LISA A. PRUITT

EDUCATION

Ph.D. Engineering *Brown University*, Providence, RI, May 1993
Doctoral Thesis: *Cyclic Damage Ahead of Fatigue Cracks in Amorphous Solids: Theory, Experiments and Implications*
Sc.M. Engineering *Brown University*, Providence, RI, May 1990
Masters Thesis: *Fatigue Behavior of Carbon Fiber-Reinforced Epoxy Composites Under Far-Field Cyclic Compression*
Sc.B. Materials Engineering, *University of Rhode Island*, Kingston, RI, May 1988
Sc.B. Chemical and Ocean Engineering, *University of Rhode Island*, Kingston, RI, May 1988

WORK EXPERIENCE

University of California at Berkeley, *College of Engineering,* Berkeley, CA, *1993-present*
Associate Dean for Lifelong Learning and Outreach Education, College of Engineering, 2005-present
Lawrence Talbot Chaired Professorship in Engineering, 2007-2011
Chancellor's Professor, 2004 - 2009
Director, Engineering Systems Research Center, College of Engineering, 2003- 2004
Vice Chair, Undergraduate Studies, Department of Bioengineering, 2002-2003
Professor of Mechanical Engineering, 1993-present
Professor of Bioengineering, 1999-present
Director of the Medical Polymer and Biomaterials Group, UC Berkeley, 1993-present

University of California at San Francisco, *School of Medicine,* San Francisco, CA, *2001-present*
Adjunct Professor of Orthopaedic Surgery, 2001- present

Research is focused on structure–property relationships in orthopedic tissues, biomaterials and medical polymers. Current projects include the assessment of fatigue fracture mechanisms and tribological performance of orthopedic biomaterials, as well as characterization of orthopedic tissues and associated devices. Surface modifications using plasma chemistry are used to optimize polymers for medical applications. Attention is focused on wear, fatigue and multiaxial loading. Retrievals of orthopedic implants are characterized to model *in vivo* degradation and physiological loading. Biomechanical characterization of structural tissues is performed to assess clinical treatments and to develop constitutive relationships. Laboratory techniques for structural characterization include SEM, TEM, FEM, SAXS, USAXS, XPS, DSC, GPC, FTIR, AFM, confocal microscopy, wear testing, fatigue testing, fracture mechanics analysis, and nanoindentation. Research has been supported by NIH, NSF, ONR, DARPA, OREF and industry. Pedagogical experience includes curriculum development in mechanical engineering and bioengineering. Teaching includes freshman seminars; undergraduate courses on Mechanical Behavior and Processing of Materials, Structural Aspects of Biomaterials, and Principles of Bioengineering; graduate courses on Fracture Mechanics, Mechanical Behavior of Materials, and Polymer Engineering.

Brown University, *Division of Engineering*, Providence, RI, *1988- 1993*
Graduate Researcher and Research Associate. Investigated resistance of polymeric composites, polymers and biomaterials to crack inception and fracture under cyclic loading. Characterized and quantified the evolution of cyclic stress fields ahead of fatigue cracks by recourse to photoelasticity and laser interferometry. Confirmed that residual tension is responsible for crack nucleation under cyclic compression in polymeric solids. Studied micromechanisms of fatigue fracture in these materials using electron and optical microscopy techniques. Developed models for cyclic damage in structural polymers.

Army Research Labs, *Corrosion Science Division*, Watertown, MA, *1987- 1988*
Research Engineer. Characterized the effect of ion implantation and surface treatments on the hydrogen embrittlement resistance in 4340 steels. Analytic techniques included barnacle electrode methods and fracture toughness testing. Fractography and microstructural characterization was performed with scanning and transmission electron microscopy.

Chancellor's Professor
Department s of Mechanical Engineering and Bioengineering
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HONORS AND AWARDS

Lawrence Talbot Chaired Professorship in Engineering, *2007-2011*
Faculty of the National Student Leadership Conference, *2006-7*
University of California Chancellor's Professorship, *2004-2009*
U.S. Presidential Award for Excellence in Science, Mathematics and Engineering Mentoring, *2004*
Faculty Mentor to the ***Society for Biomaterials Undergraduate Research Award*** for research entitled, "Biochemical Characterization of Atherosclerotic Plaques Using FTIR Spectroscopy and Histology," *2002*
Elected Fellow to ***American Association for the Advancement of Science,*** *2002*
American Association for the Advancement of Science Mentor Award, *2001*
Miller Research Professorship, *2000*
Congressional Citation for Engineering Excellence, *1999*
Engineering Excellence and Distinguished Engineering Alumni Award, University of Rhode Island, *1999*
Chancellor's Research Initiative Award, *1999-2000*
ONR Young Investigator Award, *1998-2001*
The Alonzo J Neufeld Award, *Western Orthopedic Association*, *1998*
Prytanean Alumnae Award, *1997-1998 Given annually to a Professor who serves as an exceptional role model to women.*
Hellman Family Faculty Fund Award*, 1997-1998*
National Science Foundation CAREER Award*, 1996-2001*
Cal Berkeley Career Development Award, *1996-1997*
Faculty Sponsor for the ***DuPont Plunkett Student Award for Innovation with Teflon and Tefzel****, 1996*
Chancellor's Award for Academic Excellence of Research, *1995*
U. C. Regents' Junior Faculty Fellowship, *1995*
Brown University Materials Engineering Teaching Award, *1993*
Elected to Sigma Xi, *1990*
Brown University Presidential Fellowship and Research Assistantship, 1988-1993
Elected to Tau Beta Pi, 1988
University of Rhode Island Undergraduate Research Award, *1988*

PROFESSIONAL SERVICE

Guest Editor: *International Journal of Fatigue*
Reviewer: NIH, DOE, NSF, Society for Biomaterials
Journal Reviewer: *Applied Biomaterials, Journal of Biomedical Materials Research, Journal of the Mechanics and Physics of Solids, Journal of Orthopedic Research, Knee, Polymer, Polymer Science and Engineering, International Journal of Fatigue, Journal of Biomedical Engineering, Journal of Biomechanical Engineering, Journal of Bone and Joint Surgery*
Member*:* AAAS, ASEE, MRS, ASME, Prytanean Honor Society, Society for Biomaterials, Orthopedic Research Society

PATENTS: "Plasma-Assisted Surface Modification of Polymers for Medical Device Applications",
U.S. Patent No. 6,379,741. Issued April 30, 2002
U.S. Patent No. 6,685,743. Issued February 3, 2004.

BOOK CHAPTERS

"Fatigue Crack Propagation in Polymer Blends," R. Pearson and L. Pruitt, in Polymer Blends: Formulation and Performance, D.R. Paul and C.B. Bucknall, Eds., John Wiley and Sons, Inc., New York, **27,** 269-299, 1999.
"Fatigue Testing and Behavior of Plastics," L. Pruitt, in *ASM Handbook*, Volume 8, *Mechanical Testing and Evaluation*, H. Kuhn and D. Medlin, Eds., ASM.International, Ohio, **8** 758-767, 2000.

"Fluorocarbon Polymers in Biomedical Engineering," L.Pruitt, in Advances in Polymer Science: Encyclopedia of Materials: Science and Technology, D.F. Williams, Ed., Elsevier Science Limited, Oxford, 2001.
"Radiation Effects on Medical Polymers and on their Mechanical Properties," in Advances in Polymer Science: Radiation Effects, H.H. Kausch, Ed., Springer-Verlag, Heidelberg, 2003.
"Fatigue of Polymers," L. Pruitt, in Comprehensive Structural Integrity, R.O. Ritchie and Y. Murakami, Eds., Elsevier Science Limited, Oxford, 2002.
"Conventional and Cross-linked Polyethylene Properties," L. Pruitt, in Total Knee Arthroplasty: A Guide for Better Performance, J. Bellmans, M. Ries, and J. Victor, Eds., Springer-Verlag, Heidelberg, 2004.
"Advances in UHMWPE:Structure-Property-Processing Inter-relationships," A. Bellare and L. Pruitt, in Joint Replacements and Bone Resorption Eds. A. Shanbhag, H. Rubash and J. Jacobs, Marcel Dekker, NY, 2004.
"Alternative Bearings for Knee Articulation: Hopes and Realities," M. Ries and L.Pruitt, in Surgery of the Knee, 4th ed. Ed W.N. Scott, J. Insall, NY, 2005.
"Morphological Analysis of Retrieved Cross-linked UHMWPE and Improved Microstructures for Enhanced Fatigue and Wear Performance," L.Pruitt, in UHMWPE for Arthroplasty: From synthesis to implant, 121-132, Eds; L. Costa, E.M. Brach del Prever, P. Bracco, Torino, IT, 2005.

ARCHIVAL JOURNAL PUBLICATIONS

1. J. Furmanski and L. Pruitt, "Peak stress intensity dictates fatigue crack propagation in UHMWPE," submitted to *Polymer* for publication (2007).
2. N. Gundiah, M. Ratcliff, and L. Pruitt, "Mechanics of Arterial Elastin," submitted to *Journal of Experimental Biology* for publication (2007).
3. D.M. Ebenstein, D. Coughlin, J. Chapman, C. Li, and L. Pruitt, "Structure-property relations of atherosclerotic plaque tissue," submitted to *Journal of Biomedical Materials Research* for publication (2007).
4. J. Furmanski, S. Gupta, A. Chawan, A. Kohm, B. Jewett, L. Pruitt, and M. Ries, "Extensive Surface Cracking in a Highly Crosslinked Acetabular Liner Associated with a Non-Spherical Femoral Head Counterface," *Journal of Bone and Joint Surgery*, accepted for publication (2007).
5. S. Gupta, F. Carrillo, C. Li, L. Pruitt, and C. Puttlitz, "Adhesive Forces Significantly Affect Elastic Modulus Determination of Soft Polymeric Materials in Nanoindentation," *Journal of Materials Science Letters* 61(2):448-451(2007).
6. N. Gundiah, M, Ratcliffe, and L. Pruitt, "A new constitutive model for arterial elastin: I. Comparison of purification methods for mechanical tests and material symmetry of arterial elastin," *Journal of Biomechanics* accepted for publication (2007).
7. N. Gundiah, D. Chang, P. Zhang, L. Pruitt, P. Ursell, and M.B Ratcliffe, "Biomechanical and Structural Changes in Healing Myocardial Infarct Tissue," submitted to American Physiological Society for publication (2007).
8. C. Li, L.Pruitt, and K. King, " Nanoindentation Differentiates Tissue-Scale Properties of Native Articular Cartilage," *Journal of Biomedical Materials Research* Sep 15;78(4):729-38 (2006).
9. D.M. Ebenstein and L. Pruitt, "Nanoindentation of Biological Materials," *Nano Today* 1(3) 27-33 (2006).
10. N. Gundiah and L. Pruitt, "Role of elastin and collagen in constitutive properties of arteries: experiments using elastase and collagenase" submitted to *Journal of Biomechanical Engineering* for publication (2006).
11. K. Cheng, L. Pruitt, C. Zaloudek, and M. D. Ries, "Osteolysis is caused by Tibial Component Debonding in Total Knee Arthroplasty," *Clinical Orthopaedics and Related Research* 443 333-336 (2006).
12. M.D. Ries, T. Petrie, L. Al-Marashi, E. Young, P. Goldstein, A. Hetherington and L. Pruitt," In-vivo Behavior of Acrylic Bone Cement in Total Hip Arthroplasty," *Biomaterials,* 27(2) 256-261 (2006).
13. K. Simis, A. Bistolfi, A. Bellare and L. Pruitt, "The Combined Effects of Crosslinking and Elevated Crystallinity on the Microstructural and Mechanical Properties of Ultra High Molecular Weight Polyethylene," *Biomaterials* 27(9) 1688-1694 (2006).

14. A.P.D. Elfick, K. Healy, A.Unsworth, L. Pruitt, "The Importance of Protein Physisorption in BioMEMs/NEMs Applications: A Nanotribological Study" in "Life Cycle Tribology" (Eds Dowson D, Priest M, Dalmaz G, Lubrecht AA), p835-844, Tribology and Interface Engineering Series, No 48, Elsevier, Amsterdam, (2005).
15. S. Gupta, F. Carrillo, M. Balooch, L. Pruitt, C.M. Puttlitz, "Simulated Soft Tissue Nanoindentation – A Finite Element Study," *Journal of Materials Research* 20(8) 1979-1994 (2005).
16. M. Ries and L. Pruitt, "Effect of Crosslinking on the Microstructure and Mechanical Properties of UHMWPE," *Clinical Orthopedics and Related Research,* 440:149-156 (2005).
17. F. Carrillo, S. Gupta, M. Balooch, S.J. Marshall, G.W. Marshall, L. Pruitt, C.M. Puttlitz, "Nanoindentation of Polydimethylsiloxane Elastomers:Effect of crosslinking, work of adhesion, and fluid environment on elastic modulus" *Journal of Materials Research*, 20(10) 2820-2830 (2005).
18. L. Pruitt, "Deformation, Yielding, Fracture and Fatigue Behavior of Conventional and Highly Cross-linked Ultra High Molecular Weight Polyethylene," *Biomaterials* **26** (8) 905-915 (2005).
19. L. Bradford, D. Baker, M.D. Ries, and L. Pruitt, "Fatigue Crack Propagation Resistance of Highly Crosslinked Polyethylene," *Clinical Orthopedics and Related Research,* **(429):** 68-72 (2004).
20. D. M. Ebenstein, A. Kuo, J.J. Rodrigo, A. H.Reddi, M.D. Ries, and L. Pruitt, "A Nanoindentation Technique for Functional Evaluation of Cartilage Repair Tissue," *Journal of Materials Research,* **19(1)**, 273-281 (2004).
21. J. Zhou, A. Chakravartula, L. Pruitt, and K. Komvopoulos, "Tribological and Nanomechanical Properties of Unmodified and Crosslinked Ultra-High Molecular Weight Polyethylene for Total Joint Replacements," *Journal of Tribology* ASME Trans., **126(2)**, 386-394 (2004).
22. L. Bradford-Collons, D.A. Baker, J. Graham, A. Chawan, M.D. Ries, L. Pruitt, "Wear and Surface Cracking in Early Retrieved Highly Crosslinked Durasul Acetabular Liners," *Journal of Bone and Joint Surgery* 86:1271-1282 (2004).
23. D. Ebenstein and L. Pruitt, "Nanoindentation of Hydrated Materials for Application to Vascular Tissues, *Journal of Biomedical Materials Research* , 69A(2) 222-232 (2004).
24. L. Bradford, R. Kurland, M. Sankaran, H. Kim, L. Pruitt, M. Ries, "Early Failure due to Osteolysis in Highly Cross-linked Ultra-High Molecular Weight Polyethylene: A Case Report," *Journal of Bone and Joint Surgery 86:1051-1056* (2004).
25. J. Graham, M. Ries, and L. Pruitt, "Effect of Bone Porosity on Mechanical Integrity of the Bone-Cement Interface," *Journal of Bone and Joint Surgery* , **85(A)** 10, 1901-1908 (2003).
26. C. Li, D. Ebenstein, C. Xu, Chapman, J., Saloner, D., Rapp, J., and L. Pruitt, "Biochemical Characterization of Atherosclerotic Plaques Using FTIR Spectroscopy and Histology," *Journal of Biomedical Materials Applied Biomaterials,* **64A**(2) 197-206 (2003).
27. K. Hughes, M.D. Ries, and L. Pruitt, "Structural Degradation of Acrylic Bone Cement due to In Vivo and Simulated Aging," *Journal of Biomedical Materials Research* **65A**:126-135(2003).
28. D.A. Baker, A. Bellare, L. Pruitt, "The Effects of Degree of Crosslinking on the Fatigue Crack Initiation and Propagation Resistance of Orthopedic Grade Polyethylene," *Journal of Biomedical Materials Research* **66A**:146-154(2003).
29. E.A. Nauman, D.M. Ebenstein, K.F. Hughes, L. Pruitt, B.P. Halloran, D.D. Bickle, and T.M. Keaveny, "Mechanical and Chemical Characteristics of Mineral Produced by bFGF-Treated Bone Marrow Stromal Cells In Vitro", *Tissue Engineering*, **8**(6) 931-939 (2002).
30. S.B. Gunther, J. Graham, T.R. Norris, M.D. Ries, and L. Pruitt," Retrieved Glenoid Components: A Classifaction System for Surface Damage Analysis," *Journal of Arthroplasty,* **17**(1) 95-100 (2002).
31. C.M. Klapperich, L. Pruitt, and K. Komvopoulos, "Nanomechanical Properties of Energetically Treated Polyethylene Surfaces", *Journal of Materials Research*, **17**(2) 423-430 (2002).
32. D. Baker, A. Bellare, and L. Pruitt, "Ultra-Small X-ray Scattering to Detect Fatigue Damage in Polymers," *Journal of Materials Science Letters* **20**(12) 1163-1164 (2001).

33. C. Klapperich, L. Pruitt, and K. Komvopoulos, "Chemical and biological characteristics of low-temperature plasma treated ultra-high molecular weight polyethylene for biomedical applications,"*Journal of Materials Science: Materials in Medicine*, **12** 549-556 (2001).
34. S. Niedzwiecki, J. Short, S. Jani, W. Sauer, C. Klapperich, M. Ries, and L. Pruitt, "Comparison of Three Viable Wear Debris Isolation Techniques: Acid Digestion, Enzyme Cleavage and the Campbell Method," *Journal of Biomedical Materials Research,* **56** 245-249 (2001).
35. R. Meyer and L. Pruitt, "The Effect of Cyclic True Strain on the Morphology, Structure, and Relaxation Behavior of Ultra High Molecular Weight Polyethylene," *Polymer*, **42** 5293-5306 (2001).
36. C. Klapperich, K. Komvopoulos, and L. Pruitt, "Nanoindentation of Various Polymers for the Determination of Surface Mechanical Properties," *ASME Journal of Tribology* **123** (3) 624-631 (2001).
37. J. Graham, M. Ries, L. Pruitt, and N. Gundiah "Fracture and Fatigue Properties of Acrylic Bone Cement: The Combined Effects of Sterilization and Mixing Method," *Journal of Arthroplasty,* **15**(8) 1028-1035 (2000).
38. S. M. Kurtz, C. M. Rimnac, L. Pruitt, C. W. Jewett, V. Goldberg, and A. A. Edidin, "The Relationship Between the Clinical Performance and Large Deformation Mechanical Behavior of Retrieved UHMWPE Tibial Inserts," *Biomaterials* **21** 283-291 (2000).
39. C. Klapperich, S. Niedzwiecki, M. Ries, and L. Pruitt, "Fluid Sorption of Orthopedic Grade UHMWPE in a Serum Environment is Affected by Surface Area and Sterilization Method," *Applied Biomaterial* **53** 73-75 (2000).
40. D.A. Baker, R.S. Hastings and L. Pruitt, "Compression and Tension Fatigue Resistance of Medical Grade UHMWPE: The Effect Morphology, Sterilization, Aging and Temperature," *Polymer*, **41** 795-808 (2000).
41. C. Klapperich, J. Graham, L. Pruitt, and M. Ries, "Failure of a Metal - Metal Total Hip Arthroplasty from Progressive Osteolysis," *Journal of Arthroplasty*, **14** *(7) 877-881* (1999).
42. D. Baker, R.S. Hastings and L. Pruitt, "A Study of the Fatigue Resistance of Chemical and Radiation Crosslinked Medical Grade UHMWPE", *Journal of Biomedical Materials Research,* **46**(4), 573-581, (1999).
43. S.M. Kurtz, D.J. Crane, L. Pruitt, and A. Edidin, "Evolution of Morphology in UHMWPE Following Accelerated Aging: The Effect of Heating Rates," *Journal of* B*iomedical Materials Research* **46** (1) 112-120 (1999).
44. S.M. Kurtz, L. Pruitt, C.W. Jewett, J.R. Foulds, and A. A. Edidin, "Radiation and Chemical Crosslinking Promote Strain Hardening Behavior and Molecular Alignment in UHMWPE During Multi-axial Conditions," *Biomaterials*, **20** (16) 1449-1462 (1999).
45. A. Edidin, L. Pruitt, C.W. Jewett, R.P. Crawford, D. J. Crane, D. Roberts and S.M. Kurtz, "Plasticity-Induced Damage Layer is Precursor to Wear in Radiation-Crosslinked UHMWPE," *Journal of Arthroplasty*, **14** (5) 616-627 (1999).
46. Klapperich, K. Komvopoulos, and L. Pruitt, "Tribological Properties and Microstructure Evolution of Ultra-High Molecular Weight Polyethylene," *Journal of Tribology, 121(2)* 394-402 (1999).
47. S.M. Kurtz, L. Pruitt, C.W. Jewett, R.P. Crawford, D. J. Crane, and A. A. Edidin, "The Yielding, Plastic Flow and Fracture Behavior of Ultra High Molecular Weight Polyethylene used in Total Joint Replacements," *Biomaterials* **19/21** 1989-2003 (1999).
48. J. Catanese, D. Cooke, C. Maas, and L. Pruitt, "Mechanical Properties of Medical Grade Expanded Polytetrafluoroethylene: The Effects of Internodal Distance, Density, and Displacement Rate," *Applied Biomaterials* **48**(2), 187-192 (1999).
49. T. Xu and L. Pruitt, "Diamond-Like Carbon Coatings for Orthopedic Applications: An Evaluation of Tribological Performance," *Journal of Materials Science: Materials in Medicine* **10** 83-90 (1999).
50. L.P. Lee, S. Berger, and L. Pruitt, "High Aspect Ratio Polymer Microstructures and Cantilevers for Bio-MEMS Using Low Energy Ion Beam and Photolithography," *Sensors and Actuators A: Physical* **71/1-2** 144-149 (1998).
51. M. Goldman, G. Long, R. Gronsky, and L. Pruitt, "The Effect of Hydrogen Peroxide and Sterilization on Structure of Ultra High Molecular Weight Polyethylene," *Polymer Degradation and Stability,* **62**, 97-104 (1998).

52. M. Goldman and L. Pruitt, "A Comparison of the Effects of Gamma Radiation and Low Temperature Hydrogen Peroxide Gas Plasma Sterilization on the Molecular Structure, Fatigue Resistance and Wear Behavior of Ultra High Molecular Weight Polyethylene," *Journal of Biomedical Materials Research* **40** (3), 378-384 (1998).
53. M. Goldman, R. Gronsky, and L. Pruitt, "The Influence of Sterilization Technique and Aging on the Structure and Morphology of Medical Grade Ultra High Molecular Weight Polyethylene," *Journal of Materials Science: Materials in Medicine*, **9**, 207-212 (1998).
54. L. Pruitt and L. Bailey, "Factors Affecting the Near-Threshold Fatigue Behavior of Surgical Grade Ultra High Molecular Weight Polyethylene", *Polymer*, **39,** 1545- 1553 (1998).
55. D. Greene, L. Pruitt and C.S. Maas, "Biomechanical Effects of e-PTFE Implant Structure on Soft Tissue Implantation Stability: A Study in the Porcine Model," *The Laryngoscope Journal*, July **107**, 957- 962 (1997).
56. M. Goldman, M. Lee, R. Gronsky and L. Pruitt, ``Oxidation of Ultra High Molecular Weight Polyethylene Characterized by Fourier Transform Infrared Spectrometry", *Journal of Biomedical Materials Research*, **37**(1) 43-50 (1997).
57. L. Pruitt and D. Rondinone, ``The Effect of Specimen Thickness and Load Ratio on the Fatigue Behavior of Polycarbonate", *Polymer Science and Engineering*, Mid-May **36** (9), 1300-1305, (1996).
58. M. Goldman, R. Ranganathan, R. Gronsky, and L.Pruitt, `` The Effects of Gamma Radiation Sterilization and Aging on the Structure and Morphology of Medical Grade Ultra High Molecular Weight Polyethylene," *Polymer* **37**(14) 2909-2913 (1996).
59. L. Pruitt and R. Ranganathan, ``Effect of Sterilization on the Structure and Fatigue Resistance of Medical Grade UHMWPE," *Materials Science and Engineering*, **C3**, 91-93, (1995).
60. L. Pruitt, J. Koo, C. Rimnac, S. Suresh and T. Wright, ``Cyclic Compressive Loading Results in Fatigue Cracks in Ultra High Molecular Weight Polyethylene", *Journal of Orthopaedic Research*, **13,** 143-146, (1995).
61. L. Pruitt and S. Suresh, ``Cyclic Stress Fields Ahead of Tension Fatigue Cracks in Amorphous Polymers", *Polymer*, 3221-3229 (1994).
62. L. Pruitt and S. Suresh, ``Cyclic Stress Fields For Fatigue Cracks in Amorphous Solids: Experimental Measurements and Their Implications", *Philosophical Magazine A*, **67**, 1219-1245, (1993).
63. L. Pruitt, R. Herman and S. Suresh, ``Fatigue Crack Growth in Polymers Subjected to Fully Compressive Cyclic Loads", *Journal of Materials Science*, **27**, 1608-1616, (1992).
64. L.Pruitt and S. Suresh, ``Fatigue Crack Growth in Graphite-Epoxy Composites Subjected to Cyclic Compressive Loads", *Journal of Materials Science Letters*, 11, 1356-1360, (1992).
65. O. J. Gregory, L. Pruitt, E. E. Crisman, C. Roberts and P. J. Stiles, `` Native Oxides Formed on Single Crystal Germanium by Wet Chemical Reactions", *Journal of the Electrochemical Society*, 135, 923-929, (1988).

CONFERENCE PAPERS

1. C. Li, K. King, and L. Pruitt, "Analysis of Force-Displacement Curves of Cartilage and Biomaterials," 53rd Annual Meeting of the Orthopaedic Research Society, San Diego, CA, February 2007.
2. J. Furmanski, S. Atwood, J. Tang, E. Feest, M. Hoang, and L. Pruitt, "Effect of α-Tocoperol on Fatigue Resistance of Cross-linked UHMWPE," 53rd Annual Meeting of the Orthopaedic Research Society, San Diego, CA, February 2007.
3. J. Furmanski, S.R. Kane, S. Gupta and L. Pruitt, "Work in Progress: Problem-Based Learning and Assessment of Competence in a an Engineering Biomaterials Course," 36th ISEE/ASEE Frontiers in Education Conference, San Diego, CA October 2006.
4. C. Li, K. King, and L. Pruitt, "Changes in Biomechanical Properties in Articular Cartilage due to Cyclic Loading," Annual Meeting of the Biomedical Engineering Society, Chicago, IL, October 2006.
5. S. Kane and L. Pruitt, "PEGylation of UHMWPE to reduce mechanical adhesion," American Chemical Society National Meeting, San Francisco, September 2006.

6. A. Chakravartula, B. Ando, C.Li, S. Gupta and L. Pruitt, "Undergraduate Students Teaching Children: K-8 Outreach within the Core Engineering Curriculum," Conference Proceedings of the American Society for Engineering Education, 1310.1- 1310.14, Chicago, June 2006.
7. J. Gaumer, J. Lannutti, A. Kohm, L. Pruitt, M. Ries, V. Ravula, T. Dey, and G. Li, " New Technique for Evaluation of Retrieved Total Hip Arthroplasty," Annual Meeting of the Society of Biomaterials, Pittsburgh, PA, April 2006.
8. L. Pruitt, " The Origins of Wear in Ultra High Molecular Weight Polyethylene used in Total Joint Arthroplasty," 13th International Meeting on the Deformation, Yield and Fracture of Polymers," Eindhoven, Netherlands, April 2006.
9. A. Kohm, J. Fermanski, and L. Pruitt, "Effect of α -Tocopherol on UHMWPE Fatigue Resistance," Annual Meeting of the Orthopaedic Research Society, 662, Chicago, March 2006.
10. N. Gundiah, M. Ratcliff, and L. Pruitt, "Role of Elastin and Collagen in Arterial Mechanics," First International Conference on Mechanics of Biomaterials & Tissues, Waikoloa, HI, December 2005.
11. L. Pruitt, C.Li, S. Gupta, and D. Coughlin, "Multiscale Mechanical Characterization of Cartilage and other Structural Tissues," in *Mechanical Behavior of Biological and Biomimetic Materials*, Annual Meeting of the Materials Research Society, Boston, December, 2005.
12. L. Pruitt and A. Chakravartula, "Use of Interactive Exhibits in Undergraduate Curriculum to Provide Public Science Education to K-12," Forum on Materials Science Education, Annual Meeting of the Materials Research Society, Boston, December, 2005.
13. N. Gundiah, M. Ratcliff, and L. Pruitt, "A Novel Constitutive Model for Arterial Elastin," ASME Summer Bioengineering Conference, Vail, CO June 2005.
14. A. M. Chakravartula, L. Pruitt, K. Komvopoulos, and A. Bellare, "Nanoscale Viscoelastic Properties of Microstructurally-modified UHMWPE," Society of Biomaterials Annual Meeting, Memphis, TN. April, 2005.
15. C. Li, S. Gupta, F. Carrillo, C. Puttlitz, and L. Pruitt "Nanoindentation and Unconfined Compression Characterization of Poly dimethyl siloxane," Society of Biomaterials Annual Meeting, Memphis, TN. April, 2005.
16. D. Coughlin and L. Pruitt, "Characterization of Arterial Calcifications Using Fourier Transform Infrared Spectroscopy Imaging," Society of Biomaterials Annual Meeting, Memphis, TN. April, 2005.
17. L. Pruitt, "The Role of Microstructure on the Fatigue and Fracture Properties of Medical Grade Ultra High Molecular Weight Polyethylene," International Conference on Fracture, Turin, IT, March 2005.
18. L. Pruitt, "Morphological Analysis of Retrieved Cross-linked UHMWPE and Improved Microstructures for Enhanced Fatigue and Wear Performance," Conference on UHMWPE for Arthroplasty: Degradation, Stabilization, and Crosslinking, Torino, IT, 121, March 2005.
19. F Carrillo, S Gupta, L Pruitt, M Balloch, CM Puttlitz. "Nanoindentation validation of soft biomaterials." 51st Annual Meeting of the Orthopaedic Research Society, Washington, D.C., February 20-23, 2005.
20. N. Gundiah, D. Chang, P. Zhang, M. Ratcliffe, and L. Pruitt, "Structural and Mechanical Characteristics of Healing Myocardial Scar Tissue," International Mechanical Engineering Congress Expo, Anaheim, Nov, 2004.
21. J. Wang and L. Pruitt, "The Contribution of Elastin, Collagen and Smooth Muscle Cells to Residual Strains in Large Elastic Arteries," International Mechanical Engineering Congress Expo, Anaheim, Nov, 2004.
22. A. P. D. Elfick, K. Healy, T. Unsworth, and L. A. Pruitt, "The Importance of Protein Physisorption in BioMEMs/NEMs Applications: A Nanotribological Study," Leeds-Lyon Tribology Conference, Lyon, September, 2004.
23. J. Sherriff, A. Pelton, and L. Pruitt, "Effects of Hydrogen on the Fatigue Behavior of Nitinol," Materials & Processes for Medical Devices Conference, ASM International, Minnesota, August 2004.
24. D.M. Ebenstein, J. Fischer, C. Li, C.Puttlitz C and L. Pruitt, "Nano-DMA for Characterization of Viscoelastic Polymers and Biomaterials," 7th World Biomaterials Congress, Sydney, May 2004.
25. D.G. Coughlin and L. Pruitt, "Nanoindentation of Calcifications from Atherosclerotic Carotid Arteries," 7th World Biomaterials Congress, Sydney, May 2004.
26. L.Pruitt, C.Li, and K. King, "Nanoindentation Assessment of Rabbit Finger Cartilage," 7th World Biomaterials Congress, Sydney, May 2004.

27. L. Pruitt, K. Simis, A. Bistolfi, and A. Bellare, "The Effect of Microstructure on the Mechanical Properties of UHMWPE," 7th World Biomaterials Congress, Sydney, May 2004.
28. L. Pruitt, M. Sinha, D. Zeltser, and S. Gunther, "The Effects of In Vivo Damage on UHMWPE Glenoid Components," 7th World Biomaterials Congress, Sydney, May 2004.
29. A.P.D. Elfick, J. Zhao, K. Healy, A.Unsworth, and L. Pruitt, " Biomolecular Boundary Lubrication of Total Joint Replacements," 7th World Biomaterials Congress, Sydney, May 2004.
30. L. Al-Marashi, E. Young, M.Gudiel, T. Petrie, A. Hetherington, P. Goldstein, D. Ebenstein, M. Ries, and L. Pruitt, "Evaluation of Mechanical Degradation of Acrylic Bone Cement from Hip Arthroplasty Revision Surgery," 7th World Biomaterials Congress, Sydney, May 2004.
31. L. Pruitt, A. Chakravartula, K. Simis, A. Bistolfi, and A. Bellare, "Nano-scale Mechanical Properties of Microstructurally Modified UHMWPE," 7th World Biomaterials Congress, Sydney, May 2004.
32. A.P.D. Elfick, J. Zhao, K.E. Healy, A. Unsworth, and L. Pruitt, "Lateral Force Microscopy Study of Physisorbed Protein Boundary Lubrication at Low Contact Stresses, American Chemical Society, Anaheim, April (2004).
33. C. Li, D.M. Ebenstein, K. King, and L. Pruitt, "Nanoindentation of Finger Joint Cartilage in a Fluid Cell," 50th Annual Meeting of the Orthopedic Research Society Meeting, San Francisco, CA, March 2004.
34. K.S. Simis, A. Bistolfi, A. Bellare, and L. Pruitt, "Fatigue Behavior of Crosslinked UHMWPE with High Crystallinity," 50th Annual Meeting of the Orthopedic Research Society Meeting, San Francisco, CA, March 2004.
35. L.H. Al-Marashi, E.Y. Young, M. Gudiel, T.A. Petrie, A. Hetherington, P. Goldstein, D. Ebenstein, M. Ries, and L. Pruitt, "Comprehensive Mechanical Evaluation of Acrylic Bone Cement in-vivo Degradation," 50th Annual Meeting of the Orthopedic Research Society Meeting, San Francisco, CA, March 2004.
36. J. Wang and L. Pruitt, "The Contribution of Elastin, Collagen and Smooth Muscle Cells to Residual Strain in Porcine Aorta," Annual Meeting of the Biomedical Engineering Society, 6.P5.126, Oct 2003, Nashville, TN.
37. N. Gundiah and L.Pruitt, "Biaxial Mechanical Properties of Elastin," Annual Meeting of the Biomedical Engineering Society, 6.P5.138, Oct 2003, Nashville, TN.
38. D. Ebenstein and L. Pruitt, "Nanoindentation as a Tool for Detection of Cartilage Degradation," SEM Mechanics of Biological and Biologically Inspired Materials and Systems Conference, 16, October 2003, Springfield, MA
39. A. Elfick, K. Healy, A. Unsworth, L. Pruitt, "Boundary Lubrication and Its Enhancement as a Paradigm for Improved Total Hip Replacement Performance," 16th Annual Symposium for the International Society for Technology in Arthroplasty, San Francisco, September 2003.
40. D.M. Ebenstein, A. Kuo and J.J. Rodrigo, A.H. Reddi, M. Ries, and L. Pruitt, "Nanoindentation as a Tool for Measuring Cartilage Repair Tissue Properties," XIX Congress of International Society of Biomechanics, Dunedin, New Zealand, July 2003.
41. T. Petrie, P. Goldstein, A. Heatherington, D. Ebenstein, M. Ries, and L. Pruitt, "Assessment of In-Vivo Mechanical Degradation of Acrylic Bone Cement," Annual Meeting of the Society for Biomaterials," 482, Reno, NV, April 2003.
42. D. Ebenstein, K. King, and L. Pruitt, "A Nanoindentation Technique for Measuring Mechanical Properties of Finger Joint Cartilage," Annual Meeting of the Society for Biomaterials, 718, Reno, NV, April 2003.
43. A. Chakravartula, Y. Zhou, K. Komvopoulos, and L. Pruitt, "Nanomechanical Analysis of Surface Properties and Early Wear Mechanisms in UHMWPE," Annual Meeting of the Society for Biomaterials, 601, Reno, NV, April 2003.
44. K. Simis, A. Bellare, A. Bistolfi and L. Pruitt, "'The Effect of High Pressure Crystallisation and Crosslinking on the Fatigue Crack Inception Behaviour of Medical Grade Ultra High Molecular Weight Polyethylene," 12th International Conference on the Deformation, Yield and Fracture of Polymers, 69-72, April 2003, Cambridge, UK.
45. G. McKenna, D. Rondinone, and L. Pruitt, "A Three Dimensional Nonlinear Viscoelastic Constitutive Model for Orthopaedic Grade UHMWPE," 12th International Conference on the Deformation, Yield and Fracture of Polymers, 69-72, April 2003, Cambridge, UK.
46. K. Simis, A. Chawan, L. Collons, M. Ries, L. Pruitt, "Analysis of Early Wear Mechanisms in Retrieved Highly Crosslinked Acetabular Liners," Annual meeting of the Orthopedic Research Society, 1417, New Orleans, February (2003).

47. L. Collons, J. Graham, A. Chawan, M. Ries, L. Pruitt, " Mechanisms of Fatigue in Highly Crosslinked UHMWPE," Annual meeting of the Orthopedic Research Society, 1424, New Orleans, February (2003).
48. D M. Rondinone, L A. Pruitt, G.B. McKenna, "A Three-dimensional Nonlinear Viscoelastic Constitutive Model for UHMWPE used in Medical Implants," Society of Rheology Annual Meeting, Minneapolis, October (2002).
49. L. Pruitt, "A Study of Structural Degradation Schemes in Acrylic Bone Cements," National Meeting of the American Chemical Society, Boston (2002)
50. D. Ebenstein, J. Chapman, C. Li, D. Coughlin, J. Rapp, D. Saloner, L. Pruitt, "Nanomechanical and Biochemical Properties of Diseased Artery Tissue", World Congress of Biomechanics, 1084, Calgary (2002).
51. J. Wang, N. Gundiah, L.Pruitt, "The Contribution of Elastin and Collagen to Residua Strain in Porcine Aorta," World Congress of Biomechanics, 43, Calgary (2002).
52. S. Hsu; D. Ebenstein; A. Issever, L. Pruitt, S. Majumdar, "Investigation of Structure-Property Relationships in Human Femoral Trabelcular Bone," World Congress of Biomechanics, Calgary (2002).
53. A. Chawan, A. Chakravartula, J. Zhou, M. Ries, L. Pruitt, K. Komvopoulos, "Combined Effects of Crosslink Density and Conformity on the Tribological Performance of Medical-Grade Ultra-High Molecular Weight Polyethylene," Materials Research Society, Spring Annual Meeting, San Francisco (2002).
54. D. Ebenstein, CM Puttlitz, and L. Pruitt, "A Novel Technique for Measuring Murine Fracture Callus Mechanical Properties Using Nanoindentation," 28th Annual Meeting of the Society for Biomaterials, Tampa (2002).
55. J. Wang, N. Gundiah, L. Pruitt, "The Contribution of Elastin to Residual Strains in Porcine Aorta," 28th Annual Meeting of the Society for Biomaterials, Tampa (2002).
56. J. Graham, M.Ries, L. Pruitt, "Initial Crack Length and Volume Fraction Effects on Fracture Toughness at Bone/Cement Interface," 28th Annual Meeting of the Society for Biomaterials, Tampa (2002).
57. L. Bradford-Collons, D. Baker, J. Graham, A. Chawan, M. Ries, L. Pruitt+ "Crosslinked Polyethylene Shows Evidence of Wear and Fatigue: A Retrieval Study of Durasul Liners," 28th Annual Meeting of the Society for Biomaterials, Tampa (2002).
58. D. Ebenstein and L. Pruitt, "Adaptation of Nanoindentation Apparatus for the Study of Nanomaterials Using Blunt Indenters," 28th Annual Meeting of the Society for Biomaterials, Tampa (2002).
59. J. Chapman, D. Ebenstein, C. Li, and L. Pruitt, "Quantification of Calcification, Fibrous and Lipid Content in Atherosclerotic Plaque Using FTIR", 28th Annual Meeting of the Society for Biomaterials, Tampa (2002).
60. C. Li, D. Ebenstein, C. Xu, Chapman, J., Saloner, D., Rapp, J., and L. Pruitt, "Biochemical Characterization of Atherosclerotic Plaques Using FTIR Spectroscopy and Histology," 28th Annual Meeting of the Society for Biomaterials, Tampa (2002).
61. A.Chawan, S. Gunther, T. Norris, M. Ries, L. Pruitt, " Correlating Shelf Life to In-Vivo Performance of Retrieved UHMWPE Glenoid Components," 48th Annual Meeting, Orthopaedic Research Society, February (2002), Dallas.
62. A. Bellare, M. Turrell, P. Ganesan, A. Gomoll, W. Fitz, D. Baker, L. Pruitt, R. Scott, and T. Thornhill, "Mechanisms of Crack Propagation in a Conventional and Nanocomposite Bone Cement," 48th Annual Meeting, Orthopaedic Research Society, February 2002, Dallas.
63. J. Graham, M. Ries, and L. Pruitt, "Fracture Toughness of the Trabecular Bone/Cement Interface Sensitive to Initial Crack Length," 48th Annual Meeting, Orthopaedic Research Society, February 2002, Dallas.
64. L. Pruitt, D. Ebenstein, J. Wang, N. Gundiah, " Biomechanical Analysis of Vascular Tissue", American Heart Association, Young Investigators Forum, September 2001, Los Angeles.
65. D. Ebenstein, J Chapman, C Li, D. Saloner, J Rapp, and L. Pruitt, "Assessing structure-property relations of diseased tissues using nanoindentation and FTIR", Annual Meeting Materials Research, December (2001), Boston. Materials Research Society Symposium Proceedings **711** 47-52 (2002).
66. L. Pruitt, "Cyclic Damage in Medical Grade Polymers used in Orthopedics," 10th International Congress of Fracture, December 2001, Honolulu, HI.

67. A. Bellare, A. Gomoll, W. Fitz, D. Baker, L.Pruitt, R. Scott, and T. Thornhill, "Fatigue Performance of a New Nanocomposite Surgical Cement," 4th Combined Meeting of the Orthopaedic Research Societies of the USA, Canada, Europe and Japan, June 2001, 232,Rhodes, Greece.
68. J. Graham, M. Ries, L. Pruitt, "Cement Penetration Depth Significantly Affects Fracture Toughness at the Trabecular Bone/Cement Interface," 27th Annual Meeting of the Society for Biomaterials," 206, April 2001, Saint Paul, MN.
69. D. Ebenstein, C. Li, K. Hughes, C Xu, and L. Pruitt, "Biochemical Characterization of Atherosclerotic Plaques using Spectroscopic and Histological Methods," 27th Annual Meeting of the Society for Biomaterials," 21, April 2001, Saint Paul, MN.
70. D. Ebenstein, L. Kuhn, and L. Pruitt, "Nanoindentation of Hydrated Viscoelastic Materials," 27th Annual Meeting of the Society for Biomaterials," 304, April 2001, Saint Paul, MN.
71. J. Graham, M. Ries and L. Pruitt, "Trabecular Orientation, Bone Porosity and Cement Pressure Significantly Affect Fracture Toughness at the Trabecular Bone/Cement Interface," 47th Annual Meeting, Orthopaedic Research Society,1038, February 2001, San Francisco.
72. S. Gunther, J. Graham, T. Norris, M. Ries, and L.Pruitt, "A Quantitative Evaluation of Surface Damage in Retrieved Total Shoulder Prostheses," 47th Annual Meeting, Orthopaedic Research Society, 780, February 2001, San Francisco.
73. A. Bellare, A. Gomoll, W. Fitz, D. Baker, L.Pruitt, R. Scott, and T. Thornhill, "Using Nanotechnology to Improve the Fatigue Performance of Acrylic Bone Cement," 47th Annual Meeting, Orthopaedic Research Society, 182, February 2001, San Francisco.
74. E.A. Nauman D. Ebenstein, K. Hughes, B. P. Halloran, D. Bikle, L. Pruitt, and T.M. Keaveny, "The Effect of β-Glycerophosphate on the Chemical and Mechanical Character of Mineral Produced by Bone Cells In Vitro," 47th Annual Meeting, Orthopaedic Research Society, 504, February 2001, San Francisco.
75. A. Bellare, A. Gomoll, W. Fitz, R. Scott, and T. Thornhill, D. Baker, L.Pruitt, , "Structure and Properties of a New Nano-Composite Poly(methylmethacrylate) Bone Cement," Annual Meeting, Materials Research Society December 2000, Boston.
76. W. M. Jackson, D. Rondinone, R. Meyer, and L. Pruitt, The Effect of Cyclic Loading and Sterilization on the Strain Recovery Behavior of Orthopedic Grade Ultrahigh Molecular Weight Polyethylene, 12th European Conference on Biomechanics, 227, August 2000, Dublin, Ireland.
77. L. Pruitt, "Characterization of Sub-micron Mechanical Behavior and Fracture Processes of Polymers and Biomaterials," 13th European Conference on Fracture, Es; European Structural Integrity Society, 180-185, September 2000, San Sebastian, Spain.
78. D. Baker and L. Pruitt, "A Comparison of Total Life and Defect Tolerant Fatigue Characterization of Medical Grade UHMWPE," 6th World Biomaterials Congress, 1116, May 2000, Kamuela, HI.
79. N. Gundiah, J. Graham, M. Ries, and L. Pruitt, "Fatigue Life of Acrylic Bone Cement: The Relative Effects of Mixing, Sterilization Method, and Molecular Weight," 6th World Biomaterials Congress, 414, May 2000, Kamuela, HI.
80. C. Klapperich, L.P. Lee, and L. Pruitt, "Micro-patterning of Ultra High Molecular Weight Polyethylene," 6th World Biomaterials Congress, 1233, May 2000, Kamuela, HI.
81. K. Hughes, B. Pelletier, A. Stutz, J. Graham, A. Lawrence, M.Ries, and L. Pruitt, "Artificial Aging of Acrylic Bone Cements," 6th World Biomaterials Congress, 1456, May 2000, Kamuela, HI.
82. D. Ebenstein, L. Kuhn, A. Lundkvist, and L. Pruitt, "Differentiation of Mechanical Properties of Vascular Plaque Constituents using Nanomechanical Methods," 6th World Biomaterials Congress, 531, May 2000, Kamuela, HI.
83. C. Klapperich, H. Huszar, S. Niedzwiecki and L. Pruitt, "Biocompatibility and Chemical Stability of Plasma Modified UHMWPE Surfaces," 6th World Biomaterials Congress, 1517, May 2000, Kamuela, HI.
84. C.M. Klapperich, K. Komvopoulos, and L. Pruitt, "Nanoindentation Experiments to Probe the Surface Properties of Plasma Treated Polyethylenes," Materials Research Society, 446, April 2000, San Francisco.

85. D.A. Baker, A. Bellare, L. Pruitt, Fatigue Analysis of Crosslinked UHMWPE: An Evaluation of Resistance to Initiation and Propagation of Flaws at Varying Crosslink Densities, 11th International Conference on the Deformation, Yield and Fracture of Polymers, 69-72, April 2000, Cambridge, UK.
86. C.M. Klapperich, A. Bellare, K. Komvopoulos, and L. Pruitt, "Sub-Micron Scale Indentation Characterization of Orthopedic Polymers: The Effect of Crosslink Density and Morphology on the Hardness and Elastic Properties of Polyethylene," 11th International Conference on the Deformation, Yield and Fracture of Polymers, 438-441, April 2000, Cambridge, UK.
87. L. Pruitt, D. Baker, and A. Bellare, "Quantitative Method to Detect Micro-Sized Flaws in UHMWPE due to Fatigue Damage," Transactions of 46th annual Meeting, Orthopaedic Research Society, 540, March, 2000. Orlando.
88. J. Graham, N. Gundiah, M. Ries, and L. Pruitt, "Combined Effects of Sterilization and Mixing Methods on the Fracture Toughness of Acrylic Bone Cement," Transactions of 46th annual Meeting, Orthopaedic Research Society, 663, March, 2000. Orlando.
89. B. Pelletier, K. Hughes, S. Muller, L.Pruitt, and M. Ries, "An FTIR Study of In-vivo Structural Evolution in Acrylic Bone Cements Due to Aging," 387, 22nd Annual Meeting of the Society for Biomaterials, April, 1999. Providence.
90. S. Niedzwiecki, J. Short, S. Jani, W. Sauer, L. Pruitt, and M. Ries, "Isolation of UHMWPE Wear Debris: A Comparison of Three Viable Methods," 150, 22nd Annual Meeting of the Society for Biomaterials, April, 1999. Providence.
91. D.J. Crane, L. Pruitt, S. M. Kurtz, C.M. Rimnac, and A.A. Edidin, "Plasticity Induced Damage Layer and Lamellar Alignment Detected in UHMWPE: A Comparison of Retrievals and Simulator Components," 22nd Annual Meeting of the Society for Biomaterials, 516, April, 1999. Providence.
92. D.J. Crane, L. Pruitt,.T. Baldini, C.M. Rimnac, and T.M. Wright," Microstructural Alignment is Induced Around Crack Tips in Ultra High Molecular Weight Polyethylene," 510, 22nd Annual Meeting of the Society for Biomaterials, April, 1999. Providence.
93. S. M. Kurtz, C.W. Jewett, D.J. Crane, L. Pruitt, J.R. Foulds, and A.A. Edidin, Effect of Peroxide and Radiation Crosslinking on the Strain Hardening Behavior and Molecular Alignment of UHMWPE, 516, 22nd Annual Meeting of the Society for Biomaterials, April, 1999. Providence.
94. S.M. Kurtz, C.W. Jewett, D.J. Crane, L. Pruitt, J.R. Foulds, and A.A. Edidin, **"**Radiation and Peroxide Crosslinking Promotes Strain Hardening Behavior and Molecular Alignment in UHMWPE under Multiaxial Loading Conditions," 842, Transactions of 45th annual Meeting, Orthopaedic Research Society, February, 1999. Anaheim.
95. B. Pelletier, K. Hughes, N. Gundiah, S. Muller, L. Pruitt, and M. Ries, "A Study of the In-Vivo Molecular Degradation of Acrylic Bone Cements used in Cemented Total Joint Arthroplasty," 285, Transactions of the 45th annual Meeting, Orthopaedic Research Society, February, 1999. Anaheim.
96. D. Baker, D. Coughlin, and L. Pruitt, "The Role of Crosslinking on the Body Temperature Fatigue Performance of UHMWPE: An Evaluation of Chemical and Radiation Crosslinked Resins Subjected to Accelerated Aging,"102, Transactions of 45th annual Meeting, Orthopaedic Research Society, February, 1999. Anaheim.
97. C. Klapperich, S. Niedzwiecki, L. Pruitt, and M. Ries, "Surface Area and Sterilization Method Affect Fluid Sorption of Medical Grade UHMWPE: Implications for Simulator Studies," 828, Transactions of the 45th annual Meeting, Orthopaedic Research Society, February, 1999. Anaheim.
98. M. Ries, B. Pelletier, K. Hughes, O. Hovic, F. Snorrason, S. Muller, and L. Pruitt,, "In-Vivo Degradation of Acrylic Bone Cement in Total Hip Arthroplasty," 513, Transactions of the 66h annual Meeting, American Academy of Orthopaedic Surgeons, February, 1999. Anaheim.
99. C. Klapperich, K. Komvopoulos, and L. Pruitt, "Plasma Surface Modification of Ultra High Molecular Weight Polyethylene for Improved Tribological Properties," in Biomedical Materials for Drug Delivery, Medical Implants, and Tissue Engineering , 331-336, (1999). Presented at the Fall Annual Meeting of the *Materials Research Society*, Boston. December, 1998.
100.L.P. Lee, S.A. Berger, L. Pruitt, and D. Liepmann, "Key Elements of Microfluidic Systems Development Based on Transparent Fluoropolymers," *3rd International Symposium on μ-TAS*, Banff, Alberta, Canada. October, 245-248,1998.

101.B. Pelletier, J. Graham, M. Goldman, S. Muller, M. Ries, and L. Pruitt, "The Effect of Sterilization and Aging on the Molecular Properties of Acrylic Bone Cement," *Society for Biomaterials 24th annual Meeting*, 286 (1998). San Diego.
102.D. Baker, D. Coughlin and L. Pruitt, "The Effect Accelerated Aging and Sterilization Method on the Fatigue Resistance of UHMWPE at Body Temperature: A Comparison of GUR4150 and Hylamer-M," *Society for Biomaterials 24th annual Meeting*, 122 (1998). San Diego.
103.S.M. Kurtz, C.W. Jewett, D. Crane, L. Pruitt, J.R. Foulds, and A.A. Edidin, "Ultimate Properties and Crystalline Morphology of Ultra-High Molecular Weight Polyethylene During Uniaxial and Biaxial Tension," *Society for Biomaterials 24th annual Meeting*, 125 (1998). San Diego.
104.D. Crane, S. Kurtz, L. Pruitt, and A.A. Edidin, "Structural Evolution in UHMWPE Due to Accelerated Thermal Aging After Gamma Radiation in Air versus Nitrogen: The Effect of Heating Rates," *Society for Biomaterials 24th annual Meeting*, 503 (1998). San Diego.
105.S. Kurtz, D. Crane, L. Pruitt, and A.A. Edidin, "Degradation Rate During Accelerated Thermal Aging of UHMWPE after Gamma Sterilization in Air and Nitrogen," *44th Annual Meeting, Orthopaedic Research Society,* 788 (1998). New Orleans.
106.M. Goldman, B. Pelletier, S. Muller, M. Ries and L. Pruitt, "Comparison of the Effects of Sterilization Techniques on Acrylic Bone Cement: Implications for Mechanical Failure of Total Joint Replacements," *44th Annual Meeting, Orthopaedic Research Society,* 217 (1998). New Orleans.
107.M. Goldman, R. Gronsky, G.G. Long, D. Baker and L. Pruitt, "The Effects of Oxidation and Sterilization on the Structure and Properties of UHMWPE," *Fall Annual Meeting of the Materials Research Society* (1997). Boston.
108.C. Klapperich, D. Crane, K. Komvopoulos and L. Pruitt, "The Effect of Physiological Loads on the Texture Evolution of UHMWPE," *Fall Annual Meeting of the Materials Research Society* (1997). Boston.
109.L. Pruitt, ``Fatigue Fracture Mechanisms of Advanced Polymers", invited paper in the *7th International Conference on Fracture,* 729(1997). Sydney.
110.L. Bailey, D. Baker, D. Crane, M. Goldman, and L. Pruitt, "The Effect of Molecular Structure and Processing Variables on the Fatigue Performance of Medical Grade Polyethylenes," in the *The 10th International Conference on Deformation, Yield and Fracture of Polymers* 290-293 (1997). The Institute of Materials, London.
111.L. Pruitt, L. Bailey, and R. Nassiri, "The Role of Manufacturing Process on the Fatigue Crack Propagation Resistance of Medical Grade Ultra High Molecular Weight Polyethylene," in the 43rd Annual Meeting of the *Orthopaedic Research Society*, 790 (1997). San Francisco.
112.Lundkvist, E. Lilleoden, W. Siekhaus, J. Kinney, L.Pruitt, and M. Balooch, ``Viscoelastic Properties of Healthy Human Artery Measured in Saline Solution by an AFM-Based Indentation Technique" in *Conference Proceedings of the Materials Research Society:Thin Films- Stress and Mechanical Properties,* **436***, 353-358* San Francisco (1996).
113.M. Goldman, M. Lee, L.Pruitt, and R. Gronsky, ``A Comparison of Sterilization Techniques on the Structure and Morphology of Medical Grade UHMWPE" in *The Transactions of the 5th International Biomaterials Congress*, University of Toronto Press, Toronto, 189, (1996).
114.R. Ranganathan, M. Goldman, and L.Pruitt, ``Effect of Sterilization on the Structure and Fatigue Resistance of UHMWPE" in *Mechanics of Plastics and Plastic Composites, ASME IMECE,* edited by Mary Boyce, 68**,** 23-26, (1995). ASME IMECE, San Francisco.
115.D. Rondinone and L.Pruitt, ``The Effect of Specimen Thickness on Near-Tip Stresses Ahead of Fatigue Cracks" in *Mechanics of Plastics and Plastic Composites, ASME IMECE,* edited by Mary Boyce, 68, 27-30, (1995). ASME IMECE, San Francisco.
116.M. Goldman, R. Ranganathan, L. Pruitt, R. Gronsky ``Characterization of Structure and Fatigue Resistance of Aged and Irradiated Ultra High Molecular Weight Polyethylene," in *21st Annual Meeting of the Society For Biomaterials*, 110, (1995). Published by Society for Biomaterials, Minneapolis.
117.L. Pruitt, ``Cyclic Near Tip Stress Fields in Amorphous Polymers", in *Proceedings of the 31st Annual Society of Engineering Science Conference*, edited by D. Allen and D. Lagoudos, 366 (1994).

118.L. Pruitt, ``Cyclic Deformation Mechanisms in Polymer Composites", in *The International Conference on Composites Engineering*, edited by D. Hui, 409-410 (1994).
119.L. Pruitt and S. Suresh, ``Cyclic Near-Tip Stresses for Fatigue Cracks in Polymers: In situ Measurements, Crack-tip Microscopy and Applications", in *The 9th International Conference on Deformation, Yield and Fracture of Polymers*, edited by R. J. Young, et al., 38-1-1-38/4 , (1994). The Institute of Materials, London.
120.L. Pruitt, C. Bull and S. Suresh, ``Fatigue Crack Tip Damage and Stress Fields in Polymers and Polymeric Composites", in *Fatigue'93*, edited by Jean-Paul Bailon, **3**, 1349-1354 (1993).
121.L.Pruitt, J. Koo, C. Rimnac, S. Suresh and T. Wright, ``Compression Fatigue of Ultra High Molecular Weight Polyethylene and its Implications for Total Joint Replacements" in the *Proceedings of* the *39th Annual Meeting of the Orthopaedic Research Society*, (1993). ORS, San Francisco.
122.S. Suresh and L. Pruitt, ``Fatigue Crack Growth in Polymers and Organic Composites under Cyclic Compressive Loads", in *The 8th International Conference on Deformation, Yield and Fracture of Polymers*, edited by R. J. Young, et al., 32-1-32-4, (1991). The Plastics and Rubber Institute, London.
123. O. J. Gregory, E.E. Crisman, L. Pruitt, D. Hymes and J. J. Rosenberg, `` Electrical Characterization of Some Native Insulators on Germanium", *Materials Research Society Proceedings,* 76, 307-311, (1987).

INVITED TALKS

"Probing structural tissue properties at heirarchical length scales," Gordon Research Conference on Tribology, Colby College, Waterville, ME (2006).
"The Origins of Wear in Orthopedic UHMWPE," International Meeting on Deformation, Yield and Fracture of Polymers, Netherlands (2006).
"Role of Elastin and Collagen in Arterial Mechanics," International Conference on Mechanics of Biomaterials & Tissues, HI (2005).
"Multiscale Mechanical Characterization of Cartilage and other Structural Tissues," Fall Annual Meeting of the Materials Research Society, Boston (2005).
"Use of Interactive Exhibits in Undergraduate Curriculum to Provide Public Science Education to K-12," Forum on Materials Science Education, Annual Meeting of the Materials Research Society, Boston (2005).
"Surface Engineering of Orthopedic Bearing Materials," ASM Materials and Processes for Medical Devices Conference, Boston (2005).
"Advances in Orthopedics Biomaterials Research," Departmento de Ciencia de Materiales, Universidad Politecnica de Madrid, Madrid, Spain (2005).
"Orthopedic Biomaterials and Tissue Research," Lawrence Livermore National Lab, Livermore CA (2005).
"Utilization of Biomaterials and Tissue Mechanics Research to Improve the Bearing Surface in Articular Joints," Center of Excellence Symposia, Contra Costa College, San Pablo, CA (2005).
"Alternate Bearing Surfaces in Total Joint Replacements," Inman-Abbot Lecture, UCSF Medical School, San Francisco, CA (2005)
"Current Trends in Orthopedic Biomaterials Research", Bioengineering Seminar Series, Stanford University, Stanford, CA (2005)
"Morphological Analyses of Retrieved Crosslinked UHMWPE and Improved Microstructures for Enhanced Fatigue and Wear Performance," Symposium on UHMWPE for Arthroplasty:Degradation, Stabilisation and Crosslinking, Turino, Italy (2005)
"The Role of Microstructure on the Plastic Deformation and Fatigue Behavior of Ultra High Molecular Weight Polyethylene" International Meeting on Plasticity, Kauai, HI (2005)
"The Role of Microstructure on the Fatigue and Fracture Properties of Medical Grade Ultra High Molecular Weight Polyethylene" Int. Congress on Fracture, ICF 11 Turin, Italy, (2005)

"Advances in Orthopedic Biomaterials for Articular Joint Repair", Bioengineering Seminar Series, Georgia Tech, Atlanta, GA (2004)

"Innovations in Medical Devices and Biomaterials Science", Business Innovation Symposium, University of Notre Dame, Notre Dame, IN (2004).

"Nanoindentation as A Characterization Tool for Orthopedic Tissues," Bay Area Biomechanics Seminar Series, UC Davis, Davis CA (2003)

"Current Research Trends in Polymers for Total Joint Replacements," Polymer Science and Engineering Seminar Series, University of Massachusetts, Amherst, MA (2003)

"Cyclic Damage in Medical Grade Polymers used in Orthopedics, 10th International Conference on Fracture, Honolulu, HI (2002)

"Current Research in Orthopedics, Biomaterials, and Vascular Tissues", Biomechanics Seminar Series, University of Notre Dame, Notre Dame, IN (2002)

" Biomechanical Design Issues in Orthopedic Biomaterials," Bio-Design Seminar Series, Stanford University, Palo Alto, CA (2002)

"Characterization of Sub-micron Mechanical Behavior and Fracture Processes of Polymers and Biomaterials," 13th European Conference on Fracture, Eds; European Structural Integrity Society, San Sebastian, Spain (2000)

"Advancing Medicine with Engineered Materials and Tissues," USB Chancellor's Forum, (1999)

"Polymers in Medicine" Golden Gate Polymer Forum on Polymers in Medical and Biomedical Applications, San Francisco (1998).

"Fatigue Fracture Mechanisms of Advanced Polymers", 7th International Conference on Fracture, Sydney, Australia, (1997).

"Characterization of Polymer Resistance to Cyclic Damage", 33rd Annual Meeting of the Society of Engineering Science, Tempe, Arizona, (1996).

OUTREACH ACTIVITIES

National Student Leadership Conference at UC Berkeley. Facilitated three 10-day sessions for approximately 350 high school honors students from around the country. Conference involves implementation of hands-on design projects, faculty lectures providing an overview of engineering, and research laboratory tours (2006-2007).

Berkeley Early Academic Outreach Program. Facilitated interactive laboratory activities in biomaterials and medical devices for a Reverse Engineering Class targeted to high school students (2005-2006).

Lawrence Hall of Science Interactive Children's Exhibits entitled, *The Way Things Break*, *The Human Body Shop, The Body Builders, Fantastic Plastic, The Bionic Bear, and Body by Design*. Developed interactive teaching demonstrations with undergraduate and graduate classes in the areas of engineering materials, polymers, and medical devices. Students worked in teams to build projects aimed at teaching science and engineering concepts to children with a target age of 8-10 years and 11-12 years for local elementary school children, science classes at the local middle school, and the public at large (1997-2007).

Summer Undergraduate Program in Engineering Research at Berkeley (SUPERB). Provided summer research opportunities to under-represented or non-traditonal students from around the nation. Students were teamed up with a mentoring graduate student in the research laboratory for 8 weeks in the summer (1993-2007).

Summer Research Program in Bioengineering. Developed an industry-funded summer research program aimed at providing bioengineering research experiences to Berkeley undergraduates (2000-2007).