic cubic zirconia for solid oxide fuel cell electrolytes"
Last known employment, VP of Research, Edison Materials Technology Co. Dayton, OH
12. Tiandan Chen Ph.D. Mat. Sci. Eng. 2005
"Design of Superplastic Ceramics with Tri-phase Structures"
President, Nanjing Forgreener Advanced Materials Inc., China
13. Lynher Ramirez Ph.D. Mat. Sci. Eng. Dec.2007
"Microstructural Control of Pulsed CVD of Zirconia"
Current employment, Development Engineer, IBM, East Fishkill, New York
14. R. Peter Dillon Ph.D. Mat. Sci. Eng. Dec.2007
"Strategies for the Development of Superplastic Ceramics"
Current Employment: Staff Engineer, JPL, Pasadena, CA
15. Lili Taherabadi Ph.D. Eng. (Mat.Sci.) Dec. 2008
"*Superplastic Deformation of Mullite Composites and Determination of Burger's Vectors for Mullite"*
Current Employment: Consultant, Irvine, CA
16. Sung-Rok Bang Ph.D. Eng. (Mat.Sci.) Dec. 2008
Ionic conductivity and Phase Stability of Yttria Stabilized Zirconia doped with Monovalent and Pentavalent Cations for SOFC applications
Current Employment: Senior Engineer, Corning/Sammsung, Korea
18. Mai Ng Ph.D. Mat. Sci. Eng. Dec. 2010
"Grain Size Effects in Zirconia, Monazite, and Apatite Electrolytes"
Current Employment: Intel, Portland, OR
19. Chris Hoo Ph.D. Mat. Sci. Eng. March 2012
"Transparent Multiphase Ceramics"
Current Employment: UCI Project Scientist and Lecturer, consultant
20. Dan-Ju Men Ph.D. Mat. Sci. Eng. June 2012
"Multiphase Ceramics for Nuclear Applications"
Current Employment: Apple, Mountain View
21. Jung-Yun Kim Ph.D. Mat. Sci. Eng March 2013
"Grain Growth in Gold Nanowires" Co-advisor with Reg Penner as Primary Advisor
Current Employment: Apple, Mountain View, CA
Current Employment:
22. Jesse Angle Ph.D. Mat. Sci.Eng June 2014
"Composite Ceramics in Extreme Environments"

Current Employment: Exponent (Failure Analysis Firm), CA

23. Weicai Cao — Ph.D. Mat.Sci.Eng. — June 2015
"STM of Oxide Growth on Surfaces" Coadvisor with Wilson Ho as Primary
Current employments, Technology Development Engineer, Intel, Portland, OR
24. Kenta Ohtaki — Ph.D. Mat.Sci.Eng. — Current Student
"Radiation Damage in Multiphase Ceramics"
26. Austin Travis — Ph.D. Chem.Eng. — Current Student
"Computational Modeling of Thermal Properties of Multiphase Ceramics"
27. David Kok (**NDSEG Fellow**) — Ph.D. Mat.Sci.Eng. — Current Student
"Mechanical and Optical Properties of Nanocrystalline Multiphase Ceramics"

M.S. Students	Degree	Year Graduated

1. Elizabeth Hassler — M.S., Mat.Sci.& Eng. — 1988
"High T_c Superconducting Thin Films by Sol-Gel Coating"
Current Employment - Medtronics, Minneapolis
2. Terumi Nagase — M.S., Chem.Eng. — 1990
"Rheology of Sol-Gel Systems During Gelation"
Current Employment - James River Company
3. Vijay Agrawal — M.S., Mat.Sci.& Eng. — 1991
"Microstructural Development During Thin Film Formation of $YBa_2Cu_3O_{7-x}$"
(primary advisor, co-advised with Allen Goldman)
Current Employment - Materials Export Company, Cedar Rapids, Iowa
4. Maria Gust — M.S., Engineering — 1992
"Superplastic Behavior in Compression via Grain Boundary Phases in Yttria Zirconia"
Current Employment - Western Digital, Irvine
5. Phil Imamura — M.S., Eng. (Mat.Sci.) — 1995
"Microstructural Studies of Low Temperature Cofired Ceramics "
Current Employment - Tencor, Santa Clara, CA
6. Joseph Lee — M.S., Eng. (Mat.Sci.) — 1996
"Dielectric Properties of Sol-Gel BaTiO3 Thin Films" Masters Project
Current Employment – Samsung, Korea
7. Nitin Goyal — M.S., Chem. Eng. — 1997
"Processing and Structure of V2O5 Thin Films" Masters Project
Current Employment - i2 Company, Dallas, Texas
8. Benjamin Craft — M.S., Eng. (Mat.Sci.) — 2001
"MOD Techniques for the Growth of Uniform Carbon Nanotubes"
Current Employment - Material Methods, Irvine, CA
9. Joanne Manalac — M.S., Eng. (Mat.Sci.) — 2001
"Microstructure and Mechanical Properties of Seashells"
10. Kevin Olson — M.S. Mat. Sci. Eng. — 2007
"AFM Tip Enhancement and Characterization"
Current Employment – Project Engineer, B.A.E., Washington D.C.
11. Cagan Iyi — M.S. Mat. Sci. Eng. — 2011
"Potential Ceramic Materials to prevent CMAS Infiltration"
Current Employment – Ph.D. student in Turkey *Co-advised with Dan Mumm*
12. Kara Phillips — M.S. Mat.Sci.Eng. — 2014
"Processing Multiphase Ceramics for Nanocrystalline Nuclear Fuel Concept"
Current Employment: - PhD student, UC Irvine
13. Neshat Jalali Heravi — M.S. ChE — 2015

"Chemical Processes for Sr-Doped Monazite Electrolytes"
Current Employment: Process Engineer, Statek Corp., Orange, CA

14. Joanna Leadbetter — M.S. Mat.Sci.Eng. — June 2016
"Separation of Rare Earths"
15. Michael Lu — M.S. Mat.Sci.Eng. — exp. Sept. 2016
"Water Vapor Transport in Cubic YSZ"
16. Hugo Gonzalez — M.S. Mat.Sci.Eng. — exp. Sept 2016
"Additive Manufacturing Routes for Ceramic Prototypes"
17. Hemanth Kumar — M.S. Mat.Sci.Eng. — exp. June 2017
"Thermal Shock of Multiphase Ceramics"
18. Zonghan Yang — M.S. ChE — exp. June 2017
"Comparison of Three-Omega and Laser Flash Thermal Measurements"

Post-Doctoral Associates — Time Period

1. Dr. Yu-Jun Zhang (from Shanghai Inst. of Ceramics) — 1988 - 1990
"TEM Analyses of High T_c Superconducting Ceramics"
2. Dr. Grace King (from USC) — 1990 - 1992
"Analytical TEM of Composite Microstructures"
3. Dr. Debasis Roy (from Penn State) — 1992 - 1994
"Electrical Characterization of Ferroelectric Thin Films"

Visiting Professors — Time Period

1. Susan Krumdieck, University of Canterbury, NZ — December 1-30, 2002
"Pulsed MOCVD Routes to Zirconia Films"
2. Suleyman Tekeli, Gazi University, Turkey — July-September 2004
"Effect of Titania on Superplastic Deformation of YSZ"

Project Scientist — Time Period

1. John Porter, Ph.D. — January 2006-December 2007
"High Temperature Deformation and TEM Analyses"
2. Chris Hoo, Ph.D. — September 2013 – Sept 2015
"Effect of Stress on Diffusion in Ceramics"

Visiting Scientist (Researcher) — Time Period

1. Peter E.D. Morgan, Ph.D. — October 2006-present
"New Chemical Routes to Proton Conducting Oxides"

Undergraduate Researchers at UC Irvine

* underrepresented student in Engineering

1. **Brian Paul –** Fall 2016, MSE/ChE majors, thermal measurements and microstructural studies
2. **Kevin Enrique* –** Summer 2016 UC LEADS, nanocrystalline characterization (junior UC Davis)
3. **Kenny Huynh** – Fall 2015 – present, MSE major, UC LEADS, three omega and FAST sintering ceramics
4. **Dania Alfeerawi* –** Winter/Spring 2016, ChE Major, processing of multiphase ceramics
5. **Michael Dixon –** Winter 2016 - present, MSE Major, mechanical properties of multiphase ceramics
6. **Zari Ebadeh* -**Winter/Spring 2016 – ChE major, radiation damaged microstructures
7. **Salah Saad** - Fall 2015-Spring 2016, MSE major, research on ceramic processing
8. **Victor Cobar** – Winter/Spring 2016, MSE major, ceramics for energy
9. **Michael Crowley –** Fall 2015 – Spring 2016, MechE. major, research on hollow ceramic trusses via additive manufacturing.
10. **Alex Heald –** Fall 2015, ChE major, research on two-step sintering of ceramics

11. **Yolaine Danard* -** Spring/Summer 2015, France, Chemistry Major, research on thermal shock of multiphase ceramics
12. **Andy Lam –** Winter/Spring 2015, MSE major,
13. **Stoney Middleton –** Fall 2014-Spring 2016, UCI MSE major, former Marine, research on additive manufacturing of ceramics, graduated 2016, now in MS program UCI
14. **Rhea Reyes*** - Fall 2013-Spring 2014, UCI ChE major, research on metal/ceramics
15. **Patrick Ngo** – January 2012- present, UCI ChE major, fabrication of dense alumina with Ni inclusions
16. **Merna Salama*** - March 2012 – present, UCI ChE major, research on Cr (II) oxide catalyst ceramics, Summer internship at Boeing 2013, 2014, currently Ph.D. student at UCI in MSE.
17. **Danielle Becerra*** - September 2011-June 2012, MechEng Major, research on computational modeling of ceramics, summer internship 2012 with Disney Imagineers
18. **Yuhua Lu*** - Exchange UG Student from China, research on thermal conductivity of ceramics, Sept. 2011 to March 2012.
19. **Pedro Cruz* –** Summer 2011 –Spring 2012, Irvine Valley Community College, pre-ChE major, research on chemical processes for fabricating fuel cell electrolytes. Fall 2012 ChE major at UCI.
20. **Jamie Mac –** January –June 2011, research on multiphase ceramics
21. **Lucia Diaz* -** January 2011-June 2011, computational MSE research, UC LEADS scholar, graduated in Computer Engineering June 2013, accepted to UCI EECS department for Ph.D. (turned it down as the department offered no financial support).
22. **Genara Armando Perez-Selsky*** - September 2010 – June 2011, research on computer control of experiments, graduated ChE in 2011, currently Ph.D. student in ChE, University of Washington
23. **David Kok–** Summer 2011, Mt. SAC Community College, currently Chemistry major at CalPoly Pomona, research on ceramic armor, former Marine
24. **Trang Tran*** – Summer 2010, Mt. SAC Community College, currently ChE major at CalPoly Pomona, research on transparent ceramics
25. **Marvin Chan** – SURF-IT summer 2010, ME major UCI, computer modeling of thermal shock properties. M.S. student in MechEng at UCLA.
26. **Aileen Hyunh*** - Spring 2010- , ME major and MSE minor, fabrication of multiphase ceramics
27. **Kyle Dykman** – Spring 2010- , ME and MSE major, design of sensor materials with high thermal shock, completed M.S. in MSE at UCI 2012.
28. **Juan Lucio* -** Summer 2008-Spring 2010, UC LEADS Scholar at UCI, community college transfer student, research on fuel cell materials, ChE Ph.D. student at the University of Delaware.
29. **Jesse Angle –** (2008/2009) – Research on Grain Growth in Ceramics, attending UCI for Ph.D. in MSE currently (B.S. graduation date, June 2010)
30. **Rita Blaik* - (**Sept. 2007 – June 2008) Senior Design project with Glidewell Dental Ceramics. Graduated June 2008. UCLA MSE Ph.D. student.
31. **Michael Schatzmann** - (Jan. 2007 – June 2009) Campuswide Honors, HSSoE Research Fellowship, UROP grant, 2nd place winner, Undergraduate Category of the Ceramographic Poster Competition at The American Ceramic Society, Chemical Synthesis Routes to Monazite, completed M.S. in ChE, fall 2010.
32. **Jason Bentley** - (Summer 2007) UC LEADS Scholar from UC Riverside, AFM Characterization of Grain Boundary Sliding in Superplastic Ceramics, will be attending Georgia Tech for a Ph.D. in MSE, fall 2008
    Current status - graduated UC Riverside 2008
33. **Joy Trujillo*** - (Winter 2005-Spring 2007) UC LEADS Scholar, HSSoE Research Fellowship, 2nd place winner, Undergraduate Category of the Ceramographic Poster Competition at The American Ceramic Society, Grain Growth during Creep Deformation of Multiphase Ceramics
    Fall 2007 on - Ph.D. student at UCLA, *NSF Graduate Research Fellowship*
34. **Trang Doan*** - (2006/2007) Senior Design project with Pacific Nanotechnology, Design of a Fluid Flow Cell for the AFM. Current status - graduated 2007, employed at Fluor, will be returning to UCI for a part time M.S. in ChE.
35. **Aminah Ramjahn*** - (Summer 2006) NSF IMSURE REU summer research, from UC Davis, Routes to the Fabrication of Apatite Ceramics. Current status - graduated 2008
36. **Scott Wilbur** - (Summer 2006) NSF IMSURE REU summer research student from Penn State, Cryo-milling of Ceramics. Current status – graduated Penn State
37. **Chris Hoo** - (2005/2006) Senior Design project with Pacific Nanotechnology, Design of Methods to Characterize Nanoparticle . Current status - Ph.D. student at UCI

38. **Jeremy Roth** - (2005/2006) undergraduate 199 researcher, Mech. Eng./Mat. Sci. Eng. , Impedance Spectroscopy of Zirconia doped with Lithia. Current status -graduated spring 2007
39. **Dan Strickland** - (Summer 2005) NSF IMSURE REU summer research, from Seattle University, Fabrication of Nanocrystalline Thin Film Zirconia
    Current status – Completed Ph.D. in MechEng at Stanford University, *NSF Graduate Research Fellowship,* Assistant Professor at Santa Clara University (deceased)
40. **Michelle Lutes***- (UROP awardee 2003), "The Effect of Alumina Additions on the Microstructure and Ionic Conductivity of 8Y-CSZ," 2nd place winner, Undergraduate Category of the Ceramographic Poster Competition at the 106th Annual Meeting & Exposition of The American Ceramic Society. April 18-21, 2004; Indianapolis, Indiana. (2004/2005) Senior Design project with Pacific Nanotechnology, Design of a Step Height Standard for AFM Using Oxide Single Crystals. Current status - employed at Boeing and in M.S. program in MSE at UCI
41. **Kevin Olson** (SURP 2002 awardee, HSSoE Accelerated M.S. Research awardee) "Increasing Toughness of Ceramics: Carbon Nanotubes in Silicon Oxycarbide" Current Status – Finished M.S. at UC Irvine in MSE
42. **Anh-Tuan Do** (SURP awardee 2002, UROP awardee 2003) "Development of a New Method to Make ZrO_2 Thin Films to Replace SiO_2 in Integrated Circuits", Completed Ph.D. degree at UC Irvine in MAE.
43. **Francisco Fuentes*** - (summer undergraduate research 2003) "The Effect of Lithia Additions on the Ionic Conductivity of 8Y-CSZ"
44. **Rurico Neri*,** Fall 2001 First Place Award in Engineering for "Development of Superplastic Ceramics" Poster Presentation at SACNAS (Society for the Advancement of Chicanos and Native Americans in Science) National Conference. Current Status - completed M.S. degree in MSE at UCI, employed at Interpore/Cross
45. **Jennifer Dahlberg*** - (2001) Bridges Program, Carbon Nanotube Composites (2001)
46. **Joanne Manalac*** -(1999/2000), Undergraduate research, Mircostructural Analysis of Seashells, Current Status - completed M.S. degree at UCI, *NSF Graduate Research Fellowship*
47. **Quang Ton**, - (1998) Undergraduate 199 research, Influence of Alumina on Grain Growth in Zirconia
48. **Henry Wihardjo** (1998/99) Undergraduate 199 research, Sol-Gel Processing of SBN Ceramics
49. **Michael Hung Vi Ing** - Undergraduate 199 research, Design of an Ionic Conductivity Measurement System
50. **Roma Patel*** - (1998) Undergraduate 199 research, Grain Growth of Zirconia with Lithia Additives
51. **Lionel Liu** - (1998) Undergraduate 199 research, Mechanical Properties of Zirconia Ceramics
52. **Michael Lee** - (1998-99) Undergraduate 199 research, Sol-Sol Processing of SBN Ceramics
53. **Brian Brusca -** (1998/99) - Undergraduate 199 research, Superplastic Deformation of Ceramics
54. **Davianne Duarte* -** (1997-99) Undergraduate 199 research, Pregraduate Mentorship Program, CAMP, Biological Design of Materials
55. **Huy Pham -** (1994-1996) Undergraduate 199 research, Fracture of zirconia Ceramics
56. **Adrienne Cooper* -** (1994-95), Undergraduate 199 research, Superplastic Deformation of Zirconia
57. **W. Lim -** (1995) Undergraduate 199 research, Sol-gel Coatings
58. **Sandra Lash*** - (1993/94) 199 research, Development of V2O5 Thin Films, Current Status - completed M.S. degree at NC State U.
59. **Mark Hamamura** - (1992-94) Undergraduate 199 research, Odyssey of the Mind: Design of a HPV
60. **Ashish Kalthia** - (1992-94) Undergraduate 199 research, Odyssey of the Mind: Design of a HPV
61. **Imran Mynnuddin** - (1992-94) Undergraduate 199 research, Odyssey of the Mind: Design of a HPV
62. **Tom Armacost** - (1992-94) - 199 research, Odyssey of the Mind: Design of a HPV
63. **Kim Wu* -** (summer 1992) Undergraduate 199 research, Gel Formation in Lithium Niobate
64. **Oahn Nguyen* -** (summer 1992) Undergraduate 199 research, Gel Formation in Potassium Niobate
65. **Tabitha Slovitz* -** (SURF, 1992) Undergraduate 199 research, Grain Growth Experiments in Zirconia
66. **Sam Young -** (1991/92) Undergraduate 199 research, Design of a Dip Coating Apparatus
67. **David Stanley** - (1992) - Undergraduate 199 research, Grain Size Influence on Superplasticity

PUBLICATIONS

Books Edited (BE)

BE1. A.K. Cheetham, C.J. Brinker, M.L.Mecartney, C. Sanchez, eds., Better Ceramics Through Chemistry VI, Materials Research Society, Pittsburgh, Pennsylvania, (1994).

Book Chapters (BC)

BC1. J. R. Bellare, J. K. Bailey and M. L. Mecartney, "Direct Observation of the Structure of Sols and Gels," Chapter 65, pp. 835-842 in Processing of Advanced Ceramics, J. D. Mackenzie and D. R. Ulrich, editors, John Wiley and Sons (1988).

BC2. J.K. Bailey and M.L.Mecartney, "Characterization of Structural Development in Sol-Gel Systems by Cryogenic Transmission Electron Microscopy," Chapter 5, pp. 57-68 in Ultrastructure Processing of Advanced Materials, eds. D.R. Uhlmann and D.R. Ulrich Wiley and Sons (1992) .

Journal Articles, Peer Reviewed (J)

J1. M. L. Mecartney, W. T. Donlon and A. H. Heuer, "Plastic Deformation in CaO-stabilized ZrO_2 (CSZ)," *J. Mat. Sci.*, **15** 1063-65 (1980) .

J2. M. L. Mecartney, R. Sinclair, and R. E. Loehman, "Silicon Nitride Joining," *J. Am. Ceram. Soc*. **68**, [9] 472-478 (1985). DOI: 10.1111/j.1151-2916.1985.tb15811.x

J3. M. L. Mecartney, " Influence of an Amorphous Second Phase on the Properties of Yttria Tetragonal Zirconia Polycrystals (Y-TZP)," *J. Am. Ceram. Soc.* **70** [1] 54-58 (1987). DOI: 10.1111/j.1151-2916.1987.tb04853.x

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R22. N.D. Evans, P.H. Imamura, J. Bentley, M.L. Mecartney “Characterization of intergranular phases in doped zirconia polycrystals,” *Advances in Materials Problem Solving with Electron* Microscopy (Materials Research Society Symposium Proceedings Vol.589). pp.383-8, Mater. Res. Soc. (2001).

R23. A. L. R. Moodie, J. P. Angle, E.C. Tackett, T.J. Rupert, M. L. Mecartney, L. Valdevit, “Ceramic and hybrid micro-architected materials for high temperature applications,” *Proceedings of the 2013 Society for the Advancement of Material and Process Engineering (SAMPE) Conference, Long Beach CA* (2013).

Other Publications (O)

O1. M. L. Mecartney, R. Sinclair, "Analytical Electron Microscopy of Ferroelectric $BaTiO_3$," *38th Annual Proc. Microscopy Society of America*,, 364-65 (1980).

O2. M. L. Mecartney, "Application of TEM to the Characterization of Commercial $BaTiO_3$ Capacitors," *39h Annual Proc. Microscopy Society of America*, 170-71 (1981).

O3. M. Ruhle, M. L. Mecartney, and N. Claussen, "Amorphous Grain Boundary Phases in Yttria-Containing Tetragonal Zirconia Polycrystals (Y-TZP)," *Proc. 2nd International Symposium on Ceramic Materials and Components for Heat Engines*, 1986.

O4. J. R. Bellare, J. K. Bailey and M. L. Mecartney, "Freezing Dynamical Sol-Gel Processes with the Controlled Environmental Vitrification System, (CEVS)," *45th Annual Proc. Microscopy Society of America*, 356-357 (1987).

O5. M. L. Mecartney and P. Angelini, "Analytical Electron Microscopy of Grain Boundary Phases in Yttria-Zirconia Ceramics," *45th Annual Proc. Microscopy Society of America*, 166-167 (1987).

O6. J. K. Bailey and M. L. Mecartney, "Ceramic Sol-Gel Transformations Studied Using Cryo-Microscopy," *46th Annual Proc. Microscopy Society of America*, 110-111 (1988).

O7. Y.-J Lin, P. Angelini, and M. L. Mecartney, "Analytical TEM Study of a Yttria Stabilized Zirconia/Glass Composite," in *46th Annual Proc. Microscopy Society of America*,, 572-573 (1988).

O8. Y. J. Lin, M.L. Mecartney, and P. Angelini, "Analytical TEM of Yttria-Stabilized Zirconia with Silicate Grain Boundary Phases," pp. 515-517 in *Microbeam Analysis 89*, ed. P.E.Russell, San Francisco Press (1989).

O9. M.L. Mecartney and Y.J. Lin, "Grain Boundary Chemistry and the Properties of Zirconia Ceramics," pp. 163-166 in *Microbeam Analysis 91*, ed. P.E.Russell, San Francisco Press (1991).

O10. M.L.Mecartney, "TEM Studies of Sol-gel Derived Ferroelectric Oxide Thin Films" pp. 580-581 in *52nd Annual Proc. Microscopy Society of America*, (1994).

O11. M.L.Mecartney, M.G. Gust and N. Evans, "In-situ TEM Crystallization of Sol-gel Derived BaTiO3 Thin Films," pp. 588-589 in *52nd Annual Proc. Microscopy Society of America*, (1994).

O12. A.A. Shapiro, D.F. Elwell, P. Imamura, and M.L.Mecartney, "Structure-Property Relationships in Low-Temperature Cofired Ceramics," pp. 306-311 in *Proceedings of 27th International Symposium on Microelectronics* (SPIE Vol.2369) (1994) .

O13. M.C. Gust, N.D. Evans, and M.L. Mecartney, "Crystallization of Barium Titanate Thin Films Synthesized Via Sol-gel Processing," *53rd Annual Proc. Microscopy Society of America*,, Ed. G.W. Bailey, San Francisco Press (1995).

O14. S.E. Lash, H. Pham, A. Cooper, and M.L. Mecartney, "Electron Microscopy Studies of Grain Boundary Phases and Fracture in Yttria Zirconia Ceramics," pp. 684-85 in *54th Annual Proc. Microscopy Society of America*, Ed. G.W. Bailey, San Francisco Press (1996).

O15. N.D. Evans, P. H. Imamura, J. Bentley, and M.L. Mecartney, "Grain Boundary Studies of Doped Yttria Stabilized Zirconia," *Proceedings of the 14th International Conference on Electron Microscopy*, 1998.

O16. M.L. Mecartney, "Multiply Kids Curiosity with More Resources" (Editorial), LA Times (Orange County Edition), Page B-7, August 1, 1999.

O17. M. L. Mecartney, "UC Irvine Safe for Jewish Students," (Editorial) Orange Country Register, Local page 8, Thursday, May 10, 2007.

O18. M.L. Mecartney, "Stand Together Against Intolerance at UCI," (Editorial) New University, page 9, Tuesday, May 29, 2007.

O19. K. Ohtaki, M. Patel, M. L. Mecartney, "Radiation Damage in Multiphase Ceramics," Proceedings of the Microscopy Society of America, 2016.

Invited **Presentations at Conferences, Universities, and Research Laboratories**

(from September 1990)

1. "Structural Development During Sol-Gel Processing," Workshop on Powder Free Processing for Advanced Ceramics, Schloss Ringberg, West Germany, November 1990.
2. "Morphological Characterization of Gel Ultrastructures," Fifth Ultrastructure Processing Conference, Orlando, Florida, February 1991.
3. "Sol-Gel Processing of Ceramic Materials: Analysis and Control of Structural Development," Department of Chemical Engineering, Georgia Tech, May 1991.
4. "Grain Boundary Chemistry and the Properties of Zirconia Ceramics," EMSA and MAS Annual Meeting, San Jose, August 1991.
5. "Microstructural Development in Sol-Gel Processing," AIChE Fall Meeting, Los Angeles, November 1991.
6. "Sol-Gel Processing of Ferroelectric Thin Films," Hughes Research Labs, Malibu, CA March 1992.
7. "Sol-Gel Processing of Ceramic Materials," Physical Chemistry Div., Dept. of Chemistry, UCI, April 1992.
8. "Crystallization of Sol-Gel Thin Films," Crystal Growers Assoc. of Southern CA, June 1992.
9. "Grain Boundary Phases in Yttria Stabilized Zirconia," Fifth International Conference on Zirconia, Melbourne, Austrailia, August 1992.
10. "Microstructural Development in Sol-Gel Derived Ferroelectric Thin Films," Naval Research Laboratory, Washington D.C., May 1993.
11. "Microstructural Development in Sol-Gel Derived Dielectric and Ferroelectric Oxide Thin Films," Materials Science & Engineering Department, UCLA October 1993.
12. "Microstructural Development of Sol-Gel Derived Oxide Thin Films," Ceramic Engineering Department, University of Illinois, Champaign-Urbana, April 1994.

13. "Microstructural Development in Sol-Gel Derived Ferroelectric Thin Films," Microscopy Society of America 52nd Annual Meeting, New Orleans, August 1994.
14. "Microstructural Design of Crystalline Oxide Thin Films via Sol-Gel Routes," Materials Science & Engineering Department, University of California, Berkeley, February 1995
15. "Microstructural Evolution of Sol-Gel Derived Ferroelectric Thin Films," Sandia National Lab, Albuquerque, NM, February 1995.
16. "Intergranular Phases in Zirconia Ceramics," Los Alamos National Lab, February 1995.
17. "Ferroelectric Thin Films via Sol-Gel Processing," Materials Research Laboratory, University of California, Santa Barbara, March 1995.
18. "Microstructural Development of Sol-Gel Derived Barium Titanate Thin Films," Fifth International Symposium on Integrated Ferroelectrics, Colorado Springs, March 1995.
19. "Microstructural Design of Oxide Thin Films via Sol-Gel Routes," American Chemical Society National Meeting, Symposium on Sol-Gel Synthesis of Catalysts & Advanced Materials, San Francisco, April 1997.
20. "Design of Superplastic Oxides using Grain Boundary Phases," Materials Science and Engineering Program, Caltech, March 1998.
21. "Superplastic Deformation of Cubic Yttria Stabilized Zirconia Using Intergranular Phases" Symposium on Interfaces and Microstructures in Materials, UC Santa Barbara, April 1998.
22. "The Design of Superplastic Fine Grain Ceramics using Intergranular Phases," JIMIS-9, Towards Innovation in Superplasticity II, Kobe, Japan, September 1998.
23. "Grain Boundary Engineering of Highly Deformable Ceramics," Materials Research Society, Symposium on Superplasticity: Current Topics and Future Potential, November, 1999.
24. "Interfacial Design for Superplastic Deformation of Zirconia Ceramics," American Ceramic Society Annual Meeting, April 2003
25. "Nanocrystalline Ceramics for Superplastic Forming," International Materials Research Society (MRS) Conference, Cancun, Mexico, August 2005
26. "Observations of Metal-like Behavior in Superplastic Ceramics," Department of Mechanical Engineering, UC Riverside. October 2005.
27. "Comparison of Electrical and Chemical Grain Boundary Widths in Cubic Yttria Stabilized Zirconia, " Oak Ridge National Laboratory, May 2006.
28. "High Temperature Deformation and Superplasticity in Mullite and Mullite Composites," 4th International Workshop on Mullite, Vienna, June 2006.
29. "Dislocation Assisted High Temperature Deformation in Mullite and Mullite Composites," Stanford University, Sinclair Symposium, February 2007.
30. "Grain Size Effects in Solid Oxide Electrolytes," Materials Research Society, San Francisco, April 2007.
31. "Superplastic Ceramics," UCLA, Materials Science and Engineering Department, May 2007.
32. "Nano-dimensional Metrology in the Atomic Force Microscope," NIST, Gaithersburg, MD, August 2007.
33. "Design of Ceramic Microstructures for Easy Shape Forming and Good Room Temperature Properties," Glidewell Dental Ceramics, Irvine, CA, September 2007.

34. “Grain Boundary Sliding in Multiphase Superplastic Ceramics,” International Workshop on Mechanics-Based Design of Materials, Perth, Australia, July 2008.
35. “New Materials for Fuel Cell Electrolytes,” Chemical and Environmental Engineering, University of California, Riverside, January 2011.
36. "Deformation of 3:2 and 2:1 Mullite", 5th International Workshop on Mullite and Mullite-Type Materials, Aviles, Spain, May 2011.
37. "Mecartney Group Research", Teledyne, Thousand Oaks, CA, October 2011.
38. "Multiphase Ceramics", Ceradyne, Costa Mesa, CA, March 2012.
39. "The Use of Multiple Phases to Control Grain Growth", MS&T 2013/Annual American Ceramics Society Meeting, Pittsburgh, PA. October 2012.
40. "Ceramics in Extreme Environments", Boeing, Huntington Beach, CA, November 2012.
41. "Research on Muiltphase Ceramics and Water Vapor Sintering", Nuclear Engineering Centre, Materials Science and Engineering, Imperial College, London, UK, May 2013.
42. "Dislocation Accommodated Deformation in Mullite and Superplastic Multiphase Ceramics", Crystal Interface laboratory, University of Tokyo, Tokyo, Japan, July 2013.
43. "$LaPO_4$ Monazite Research and Water Vapor Accelerated Diffusion in Al_2O_3", Air Force Research Laboratory, Wright Patterson Air Force Base, Dayton, OH, August 2013.
44. "Dislocation Accommodated Deformation in Mullite and Superplastic Multiphase Ceramics", Department of Mechanical Engineering, University of Canterbury, Christchurch, New Zealand, August 2013.
45. "Monazite Ceramics for Fuel Cell and Nuclear Applications", Department of Materials Science and Engineering, Alfred University, Alfred, NY, September 2013.
46. "Monazite LaPO4 Ceramics for Fuel Cell and Nuclear Applications and Water Vapor Accelerated Diffusion in Al2O3", Chemical and Materials Physics (ChaMP) Program, UC Irvine, September 2013.
47. "Proton Assisted Diffusion in Oxides (Does Steam Damage Ceramics?)", Packard Fellows 25th Year Reunion Meeting, Denver, CO, (Poster Presentation), September 2013.
48. "Development of Multiphase Oxide Ceramics", Rishi Raj Group Seminar, Mechanical Engineering, University of Colorado, Boulder, CO, September 2013.
49. "Development of Monazite Ceramics for Fuel Cell and Nuclear Applications", Department of Materials Science and Engineering, Colorado School of Mines, Golden, CO, September 2013.
50. “Dislocation Accommodation for Grain Boundary Sliding in Multiphase Superplastic Ceramics,” American Ceramic Society Annual Meeting/MS&T, Montreal, Canada, October 2013.
51. “Changing the Face of Engineering,” Division of Graduate Education, National Science Foundation, Washington D.C., April 2015.
52. “Properties of Nanocrystalline Multiphase Oxide Ceramics with Applications for Improved Nuclear Fuel,” Department of Materials Science and Engineering, University of Florida, May 2015.
53. “Properties of Nanocrystalline Multiphase Oxide Ceramics with Applications for Improved Nuclear Fuel,” Materials Science and Engineering, University of Tennessee, Knoxville, May 2015.
54. “Thermal Properties of Multiphase Ceramics Designed for Enhanced Thermal Conductivity,” Mechanical Engineering MEGSA Symposium, UC Riverside, May, 2015.

55. “New Approaches to Processing Multiphase Ceramics for Ultrafine Grain Sizes,” 11th International Conference on Ceramic Materials and Components for Energy and Environmental Applications, Vancouver, BC, June 2015.
56. “Thermal Properties of Nanocrystalline Multiphase Oxide Ceramics,” MS&T 2015, Columbus, OH, October 2015.
57. “Using Multiple Phases to Achieve Fine Grain Sizes with Spark Plasma Sintering (SPS) and Two-Step Reactive Sintering,” MS&T 2015, Columbus, OH, October 2015.
58. “Multiphase Ceramics for Inert Matrix Nuclear Fuel,” Ceramics for Energy Workshop, UC San Diego, June 2016.
59. “Design of Ceramics Using Multiple Phases for Optimized Properties,” Gordon Research Seminar, Mt. Holyoke, MA, July 2016.
60. “Changing the Face of Engineering,” keynote speaker at the ASM International Women in Materials Engineering (WIME) Breakfast, MS&T, October 2016.

Graduate Student Recruitment Seminars and Outreach Seminars (from 1990)

1. "Superplastic Ceramics via Grain Boundary Manipulation," Materials Science & Engineering Department, Graduate Student Recruitment Talk, Cal Poly San Luis Obispo, 1993.
2. “Superplastic Deformation of Zirconia,” Department of Mechanical Engineering, Graduate Student Recruitment Talk, Loyola Marymount, 1993.
3. "Sol-Gel Processing of Oxide Thin Films," Department of Chemistry, Graduate Student Recruitment Talk, Loyola Marymount, 1993.
4. "Ceramics for Microelectronics Mysteries," Dept. of Materials Engineering, Graduate Student Recruitment Talk, Cal Poly San Luis Obispo, California, 1995.
5. “Solution Chemistry Routes to Ceramics,” AIChE Student Chapter, Graduate Student Recruitment Talk, Cal State Long Beach, 1997.
6. “Superplastic Deformation of Ceramics,” Department of Materials Engineering, Graduate Student Recruitment Talk, Cal Poly San Luis Obispo, 1997.
7. “Successful Routes for Graduate School Admission,” Department of Materials Engineering, Graduate Student Recruitment Talk, Cal Poly San Luis Obispo, 1999.
8. “Structure and Mechanical Properties of Seashells,” Department of Materials Engineering, Graduate Student Recruitment Talk, Cal Poly San Luis Obispo, 2000.
9. “The Hows and Whys of Graduate School,” Materials Engineering, Cal Poly San Luis Obispo, October 2001.
10. “Mentoring Strategies for Underrepresented Students,” NSF PAESMEM Workshop, March 2003, Washington D.C. (invited)
11. "Amazing Materials," Sally Ride Science Day, UC Irvine, February 2005.
12. "Should Mentoring Be an Expectation, Not an Option, for Faculty?" Southeast Alliance for Graduate Education and the Professoriate (SEAGAP), Gainesville, Florida, January 2006. (Keynote Speaker)
13. "Your Way to Graduate School," NSF REU IM-SURE program, UC Irvine, August 2006.
14. "The Story of How I Found My Career as a Professor of Engineering," UC LEADS Research Symposium, UC Santa Cruz, March 2006.

15. "Amazing Properties of Materials," Lecture and demonstrations for Girls, Inc, UC Irvine, July/Aug. 2007.
16. "Launching Your Career and Graduate Education," NSF REU IM-SURE program, UC Irvine, August 2007.
17. "Your Admission to Engineering Graduate School at UC Irvine," CSU-AMP Program, San Jose State University, October 2007.
18. "Graduate School Opportunities in MSE at UCI", Mechanical Engineering Junior Class, Loyola Marymount, LA, March 2008.
19. "Getting the Administration to Support Your GAANN Proposal," GAANN FY2009 Technical Assistant Workshop, Washington DC, February 2009 (invited)
20. "Institutional Commitment for Your GAANN Proposal," GAANN 2010 Technical Assistant Workshop, Washington DC, November 2009. (invited)
21. "Your Invitation to Graduate Research at UC Irvine," SACNAS Annual Meeting, Anaheim, September 2010.
22. "Tips on Visiting Graduate Schools", UC Irvine, Graduate Division, UC Irvine, Graduate Division, SURP program, June 2011.
23. "How to Communicate with your Advisor", Graduate Division, UC Irvine, Competitive Edge, Graduate Division, UC Irvine, July 2011.
24. "How to Conduct Research and Impress Grad Committees", SURF-IT, DUE and CalIT2, UC Irvine, Seminar for undergraduates, July 2012.
25. "Interviewing in the Sciences and Engineering", Graduate Division, UC Irvine, Panel: How to Interview for Graduate School, Summer Undergraduate Research Program, June 2013.
26. "The Individual Development Plan for Your Graduate Career," New Graduate Student Orientation, UC Irvine Graduate Division, skits developed in collaboration with Associate Dean of Graduate Studies, September 2013.
27. Panel: How to Visit and Interview for Graduate School, Summer Undergraduate Research Program, Graduate Division, UC Irvine, June 2014.
28. "Mentoring Tips for Young Faculty and Collaborations with National Labs," NSF Ceramics Division Workshop, Fairfax, VA, June 2014 (invited)
29. Panel: Graduate School Visits and Interviews, Summer Undergraduate Research Program, Graduate Division, UC Irvine, June 2015.
30. "How to Apply to Graduate School Successfully," Graduate Division UCI, program for CSU undergraduates, September 2015.
31. "Funding Your Graduate Education," Grad Division UCI, DECADE workshop targeting underrepresented undergraduates, October 2015.
32. "Landing that Professional Job – How to Stand Out when Interviewing," American Ceramic Society PCSA Winter Workshop, Orlando, FL, January 2015.
33. "Designing Materials for Nuclear Energy" UC Riverside, Materials Advantage Chapter, May 2016.
34. "Interviewing for Graduate School," SURF Summer Students, UCI Grad Division, July 2016.
35. "Graduate School Applications - what You Need to Know to Be Competitive for Full Funding and Fellowships," CalIT2 UCI, outreach to CSU LA undergraduates, August 2016.

Courses Taught at UC Irvine (excludes research supervision)

1.	ATOM/Crystalline Materials (non-majors)	Freshman Seminar
2.	Freshman Honors Seminar for Engineering	Undergrad Elective
3.	Exploring the Engineering Mind: MSE for Non-Majors Filled breadth requirement as part of physics sequence	Undergrad Elective
4.	Introduction to Materials Science & Engineering	Required Undergrad
5.	SEM, XRD, and Microanalysis	Required Undergrad
6.	Lab on Chemistry and Synthesis of Materials Co-taught with Chemistry (cross-listed)	Required Undergrad
7.	Materials Engineering Lab for Mech. Engineers	Required Undergrad
8.	Materials Processing, Selection & Design	Required Undergrad
9.	Diffusion in Materials	Required Undergrad
10.	Ceramic Engineering	Undergrad Elective
11.	Polymeric Materials	Undergrad Elective
12.	Crystallography & Defects: Adv. Matls	Required Graduate
13.	Phase Transformations	Required Graduate
14.	Theory of Electron Microscopy	Graduate Elective
15.	Applied Electron Microscopy and Laboratory	Graduate Elective
16.	Atomic Force Microscopy	Graduate Elective
17.	Structure and Character of Materials	Graduate Elective
18.	Advanced Ceramics	Graduate Elective
19.	Grain Bound. and Interfaces in Nanocryst. Mater.	Graduate Elective
20.	High Temperature Deformation	Graduate Elective
21.	Technical Communication Skills (Physics)	Graduate Elective

Selective Active Funding since 2002

NSF Minority Graduate Education $2,500,000 10/1999-
Fast Track to the Professoriate 10/2004
(Per program requirements, UCI Chancellor was PI and Deans of Engineering, Computer Science, Physical Sciences, and Biological Sciences were the four co-PI, but MLM wrote the grant and created the program as Associate Dean of Graduate Education. Became part of the University of California Alliance for Graduate Education and the Professoriate (AGEP))

NSF	*Summer Graduate Training for Chemical and Materials Physics, and Engineering (ChaMP-E)*	co-PI	$492,100	9/1999- 8/2003
NSF	*Design of Superplastic Ceramics*	PI	$350,000	6/2002- 6/2006
Pacific Nanotechnology	*Unrestricted AFM Research*	PI	$35,000	1/2005- 1/2007
Navy	*AFM Metrology for Sensor Applications*	PI	$70,000	9/2005- 9/2007
NSF	*The Role of Crystallographic Defects In Ceramic Superplasticity*	PI	$400,000	7/2006- 7/2007

US Department of Education *Graduate Assistantships in Areas of National Need (GAANN) for Chemical Engineering and Materials Science*	PI	$376,398	8/2006- 8/2010
UC Discovery/Emisense Co. *Enhanced Thermal Shock Resistance for Oxygen Sensors*	PI	$20,250	11/2009- 10/2010
US Department of Education *Graduate Fellowships for Chemical and Biochemical Engineering and Materials Science Engineering – a Multidisciplinary Proposal*	PI	$393,795	8/2010- 9/2014
NSF/ONR/Various Industries *2012 Gordon Research Conference on Solid State Studies in Ceramics*	PI	$62,900	2012
NSF *The Role of Water Vapor and Protons in Enhancing Diffusion and Sintering in Ceramics*	PI	$142,713	8/2012- 9/2014
DOE NEUP *Multiphase Nanocrystalline Ceramic Concept for Nuclear Fuel* (Collaborative proposal with LANL, UC San Diego UT, Knoxville)	PI	$800,000	2013- 2016
Nuclear Regulatory Commission (NRC) *Ph.D. Graduate Training Fellowships* (PI, Mikael Nilsson, UC Irvine)	co-PI	$400,000	2014-2018
Nuclear Regulatory Commission (NRC) *Undergraduate Scholarships* (PI, Mikael Nilsson, UC Irvine)	co-PI	$200,000	2014-2016
U.S. Department of Education *Graduate Fellowships in Chemical and Biochemical Engineering and Materials Science and Engineering*	PI	$885,834	2015-2018
NSF *Thermal Conductivity and Grain Boundary Energy of Interfaces in Multiphase Ceramics*	PI	$490,973	2016-2020
UCI Graduate Division *A Study of Markers of Graduate Student Success from Graduate Student Applications*	PI	20,000	2016-2017