

CURRICULUM VITAE

Subra Suresh

Ford Professor of Engineering

Department of Materials Science and Engineering
Professor of Biological Engineering
Professor of Mechanical Engineering
Affiliated Faculty, Harvard–MIT Division of Health Sciences and Technology

Massachusetts Institute of Technology

Office Address: Room 4-140
M.I.T., 77 Massachusetts Avenue
Cambridge, MA 02139
Phone: (617) 253-3320
Fax: (617) 253-0868
E-mail: ssuresh@mit.edu

Home Address: 8 Ox Bow Road
Wellesley, MA 02481

Nationality: United States of America

Current Professional Appointments:

Ford Professor of Engineering, MIT
Professor of Mechanical Engineering, MIT
Professor, Biological Engineering Division, MIT
Affiliated Faculty, Harvard-MIT Division of Health Sciences and Technology
Director, Defense University Research Initiative on NanoTechnology (DURINT) Program
on Nanostructured Materials, funded at MIT by the US Office of Naval Research
(2001-2006)
Chair, Peer Committee, Materials Section, National Academy of Engineering
Chair, Materials Section, National Academy of Engineering, 2005-2006.
Member, International Advisory Panel, Faculty of Engineering, National University of
Singapore
Member, International Scientific Advisory Board, Max-Planck Institute for Metallforschung,
Germany
Member, External Advisory Board, Materials Research Science and Engineering Center,
California Institute of Technology
Co-Chair, Indo-US Frontiers in Engineering Series, US National Academy of Engineering
Founding Director, Global Enterprise for Micro-Mechanics and Molecular Medicine
(GEM4)

Education:

B. Tech. Indian Institute of Technology, Madras,
May 1977, First Class with Distinction
M.S. Iowa State University, May 1979
Sc.D. Massachusetts Institute of Technology, August 1981

Professional Background:

1977-1979: Teaching and Research Assistant,
Dept. of Mechanical Engineering, Iowa State University
1979-1981: Research Assistant, Massachusetts Institute of Technology
1981-1983: Assistant Research Engineer, University of California, Berkeley
& Scientist, Lawrence Berkeley Laboratory
1983 Visiting Scientist, Royal Institute of Technology, Stockholm, Sweden
1983 Visiting Scientist, Sheffield University, England
12/1983-6/86: Assistant Professor of Engineering, Brown University
1986-1989: Tenured Associate Professor of Engineering, Brown University
1986-1993 Director, Central Facility for Mechanical Testing, Brown University
1989-1993 Professor of Engineering, Brown University
1993-2002 R. P. Simmons Professor, Dept. of Materials Science & Eng., MIT
1994- Professor of Mechanical Engineering, MIT
1994-2004 Principal Editor, Acta/Scripta Materialia
1994-1998 Director, MIT-Harvard Program on Modeling of Materials
1997-1998 TFR Swedish National Chair in Engineering, KTH, Stockholm
1998-2004 Coordinating Editor, International Journals: Acta Materialia and Scripta Materialia
1999 Program Chair, Advanced Materials Programme, Singapore-MIT Alliance
1999-2000 Clark B. Millikan Visiting Professor, California Institute of Technology
2000-2002 Program Advisor, Advanced Materials, Singapore-MIT Alliance
2000-2006 Head, Dept of Materials Science and Engineering, MIT
2000-2004 Member, Board of Governors, Acta Materialia Incorporated
2003- Professor, Biological Engineering Division, MIT
2004- Affiliated Faculty, Harvard-MIT Division of Health Sciences and Technology
2004- Senior Consulting Editor, Acta BioMaterialia
2004 Gordon Moore Distinguished Scholar, California Institute of Technology, Pasadena
2004 Senior Humboldt Research Scholar, Max-Planck Institute, Stuttgart, Germany
2005 Founding Director, Global Enterprise for Micro-Mechanics and Molecular Medicine
(GEM4)

Professional Consulting:

1981-1992: Lockheed Palo Alto Research Laboratory, Palo Alto, CA (not continuous)
1984-1988: Rockwell International, CA
1984-1988: Northrop Corporation, Hawthorne, CA
1992 Hibbitt, Karlsson and Sorensen Inc., Providence, RI
1992 Volvo Flygmotor AB, Tröllhattan, Sweden
1993-2001 Lawrence Livermore National Laboratory, Livermore, CA (not continuous)
1995-1997 Biosym Technologies, San Diego, CA
1996 Volvo Automobile Company, Goteborg, Sweden
1996 Lightspeed Semiconductor, Los Altos, CA
1996-1999 Los Alamos National Laboratory, Los Alamos, NM
1997-1998 Ceramem Corporation, Waltham, MA
1997-2000 Instron Corporation, Canton, MA
1999 Exxon Corporation, Linden, NJ
1999-2001 Covington and Burling, Washington D.C.
1999-2003 Consultant to the Faculty of Science, National University of Singapore
2001-2002 United Technologies Research Center, E. Hartford, CT, through Inventium LLC
2001-2002 Palmer and Dodge, Boston, MA
2002-2003 Battelle Scientific Services, Raleigh, North Carolina
2003 Oraxion Diagnostics, Fremont, CA
2004 Acta Materialia, Inc.
2004-2005 Consultant to the Faculty of Engineering, National University of Singapore

2005- Beckton-Dickinson Medical Devices, Waltham, MA

AWARDS AND HONORS

- 2006 Honorary Doctorate in Engineering, Royal Institute of Technology (KTH), Stockholm, Sweden.
- 2006 Selected as the inaugural holder of the Tan Chin Tuan Centennial Endowed Professorship (overseas) at the National University of Singapore.
- 2006 The 2006 Peter Winchell Lecturer, Purdue University, Indiana.
- 2006 The 2006 H.C. Oersted Lecturer, Technical University of Denmark, Copenhagen, Denmark.
- 2006 Acta Materialia Gold Medal – one of the major international awards for lifetime achievement in Materials Science and Engineering, awarded by Acta Materialia, Inc. in cooperation with 30 international materials societies
- 2005 Elected Honorary Fellow of the Indian Academy of Sciences, Bangalore.
- 2005 Selected by the United States National Academy of Engineering to be the American Co-Chair of the Indo-US Frontiers in Engineering
- 2005 Elected to Membership in the Third World Academy of Sciences, Italy, for “broad, innovative and pioneering contributions to the understanding of the mechanical behavior of materials”.
- 2004 Elected an Honorary Member of the Indian Institute of Metals.
- 2004 Albert Sauveur Achievement Award, American Society of Materials International. This award was established in 1934 to acknowledge “pioneering materials science and engineering achievements that stimulated organized work to an extent that a marked basic advance has been made in materials science and engineering knowledge.”
- 2004 Elected Fellow of the American Academy of Arts and Sciences
- 2004 Elected by members to become Vice Chair (2004-2005) and Chair (2005-2006) of the Materials Section of the US National Academy of Engineering.
- 2004 Kreidl Memorial Lecturer, Rio Grande Southwest Materials Consortium, Albuquerque, New Mexico.
- 2004 Gordon Moore Distinguished Scholar, California Institute of Technology, Pasadena
- 2004 S. S. Penner Distinguished Lecturer, University of California, San Diego
- 2004 Senior Humboldt Research Prize, Humboldt Foundation, Germany
- 2003 Elected a Foreign Fellow of the Indian National Academy of Engineering
- 2003-2004 Brahm Prakash Distinguished Visiting Professorship, Indian Institute of Science, Bangalore
- 2003 Selected as one of the “highly cited researchers” in the area of Materials Science by the Institute for Scientific Information, PA.

2003 Millsaps-Taylor Memorial Lecturer, University of Florida, Gainesville, Florida

2002 General Electric Distinguished Lecturer, Rensselaer Polytechnic Institute, Troy, NY

2002- Appointed Ford Professor of Engineering, School of Engineering, MIT

2002 Elected Member of the U. S. National Academy of Engineering.

2002 R. B. Trull Distinguished Lecturer in Engineering, The University of Texas, Austin, TX

2001 Kelly Distinguished Lecturer, Cambridge University, UK, June 2001.

2001 Director and Lead PI on the Office of Naval Research Defense University Research Initiative on NanoTechnology (DURINT) Award on Nanostructured Materials, for 5-year program.

2001 "2001 TMS Distinguished Scientist/Engineer Award" for the Structural Materials Division of The Minerals, Metals and Materials Society (TMS).

2000 Elected Fellow of TMS. Citation: "For pioneering contributions to the understanding of mechanical behavior and mechanics of materials, and for leadership in materials education". One of only 100 living fellows of the Society from among a worldwide membership of about 10,000.

2000 Sectional Lecturer, International Conference on Theoretical and Applied Mechanics, Chicago, Illinois, August 2000.

1999-2000 Clark B. Millikan Chair at California Institute of Technology, Pasadena, for visiting professorship.

1997 Distinguished Alumnus Award, Indian Institute of Technology, Madras

1997-1998 TFR Swedish National Chair in Engineering. National visiting professorship from the Swedish Research Council (TFR) at the Royal Institute of Technology, Stockholm

1997 Southwest Mechanics Lecturer

1996 Elected Honorary Member of the Materials Research Society of India

1996 Elected Fellow of the American Society of Mechanical Engineers (ASME)

1996 Forum Lecturer, ASME Summer Meeting, Johns Hopkins University.

1996 Sauveur Lecturer, ASM International New England Chapter

1995 Shell Distinguished Lecturer, Northwestern University

1995 Elected Fellow of the American Ceramic Society

1994-1995 Midwest Mechanics Lecturer

1994 Elected Fellow of ASM International "For contributions to fatigue fracture and micromechanisms of deformation of metals, ceramics and composites, especially for pioneering studies on fracture in cyclic compression of brittle materials".

1993-2002 R. P. Simmons Endowed Professorship, MIT

- 1992 Ross Coffin Purdy Award (The American Ceramic Society, for the best paper published in J. American Ceram. Soc. during 1990, lead author).
- 1990 Allied Signal Foundation Merit Award
- 1989 Allied Signal Foundation Research Award
- 1989 Technical Analysis Corporation Teaching Award. "For the member of the Engineering Faculty at Brown, who through example and instruction, has most inspired undergraduate students in engineering." Selected by honor students in engineering.
- 1986 Distinguished Overseas Guest Lecturer (Exterior Ministry of France and the French Embassy, Washington, DC. To deliver keynote lectures at several French research institutions)
- 1985-1987 Ford Foundation Research Award
- 1985-1990 Presidential Young Investigator Award (National Science Foundation and The White House)
- 1985 Champion H. Mathewson Gold Medal (The Metallurgical Society of AIME)
Citation: "For Outstanding Contributions to the Understanding of Fatigue and Fatigue Crack Growth"
- 1983 Robert Lansing Hardy Gold Medal (The Metallurgical Society of AIME)
Citation: "For Exceptional Promise of a Successful Career in the Broad Field of Metallurgy, by a Metallurgist under the Age of 30"
- 1982 Outstanding Scientific Accomplishment Award (U.S. Department of Energy)
- 1977-1979 Premium for Academic Excellence (PACE Award) (Iowa State University)
- 1977 Tata Scholar (The J.N. Tata Endowment, Bombay)
- 1974-1977 Scholarship For Outstanding Undergraduate Student Of Engineering (Sir C.P. Ramasamy Foundation, Madras, India)
- 1971-1977 National Merit Scholarship (The Government of India)

PUBLICATIONS

BOOKS (Authored)

1. S. Suresh, "Fatigue of Materials", Cambridge University Press, 1991. *Second Edition*, Published September 1998. Chinese Translation of Second Edition, 1999. Chinese Academy of Sciences. First edition published by Cambridge University Press in 1991. Second printing and paperback edition, 1992. Third printing in hardcover and paperback, 1994. Fourth printing in hardcover and paperback, 1996. Chinese Translation, sponsored by the Chinese Academy of Sciences, 1993, first edition. Japanese translation of the Second Edition, published in 2005.

2. S. Suresh and A. Mortensen, "Fundamentals of Functionally Graded Materials", The Institute of Materials, London, June 1998.
Official Chinese Translation by the Chinese Academy of Sciences published in 2000.
3. L.B. Freund and S. Suresh, "Thin Film Materials: Stress, Defect Formation and Surface Evolution", Cambridge University Press, 2003.
Chinese translation released in December 2006, sponsored by the Chinese Academy of Sciences, Shenyang.

BOOKS and Volumes (Edited)

1. Editor, "Fatigue Crack Growth Threshold Concepts", (with D.L. Davidson), Proceedings of an International Symposium, Published by The Metallurgical Society of AIME, Warrendale, PA, 1984.
2. Editor, "Interfacial Phenomena in Composites: Processing, Characterization and Mechanical Properties" (with A. Needleman), Special Issue of the International Journal "*Materials Science and Engineering*", **107**, January 1989, and a special volume devoted to the Proceedings of an International Symposium on Composites, held in Newport, RI, June 1988.
3. Editor, "Variable Amplitude Fatigue Crack Propagation", (with J. Petit, P. Rabbe and D.L. Davidson), Proceedings of an International Symposium, held in Paris, June 1988 and sponsored by the French Metallurgical Society, Paris, 1988.
4. Editor, "Fundamentals of Metal-Matrix Composites" (with A. Mortensen and A. Needleman), Butterworth-Heinemann, Stoneham, MA, 1993.
5. Editor, "Mechanics and Physics of Layered and Graded Materials" (with A. Needleman), Special Issue of "*Journal of the Mechanics and Physics of Solids*", **45**, May 1996, and a special volume devoted to the Proceedings of an International Symposium on Mechanics and Physics of Layered and Graded Materials, held in Davos, Switzerland, August 1995.
6. Editor, "The Millennium Special Issue: A selection of major topics on Materials Science and Engineering; Current Status and Future Directions", Special Issue of *Acta Materialia*, published in Jan. 2000.
7. Editor, "The Fiftieth Anniversary Special Issue", *Acta Materialia*, published in Dec. 2003.
8. Editor (with A. Rosakis and G. Ravichandran), "Dynamic Behavior and Thin Films", Special Issue of the *Journal of the Mechanics and Physics of Solids*, December 2003.

PATENTS AND COPYRIGHTED INTELLECTUAL PROPERTY

1. M. Finot, O. Kesler and S. Suresh, "Method and Apparatus for the Evaluation of a Depth Profile of Thermomechanical Properties of Layered and Graded Materials and Coatings", MIT Case No. 7364. U.S. Patent Number: 5,847,283. Date of Patent issue: Dec. 8. 1998.
2. A.E. Giannakopoulos and S. Suresh, "Method and Apparatus for Determination of Mechanical Properties of Functionally-Graded Materials", US Patent Application Serial No. 08/632,665, filed February 26, 1997. MIT Case No. 7602. U.S. Patent Number: 5,999,887. Date of Patent issue: Dec. 7. 1999.

3. S. Suresh, A.E. Giannakopoulos and J. Alcala, "Depth-Sensing Indentation Mechanism and Methodology for Mechanical Property Measurements", U.S. Patent Number: 6,134,954. Date of Issue: October 24, 2000.
4. S. Suresh and A.E. Giannakopoulos, "Method and Apparatus for Determining Pre-Existing Stresses Based on Indentation or other Mechanical Probing of a Material". U.S. Patent Number: 6,155,104. Date of Issue: December 5, 2000.
5. S. Suresh, A.E. Giannakopoulos and J. Alcala, "Depth-Sensing Indentation Mechanism and Methodology for Mechanical Property Measurements", MIT Case No. 7280DIV. U.S. Patent Number: 6,247,355 B1. Date of Issue: June 19, 2001.
6. S. Suresh and A. E. Giannakopoulos, "Method and Apparatus for Determining Pre-Existing Stresses Based on Indentation or other Mechanical Probing of a Material". Divisional Application. U.S. Patent Number: 6,311,135. Date of Issue: October 30, 2001.
7. Co-Developer (with graduate student Marc Finot), MultiTherm, A software for analyzing the thermomechanical response of layered and graded materials using a personal computer. This software is now licensed by the Technology Licensing Office at MIT. MIT Case No. 6736S.
8. T.-S. Park and S. Suresh, "Technique for Determining Curvatures of Embedded Line Features on Substrates", MIT Case Number: 8954, US Provisional Patent Application Filed April 26, 2000. California Institute of Technology Case No: 3186. Patent application filed: April 2001. U.S. Patent Number: 6,513,389 B2. Date of Issue: Feb. 4, 2003.
9. S. Suresh, A.E. Giannakopoulos, N.P. Padture, J. Jitcharoen, M. Olsson and R. Thampuran, "Functionally Graded Materials and the Engineering of Surfaces for Tribological Protection", MIT Case No. 7904. US Patent 6641893. Date of issue: November 4, 2003.
10. S. Suresh and A.J. Rosakis, "Real-Time Evaluation of Stress Fields and Properties of Line Features Formed on Substrates", California Institute of Technology Case No. CIT 3186, Disclosure filed in March 2000. US Patent application filed on April 27, 2000.
11. M. Dao, N. Chollacoop, K.J. Van Vliet, T.A. Venkatesh and S. Suresh, "Method and Apparatus for Mechanical Property Measurement Based on Large Deformation During Sharp Indentation", MIT Case Number: 9159, US Provisional patent filed March, 2001. Regular patent filed in March 2002.
12. A. E. Giannakopoulos, A. J. Rosakis, I. A. Blech and S. Suresh, "Determining Large Deformation and Stresses of Layered and Graded Structures to Include Effects of Body Forces", California Institute of Technology Case No: 3470, US patent application filed May 2002.
13. A. J. Rosakis, T.-S. Park, and S. Suresh, "Explicit Expressions for Stresses in Multilevel Line Structures and in Connecting Vertical Vias (Materials and Geometry Selection, Process Optimization, Yield Management, and Life Prediction), Oraxion Diagnostics Inc., Pasadena, CA, US Provisional Patent Application filed January 27, 2003.
14. S. Suresh and A. J. Rosakis, "System for measuring stresses in line features formed on substrates", CIT File number: 3186-C, US Patent Application Filed on July 29, 2003. US Patent No: 6,924,497 B2, Issued August 2, 2005.
15. S. Manalis, S. Suresh, T. Burg and K. Babcock, "Method and Apparatus for High Throughput Diagnosis of Diseased Cells with Microchannel Devices", MIT Case Number 11937, US Provisional Patent Application filed January 9, 2006.

Papers in Refereed International Journals

1. Ritchie, R.O., Suresh, S. and Moss, C.M. "Near-Threshold Fatigue Crack Growth in 2 1/4 Cr-1 Mo Pressure Vessel Steel in Air and Hydrogen", *Journal of Engineering Materials and Technology, Transactions of ASME*, 102, 293-299, July 1980.
2. Suresh, S., Moss, C.M. and Ritchie, R.O., "Hydrogen-Assisted Fatigue Crack Growth in 2 1/4 Cr-1 Mo Low Strength Steels", *Transactions of Japan Institute of Metals*, 21, 481-484, December 1980.
3. Suresh, S., Zamiski, G.F., and Ritchie, R.O., "Oxide-Induced Crack Closure: An Explanation for Near-Threshold Corrosion Fatigue Crack Growth Behavior", *Metallurgical Transactions A*, 12A, 1435-1443, August 1981.
4. Suresh, S. and Ritchie, R.O., "On the Influence of Fatigue Underloads on Cyclic Crack Growth at Low Stress Intensities", *Materials Science and Engineering*, 51, 61-69, November 1981.
5. Suresh, S., Palmer, I.G. and Lewis, R.E. "Effects of Environment on Fatigue Crack Growth Behavior of 2021 Aluminum Alloy", *Fatigue of Engineering Materials and Structures*, 4, 133-150, March 1982.
6. Kurkela, M., Frankel, G.F., Latanision, R.M., Suresh, S. and Ritchie, R.O., "Influence of Plastic Deformation on Hydrogen Transport in 2 1/4 Cr-1 Mo Steel", *Scripta Metallurgica*, 17, 455-460, April 1982.
7. Ritchie, R.O. and Suresh, S., "Some Considerations on Fatigue Crack Closure at Near-Threshold Stress Intensities due to Fracture Surface Morphology", *Metallurgical Transactions A*, 13A, 937-940, May 1982.
8. Suresh, S., "Crack Growth Retardation due to Micro-Roughness: A Mechanism for Overload Effects in Fatigue", *Scripta Metallurgica*, 16, 995-999, August 1982.
9. Suresh, S. and Ritchie, R.O., "A Geometric Model for Fatigue Crack Closure Induced by Fracture Surface Roughness", *Metallurgical Transactions A*, 13A, 1627-1631, September 1982.
10. Suresh, S. and Bahadur, S. "Evaluation of Polymers as Lubricants in the Extrusion of Aluminum", *Journal of Lubrication Technology, Transactions of ASME*, 104, 552-558, October 1982.
11. Suresh, S. and Ritchie, R.O., "Mechanistic Dissimilarities Between Environmentally-Influenced Fatigue Crack Growth at Near-Threshold and Higher Growth Rates", *Metal Science*, 16, 529-538, November 1982.
12. Vasudevan, A.K. and Suresh, S., "Influence of Corrosion Deposits on Near-Threshold Fatigue Crack Growth Behavior in 2XXX and 7XXX Series Aluminum Alloys", *Metallurgical Transactions*, 13A, 2271-2280, December 1982.
13. Suresh, S. and Ritchie, R.O., "On the Influence of Environment on the Load Ratio Dependence of Fatigue Thresholds in Pressure Vessel Steel", *Engineering Fracture Mechanics*, 18, 785-804, April 1983.
14. Nayeb-Hashemi, H., Suresh, S. and Ritchie, R.O., "On the Contrast Between Mode I and Mode III Fatigue Crack Propagation Under Variable Amplitude Loading Conditions", *Materials Science and Engineering*, 59, L1-L5, July 1983 (Short communication).
15. Suresh, S., "Micromechanisms of Fatigue Crack Growth Retardation Following Overloads", *Engineering Fracture Mechanics*, 18, 577-593, July 1983.
16. Suresh, S., "Crack Deflection: Implications for the Growth of Long and Short Fatigue Cracks", *Metallurgical Transactions A*, 14A, 2375-2385, October 1983.

17. Suresh, S., Vasudevan, A.K. and Bretz, P.E. "Mechanisms of Slow Fatigue Crack Growth in High Strength Aluminum Alloys: Role of Microstructure and Environment", *Metallurgical Transactions A*, 15A, 369-379, February 1984.
18. Vasudevan, A.K., Bretz, P.E., Miller, A.C. and Suresh, S., "Fatigue crack growth behavior of aluminum alloy 2020", *Materials Science and Engineering*, 64, 113-122, May 1984.
19. Dutta, V.B., Suresh, S. and Ritchie, R.O., "Fatigue Crack Propagation in Dual-Phase Steels: Effects of Ferritic-Martensitic Microstructures on Crack path Morphology", *Metallurgical Transactions A*, 15A, 1193-1203, June 1984.
20. Suresh, S. and Ritchie, R.O., "The Propagation of Short Fatigue Cracks", *International Metals Reviews*, 29, 445-476, December 1984.
21. Tzou, J.-L., Suresh, S. and Ritchie, R.O., "Fatigue Crack Propagation in Viscous Environments: I. Effects of Silicone and Paraffin Oils", *Acta Metallurgica*, 32, 105-116, January 1985.
22. Suresh, S., "Fatigue Crack Deflection and Fracture Surface Contact: Micromechanical Models", *Metallurgical Transactions*, 16A, 249-260, February 1985.
23. Vasudevan, A.K. and Suresh, S., "Lithium-Containing Aluminum Alloys: Cyclic Fracture", *Metallurgical Transactions*, 16A, 475-477, March 1985.
24. Suresh, S., "Crack Initiation in Cyclic Compression and Its Applications", *Engineering Fracture Mechanics*, 21, 453-463, April 1985.
25. Suresh, S., "Further Remarks on the Micromechanisms of Fatigue Crack Growth Retardation Following Overloads", *Engineering Fracture Mechanics*, 21, 1169-1170-1171, June 1985 (Letter).
26. Vasudevan, A.K. and Suresh, S., "Microstructural Effects on Quasi-Static Fracture Mechanisms in Aluminum-Lithium Alloys: Role of Crack Geometry", *Materials Science and Engineering*, 72, 37-45, July 1985.
27. Suresh, S. and Vasudevan, A.K. "On The Relationship Between Crack Initiation Toughness and Crack Growth Toughness", *Materials Science and Engineering*, 79, 183-190, May 1986.
28. Suresh, S. and Shih, C.F., "Plastic Near-Tip Fields for Branched Cracks", *International Journal of Fracture*, 30, 237-259, June 1986.
29. Christman, T. and Suresh, S., "Crack Initiation Under Far-Field Cyclic Compression and the Study of Short Fatigue Cracks", *Engineering Fracture Mechanics*, 23, 953-964, June 1986.
30. D.K. Holm, A.F. Blom and Suresh, S., "Crack Growth Under Far-Field Cyclic Compression: Numerical and Experimental Results", *Engineering Fracture Mechanics*, 23, 1097-1106, June 1986.
31. Ewart, L. and Suresh, S., "Dynamic Fatigue Crack Growth in Polycrystalline Alumina in Cyclic Compression", *Journal of Materials Science Letters*, 5, 774-778, August 1986.
32. Suresh, S. and Sylva, L.A. "Room Temperature Fatigue Crack Growth in Cemented Carbides", *Materials Science and Engineering*, 83, L7-L10, November 1986 (Short Communication).
33. Suresh, S., A.K. Vasudevan, Tosten, M. and Howell, P.R. "Microscopic and Macroscopic Aspects of Fracture in Lithium-Containing Aluminum Alloys", *Acta Metallurgica*, 35, 25-46, January 1987.
34. Tschegg, E.K. and Suresh, S., "Tensile Fracture Toughness Measurements in Ceramics", *Journal of the American Ceramic Society*, 70, C41-C43, March 1987 (Short Communication).

35. Ewart, L. and Suresh, S., "Crack Propagation in Ceramics Under Cyclic Loads", *Journal of Materials Science*, 22, 1173-1192, April 1987.
36. Suresh, S., Ewart, L., Maden, M., Slaughter, W. and Nguyen, M. "Fracture Toughness Measurements in Ceramics: Pre-Cracking in Cyclic Compression", *Journal of Materials Science*, 22, 1271-1279, May 1987.
37. Suresh, S. and Tschegg, E.K., "Combined Mode I - Mode III Fracture of Fatigue Pre-Cracked Ceramics", *Journal of the American Ceramic Society*, 70, 726-733, October 1987.
38. Tschegg, E.K. and Suresh, S., "Torsional Fracture of Fatigue Pre-Cracked Ceramic Rods", *Journal of Materials Science*, 22, 2927-2934, November 1987.
39. Brockenbrough, J.R. and Suresh, S., "Constitutive Behavior of a Microcracking Brittle Solid in Cyclic Compression", *Journal of the Mechanics and Physics of Solids*, 35, 721-742, December 1987.
40. Suresh, S., Han, L.X. and Petrovic, J.J. "Fracture of Si₃N₄-SiC Whisker Composites under Cyclic Loads", *Journal of the American Ceramic Society*, 71, C158-C161, March 1988 (Short Communication).
41. Suresh, S. and Brockenbrough, J.R. "Theory and Experiments of Fracture in Cyclic Compression: Single Phase Ceramics, Transforming Ceramics and Ceramic Composites", *Acta Metallurgica*, 36, 1455-1470, June 1988.
42. Christman, T. and Suresh, S., "Microstructural Development in an Aluminum Alloy-SiC Whisker Composite", *Acta Metallurgica*, 36, 1691-1704, July 1988.
43. Aswath, P.B., Suresh, S., Holm, D.K. and Blom, A.F. "Load Interactions Effects on Compression Fatigue Crack Growth in Ductile Solids", *Journal of Engineering Materials and Technology, Transactions of ASME*, 110, 278-285, July 1988.
44. Brockenbrough, J.R., Suresh, S. and Duffy, J. "An Analysis of Dynamic Fracture in Microcracking Brittle Solids", *Philosophical Magazine A*, 58A, 619-636, July 1988.
45. Marchand, A., Duffy, J., Christman, T. and Suresh, S., "An Experimental Study of the Dynamic Mechanical Properties of an Al-SiC_W Composite", *Engineering Fracture Mechanics*, 30, 295-315, September 1988.
46. Morrone, A., Nutt, S.R. and Suresh, S., "Fracture Toughness and Fatigue Crack Growth Behavior of an Alumina-SiC Composite", *Journal of Materials Science*, 23, 3206-3214, September 1988.
47. Duffy, J., Suresh, S., Bopp, E. and Cho, K. "A Method for Dynamic Fracture Initiation Testing of Ceramics", *Journal of Engineering Materials and Technology, Transactions of ASME*, 110, 325-331, October 1988.
48. Christman, T. and Suresh, S., "The Effects of SiC Reinforcement and Aging Treatment on Fatigue Crack Growth in Al-SiC Composites", *Materials Science and Engineering*, 102, 211-216, October 1988.
49. Tschegg, E.K. and Suresh, S., "Mode III Fracture of 4340 Steel: Effects of Tempering Temperature and Fracture Surface Interference", *Metallurgical Transactions A*, 19A, 3035-3044, December 1988.
50. Suresh, S., "The Fracture of Brittle Solids in Cyclic Compression: Theory, Experiments and Applications", *Materials Science and Engineering A*, A105/106, 323-329, December 1988.

51. Godse, R., Gurland, J. and Suresh, S., "The Effects of Residual Stresses on Fracture Toughness Measurements in Cemented Carbides", *Materials Science and Engineering A*, A105/106, 383-387, December 1988.
52. Becker, R., Needleman, A., Suresh, S., Tvergaard, V. and Vasudevan, A.K. "An Analysis of Ductile Failure by Grain Boundary Void Growth", *Acta Metallurgica*, 37, 99-120, January 1989.
53. Christman, T., Needleman, A., Nutt, S. and Suresh, S., "On Microstructural Evolution and Micromechanical Modelling of Deformation in a Metal-Matrix Composite", *Materials Science and Engineering A*, A107, 49-61, January 1989.
54. Sylva, L.A. and Suresh, S., "Crack Growth in Transforming Ceramics Under Cyclic Tensile Loads", *Journal of Materials Science*, 24, 1729-1738, May 1989.
55. Suresh, S., Tschegg, E.K. and Brockenbrough, J.R., "Crack Growth in Cementitious Materials Under Cyclic Compressive Loads", *Journal of Cement and Concrete Research*, 19, 827-833, May 1989.
56. Han, L.X. and Suresh, S., "High Temperature Crack Growth in an Al₂O₃-SiC Composite Under Cyclic Loads: Mechanisms of Fatigue Crack-Tip Damage", *Journal of the American Ceramic Society*, 72, 1233-1238, July 1989.
57. Aswath, P.B. and Suresh, S., "Fatigue Crack Growth Behavior of a Titanium Aluminide Intermetallic", *Materials Science and Engineering A*, A114, L5-L10, July 1989 (Short communication).
58. Suresh, S., Christman, T. and Sugimura, Y. "Accelerated Aging in Cast Al Alloy-SiC Particulate Composites", *Scripta Metallurgica*, 23, 1599-1602, September 1989.
59. Christman, T., Needleman, A. and Suresh, S., "An Experimental and Numerical Study of Deformation in Metal-Ceramic Composites", *Acta Metallurgica*, 37, 3029-3050, November 1989.
60. Suresh, S., "Mechanics and Micromechanisms of Fatigue Crack Growth in Brittle Solids", *International Journal of Fracture*, 42, 41-56, January 1990.
61. Suresh, S. and Brockenbrough, J.R., "A Theory for Creep by Interfacial Flaw Growth in Ceramics and Ceramic Composites", *Acta Metallurgica et Materialia*, 38, 55-68, January 1990.
62. Brockenbrough, J.R. and Suresh, S., "Plastic Deformation of Continuous Fiber-Reinforced Metal-Matrix Composites: Effects of Fiber Shape and Distribution", *Scripta Metallurgica et Materialia*, 24, 325-330, February 1990.
63. Suresh, S., Shih, C.F., Morrone, A. and O'Dowd, N.P. "Mixed-Mode Fracture Toughness of Ceramic Materials", *Journal of the American Ceramic Society*, 73, 1257-1267, May 1990.
64. LLorca, J., Needleman, A. and Suresh, S., "The Bauschinger Effect in Whisker-Reinforced Metal-Matrix Composites", *Scripta Metallurgica et Materialia*, 24, 1203-1208, July 1990.
65. Suresh, S., Nakamura, T., Yeshurun, Y., Yang, K-H. and Duffy, J. "Tensile Fracture Toughness of Ceramic Materials: Effects of Dynamic Loading and Elevated Temperatures", *Journal of the American Ceramic Society*, 73, 2457-2466, August 1990.
66. Brockenbrough, J.R., Shih, C.F. and Suresh, S., "Transient Crack-Tip Fields for Mixed-Mode Power Law Creep", *International Journal of Fracture*, 49, 177-202, February 1991.
67. Aswath, P.B. and Suresh, S., "Microstructural Effects on Ambient and Elevated Temperature Fatigue Crack Growth in Titanium Aluminide Intermetallics", *Metallurgical Transactions A*, 22A, 817-828, April 1991.

68. Brockenbrough, J.R., Suresh, S. and Wienecke, H.A. "Deformation of Fiber-Reinforced Metal-Matrix Composites: Geometrical Effects of Fiber Shape and Distribution", *Acta Metallurgica et Materialia*, 39, 735-752, May 1991.
69. Suresh, S., "Introduction to the Viewpoint Set on Mixed-Mode Fracture", *Scripta Metallurgica et Materialia*, 25, 981-983, May 1991.
70. Suresh, S. and Shih, C.F., "Combined Mode I-Mode II and Mode I-Mode III Fracture of Brittle Materials", *Scripta Metallurgica et Materialia*, 25, 990-995, May 1991.
71. Shih, C.F. and Suresh, S., "Mixed-Mode Inelastic Crack-Tip Fields: Homogeneous Solids and Biomaterial Interfaces", *Scripta Metallurgica et Materialia*, 25, 1017-1022, May 1991.
72. Ogawa, T. and Suresh, S., "Surface Film Technique for Crack Length Measurement in Nonconductive Brittle Materials: Calibration and Evaluation", *Engineering Fracture Mechanics*, 39, 125-136, July 1991.
73. LLorca, J., Needleman, A. and Suresh, S., "An Analysis of the Effects of Matrix Void Growth on Deformation and Ductility in Metal-Ceramic Composites", *Acta Metallurgica et Materialia*, 39, 2317-2335, October 1991.
74. Suresh, S., "Fatigue Crack Growth in Brittle Materials", *Journal of Hard Materials*, 2, 29-54, November 1991.
75. Han, L.X., Warren, R. and Suresh, S., "An Experimental Study of Toughening and Degradation due to Microcracking in a Ceramic Composite", *Acta Metallurgica et Materialia*, 40, 259-274, February 1992.
76. LLorca, J., Suresh, S. and Needleman, A., "An Experimental and Numerical Study of Cyclic Deformation in Metal-Matrix Composites", *Metallurgical Transactions A*, 23A, 919-934, March 1992.
77. Pruitt, L., Herman, R. and Suresh, S., "Fatigue Crack Growth in Polymers Subjected to Fully Compressive Cyclic Loads", *Journal of Materials Science*, 27, 1608-1616, May 1992.
78. Ewart, L. and Suresh, S., "Elevated-Temperature Crack Growth in Polycrystalline Alumina under Static and Cyclic Loads", *Journal of Materials Science*, 27, 5181-5191, July 1992.
79. Sugimura, Y. and Suresh, S., "Effects of SiC Content on Fatigue Crack Growth in Aluminum Alloys Reinforced with SiC Particles", *Metallurgical Transactions A*, 23A, 2231-2242, August 1992.
80. Pruitt, L. and Suresh, S., "Fatigue Crack Growth in Unidirectional Graphite-Epoxy Composites Under Cyclic Compression", *Journal of Materials Science Letters*, 11, 1356-1360, August 1992 (Short communication).
81. Suresh, S., Sugimura, Y. and Tschegg, E.K., "Growth of a Fatigue Crack Approaching a Perpendicularly-Oriented Bimaterial Interface", *Scripta Metallurgica et Materialia*, 27, 1189-1194, November 1992.
82. Ortiz, M. and Suresh, S., "Statistical Properties of Residual Stresses and Microfracture in Ceramic Materials", *Journal of Applied Mechanics*, 60, 244-249, April 1993.
83. Pruitt, L. and Suresh, S., "Cyclic Stress Fields for Fatigue Cracks in Amorphous Solids: Experimental Measurements and Their Implications", *Philosophical Magazine A*, 67, 1219-1245, May 1993.

84. Nakamura, T. and Suresh, S., "Effects of Thermal Residual Stresses and Fiber Packing on Deformation of Metal-Matrix Composites", *Acta Metallurgica et Materialia*, 41, 1665-1681, June 1993.
85. Suresh, S., Sugimura, Y. and Ogawa, T., "Fatigue Cracking in Materials with Brittle Surface Coatings", *Scripta Metallurgica et Materialia*, 29, 237-242, July 1993.
86. Woeltjen, C., Shih, C.F. and Suresh, S., "Cyclic Near-Tip Fields for Fatigue Cracks Along Metal-Metal and Metal-Ceramic Interfaces", *Acta Metallurgica et Materialia*, 41, 2317-2335, August 1993.
87. Ramamurty, U., Kim, A. S., Suresh, S. and Petrovic, J.J. "Micromechanisms of Creep-Fatigue Crack Growth in a Silicide-Matrix Composite with SiC Particles", *Journal of the American Ceramic Society*, 76, 2461-2472, August 1993.
88. Shen, Y.-L., Finot, M., Needleman, A. and Suresh, S., "Effective Elastic Response of Two-Phase Composites", *Acta Metallurgica et Materialia*, 42, 77-97, January 1994.
89. Y.J.M. Brechet, P. Dawson, J.D. Embury, C. Gsell, S. Suresh and W.R. Wenk, "NATO Advanced Research Workshop on Modelling of Polyphase Plasticity: Panel Report", *Materials Science and Engineering*, A175, 1-5, January 1994.
90. Dawson, P., A. Needleman and S. Suresh, "Critical Issues in the Finite Element Modelling of Polyphase Plasticity", *Materials Science and Engineering*, A175, 43-48, January 1994.
91. Shen, Y.-L., Needleman, A. and Suresh, S., "Coefficients of Thermal Expansion of Metal-Matrix Composites for Electronic Packaging", *Metallurgical Transactions A*, 25A, 839-850, April 1994.
92. Suresh, S., A.E. Giannakopoulos, and M. Olsson, "Elastoplastic Analysis of Thermal Cycling: Layered Materials with Sharp Interfaces", *Journal of the Mechanics and Physics of Solids*, 42, 979-1018, June 1994.
93. Pruitt, L. and Suresh, S., "Cyclic Stress Fields Ahead of Tension Fatigue Cracks in Amorphous Polymers", *Polymer*, 35, 3221-3229, August 1994.
94. Ramamurty, U., Suresh, S., and Petrovic, J.J., "The Effect of Carbon Addition on Elevated Temperature Crack Growth Resistance in (Mo,W)Si₂-SiC_p Composite", *Journal of the American Ceramic Society*, 77, 2681-2688, October 1994.
95. Finot, M., Shen, Y.-L. , Needleman, A. and Suresh, S., "Micromechanical Modelling of Reinforcement Fracture in Particle-Reinforced Metal-Matrix Composites", *Metallurgical Transactions A*, 25A, 2403-2420, November 1994.
96. Ramamurty, U., Hansson, T. and Suresh, S., "Mechanisms of High-Temperature Crack Growth in Monolithic and SiC-Reinforced Si₃N₄ under Static and Cyclic Loads", *Journal of the American Ceramic Society*, 77, 2985-2999, November 1994.
97. Pruitt, L., Koo, J., Rimnac, C.M., Suresh, S. and Wright, T.M. "Cyclic Compressive Loading Results in Fatigue Cracks in Ultra High Molecular Weight Polyethylene", *Journal of Orthopedic Research*, 13, 143-146, February 1995.
98. Sugimura, Y., Lim, P.G., Shih, C.F. and Suresh, S., "Fracture Normal to a Bimaterial Interface: Effects of Plasticity on Crack-Tip Shielding and Amplification", *Acta Metallurgica et Materialia*, 43, 1157-1169, March 1995.
99. Giannakopoulos, A.E., Suresh, S., Finot, M. and Olsson, M., "Elastoplastic Analysis of Thermal Cycling: Layered Materials with Compositional Gradients", *Acta Metallurgica et Materialia*, 43, 1335-1354, April 1995.

100. Shen, Y.-L., Finot, M., Needleman, A. and Suresh, S., "Effective Plastic Response of Two-Phase Composites", *Acta Metallurgica et Materialia*, 43, 1701-1722, April 1995.
101. Shen, Y.-L. and Suresh, S., "Elastoplastic Deformation of Multilayered Materials During Thermal Cycling", *Journal of Materials Research*, 10, 1200-1215, May 1995.
102. Sorensen, N.J., Suresh, S., Tvergaard, V. and Needleman, A., "Effects of Reinforcement Orientation on the Tensile Response of Metal-Matrix Composites", *Materials Science and Engineering A*, A197, 1-10, June 1995.
103. Olsson, M., A.E. Giannakopoulos and S. Suresh, "Elastoplastic Analysis of Thermal Cycling: Ceramic Particles in a Metallic Matrix", *Journal of the Mechanics and Physics of Solids*, 1995, 43, 731-760, September 1995.
104. Shen, Y.-L. and Suresh, S., "Thermal Cycling and Stress Relaxation Response of Si-Al and Si-Al-SiO₂ Layered Thin Films", *Acta Metallurgica et Materialia*, 43, 3915-3926, November 1995.
105. Sugimura, Y., Grondin, L. and Suresh, S., "Fatigue Crack Growth at Arbitrary Angles to Bimaterial Interfaces", *Scripta Metallurgica et Materialia*, 33, 2007-2012, December 1995.
106. Mortensen, A. and Suresh, S., "Functionally Graded Metals and Metal-Ceramic Composites: Part I Processing", *International Materials Reviews*, 40(6), 239-265, December 1995.
107. Finot, M., Suresh, S., Bull, C. and Sampath, S., "Curvature Changes during Thermal Cycling of Ni-Alumina Compositionally Graded Multi-layered Materials", *Materials Science and Engineering A*, 205A, 59-71, January 1996.
108. Shen, Y.-L., Suresh, S. and Bernstein, J., "Laser-Linking of Metal Interconnects: Analysis and Design Considerations", *IEEE Transactions on Electron Devices*, 43, 402-410, March 1996.
109. Shen, Y.-L. and Suresh, S., "Steady-state Creep of Metal-Ceramic Multilayered Materials", *Acta Materialia*, 44, 1337-1348, April 1996.
110. Finot, M. and Suresh, S. "Small and Large Deformation of Thick and Thin-Film Multilayers: Effects of Layer Geometry, Plasticity and Compositional Gradients", *Journal of the Mechanics and Physics of Solids*, 44, 683-721, May 1996.
111. Shen, Y.-L., Suresh, S. and Blech, I., "Stresses, Curvatures and Shape Changes Arising From Patterned SiO₂ Lines on Si Wafers", *Journal of Applied Physics*, 80, 1388-1396, July 1996.
112. Balch, D.K., Fitzgerald, T.J., Michaud, V.J., Mortensen, A., Shen, Y.-L. and Suresh, S., "Thermal Expansion of Metals Reinforced with Ceramic Particles and Microcellular Foams", *Metallurgical and Materials Transactions A*, 27A, 3700-3717, November 1996.
113. Suresh, S., Giannakopoulos, A.E. and Alcalá, J. "Spherical Indentation of Compositionally Graded Metal-Ceramic Composites: Theory and Experiments", *Acta Materialia*, 45, 1307-1321, April 1997.
114. Finot, M., Blech, I.A., Suresh, S. and Fujimoto, H., "Large Deformation and Geometric Instability of Silicon Substrates with Thin Film Deposits", *Journal of Applied Physics*, 81(8), 3457-3464, April 1997.
115. Giannakopoulos, A.E. and Suresh, S., "Indentation of Solids with Gradients in Elastic Properties: Part I. Point Force", *International Journal of Solids and Structures*, 34(19), 2357-2392, May 1997.

116. Giannakopoulos, A.E. and Suresh, S., "Indentation of Solids with Gradients in Elastic Properties: Part II. Axisymmetric Indenters", *International Journal of Solids and Structures*, 34(19), 2393-2428, May 1997.
117. Kesler, O., Finot, M., Suresh, S. and Sampath, S., "Determination of Processing-Induced Stresses and Properties of Layered and Graded Coatings: Experimental Method and Results for Plasma-Sprayed Ni-Al₂O₃", *Acta Materialia*, 45, 3123-3134, August 1997.
118. Weissenbek, E., Pettermann, H. and Suresh, S. "Elasto-Plastic Deformation of Compositionally Graded Metal-Ceramic Composites", *Acta Materialia*, 45(8), 3401-3417, August 1997.
119. Kim, A.S., Suresh, S. and Shih, C.F., "Fracture Normal to Interfaces with Homogeneous and Graded Compositions", *International Journal of Solids and Structures*, 34(26), 3415-3432, September 1997.
120. Gaudette, F., Suresh, S., Evans, A.G., Daehm, G. and Ruhle, M., "The Influence of Cr Addition on the Toughness of Nickel-Sapphire Interfaces", *Acta Materialia*, 45, 3503-3513, September 1997.
121. Suresh, S. and Mortensen, A., "Functionally Graded Metals and Metal-Ceramic Composites: Part II. Thermomechanical Properties", *International Materials Reviews*, 45, 85-116, September 1997.
122. Guzek, J., Azimi, H. and Suresh, S., "Fatigue Crack Propagation Along Polymer-Metal Interfaces in Microelectronic Packages", *IEEE Journal on Electronic Packaging*, 20, 496-504, December 1997.
123. Suresh, S., "Modelling and Design of Multi-Layered and Graded Materials", *Progress in Materials Science*, 42, 243-251, December 1997.
124. Giannakopoulos, A.E. and Suresh, S., "A Three-Dimensional Analysis of Fretting Fatigue", *Acta Materialia*, 46, 177-192, January 1998.
125. Yoo, J., Cho, K., Bae, W., Cima, M. and Suresh, S., "Transformation-Toughened Ceramic Multilayers with Gradients in Microstructure", *Journal of the American Ceramic Society*, 81(1), 21-32, January 1998.
126. Alcala, J., Giannakopoulos, A.E. and Suresh, S., "Continuous Measurements of Load-Penetration Curves with Spherical Micro-Indenters and the Estimation of Mechanical Properties", *Journal of Materials Research*, 13(5), 1390-1400, May 1998.
127. Giannakopoulos, A.E., Lindley, T.C. and Suresh, S., "Aspects of Equivalence Between Contact Mechanics and Fracture Mechanics: Theoretical Connections and a Life Prediction Methodology for Fretting Fatigue", *46*, 2955-2968, July 1998.
128. Jorgensen, O. Giannakopoulos, A.E. and Suresh, S., "Large Spherical Indentation of Polymeric Composites with Gradients in Fiber Alignment", *International Journal of Solids and Structures*, 35, 5097-5113, July 1998.
129. Shen, Y.-L., Suresh, S., He, M.Y., Bagchi, A., Kienzle, O., Ruhle, M. and Evans, A.G., "Stress Evolution in Passivated Thin films of Cu on Silica Substrates", *Journal of Materials Research*, 13, 1928-1937, July 1998.
130. Kesler, O., Matejcek, J., Sampath, S., Suresh, S., Gnaeupel-Herold, T., Brand, P.C., and Prask, H.J., "Measurement of Residual Stress in Plasma-Sprayed Metallic, Ceramic and Composite Coatings", *Materials Science and Engineering A*, 257, 215-224, 1998.

131. Gouldstone, A., Shen, Y.-L., Suresh, S. and Thompson, C.V. "Evolution of Stresses in Passivated and Unpassivated Metal Interconnects", *Journal of Materials Research*, 13, 1956-1966, July 1998.
132. Jitcharoen, J., Padture, N.P., Giannakopoulos, A.E. and Suresh, S., "Hertzian-Crack Suppression in Ceramics with Elastic-Modulus-Graded Surfaces", *Journal of the American Ceramic Society*, 81, 2301-2308, September 1998.
133. Suresh, S. and Giannakopoulos, A.E., "A New method for Estimating Residual Stresses by Instrumented Sharp Indentation", *Acta Materialia*, 46(16), 5755-5767, October 1998.
134. Sridhar, S. Giannakopoulos, A.E., Suresh, S. and Ramamurty, U. "Electrical Response during Indentation of Piezoelectric Materials: A New Method for Material Characterization", *Journal of Applied Physics*, 85(1), 380-387, January 1999.
135. Lin, C.-T., Shen, Y.-L., Becker, R. and Suresh, S., "Grain Morphology, Texture, and Microhardness Gradients in Aluminum Diffusion-Bonded to Aluminum Oxide", *Acta Materialia*, 42(2), 501-515, February 1999.
136. Wikstrom, A., Gudmundson, P. and Suresh, S., "Thermoelastic Analysis of Thin Lines on Substrates", *Journal of the Mechanics and Physics of Solids*, 47(4), 1113-1135, May 1999.
137. Wittkowsky, B.U., Birch, P.R., Dominguez, J. and Suresh, S., "An Apparatus for Quantitative Fretting-Fatigue Testing", *Fatigue and Fracture of Engineering Materials and Structures*, 22(4), 307-322, April 1999.
138. A.E. Giannakopoulos and S. Suresh, "Theory of Indentation of Piezoelectric Materials", *Acta Materialia*, 47(7), 2153-2164, April 1999.
139. Giannakopoulos, A.E. and Suresh, S., "Determination of Elastoplastic Properties of Materials by Instrumented Sharp Indentation", *Scripta Materialia*, 40(10), 1191-1198, May 1999.
140. U. Ramamurty, S. Sridhar, A.E. Giannakopoulos and S. Suresh, "Experimental Study of Indentation of Piezoelectric Materials", *Acta Materialia*, 47(8), 2417-2430, May 1999.
139. Saigal, A., Giannakopoulos, A.E., Pettermann, H.E. and Suresh, S., "Electrical Response During Indentation of a 1-3 Piezoelectric Ceramic-Polymer Composite", *Journal of Applied Physics*, 86(1), 603-606, July 1999.
140. Gouldstone, A., Wikstrom, A., Gudmundson, P. and Suresh, S., "Onset of Plastic Yielding in Thin Metal Lines Deposited on Substrates", *Scripta Materialia*, 41(3), 297-304, August 1999.
141. Suresh, S., Nieh, T.-G. and Choi, B.W., "Nano-Indentation of Copper Thin Films on Silicon Substrates", *Scripta Materialia*, 41(9), 951-957, November 1999.
142. Suresh, S., Olsson, M., Giannakopoulos, A.E., Padture, N.P. and Jitcharoen, J., "Engineering the Resistance to Sliding-Contact Damage Through Controlled Gradients in Elastic Properties at Contact Surfaces", *Acta Materialia*, 47(14), 3915-3926, November 1999.
143. Giannakopoulos, A.E., Venkatesh, T.A., Lindley, T.C. and Suresh, S., "The Role of Adhesion in Contact Fatigue", *Acta Materialia*, 47(18), 4653-4664, December 1999.
144. A. Wikstrom, P. Gudmundson and S. Suresh, "Analysis of Average Thermal Stresses in Passivated Metal Interconnects", *Journal of Applied Physics*, 86(11), 6088-6095, December 1999.
145. Keller-Flaig, R.-M., M. Legros, W. Sigle, A. Gouldstone, K. J. Hemker, S. Suresh and E. Arzt, "*In situ* Transmission Electron Microscopy Investigation of Threading Dislocation Motion in

- Passivated Thin Aluminum Films”, *Journal of Materials Research*, 14(12), 4673-4676, December 1999.
146. Venkatesh, T.A., K.J. Van Vliet, A.E. Giannakopoulos and S. Suresh, “Depth-Sensing Instrumented Sharp Indentation: Guidelines for Property Extraction”, *Scripta Materialia*, 42, 833-839, April 2000.
 147. Gouldstone, A., H.-J. Koh, K.-Y. Zeng, A. E. Giannakopoulos and S. Suresh, “Discrete and Continuous Deformation During Nanoindentation of Thin Films”, *Acta Materialia*, 48, 2277-2295, 2000.
 148. Gaudette, F., Suresh, S., and Evans, A.G. “Effects of Sulfur on the Fatigue and Fracture Resistance of Interfaces Between γ -Ni(Cr) and α -Alumina”, *Metallurgical and Materials Transactions A*, 31A(8), 1977-1983, August 2000.
 149. Pettermann, H. and Suresh, S., “A Comprehensive Unit Cell Model for the Thermomechanical Response of 1-3 Piezoelectric Composites”, *International Journal of Solids and Structures*, *International Journal of Solids and Structures*, 37, 5447-5464, 2000.
 150. Park, T.-S. and S. Suresh, “Effects of Line and Passivation Geometry on Curvature Evolution during Processing and Thermal Cycling in Copper Interconnect Lines”, *Acta Materialia*, 48, 3169-3175, 2000.
 151. Sridhar, S., A.E. Giannakopoulos and S. Suresh, “Mechanical and Electrical Responses to Conical Indentation”, *Journal of Applied Physics*, 87, 8451-8456, June 2000.
 152. Giannakopoulos, A.E., T.C. Lindley, and S. Suresh, “Similarities of Stress Concentrations in Contact at Round Punches and Fatigue at Notches: Implications to Fretting Fatigue Crack Initiation”, *Fatigue and Fracture of Engineering Structures and Materials*, 23, 561-571, 2000.
 153. Peralta, P., Ramamurty, U., Suresh, S., Campbell, G.H., King, W.E. and Mitchell, T.E., “Crystallographic Effects on Fatigue Fracture of Copper-Sapphire Interfaces”, *Philosophical Magazine A*, 80, No. 9, 2109-2129, September 2000.
 154. Venkatesh, T.A., Conner, B.F., Lee, C.S., Giannakopoulos, A.E., Lindley, T.C. and Suresh, S., “An Experimental Investigation of Fretting Fatigue in Ti-6Al-4V: the Role of Contact Conditions and Microstructure”, *Metallurgical and Materials Transactions A*, 32A, 1131-1146, May 2001.
 155. Legros, M., Dehm, G., Keller-Flaig, R.M., Arzt, E., Hemker, K.J. and Suresh, S., “Dynamic Observation of Al Thin Films Plastically Strained in a TEM”, *Materials Science and Engineering A*, A309, 463-467, June 2001.
 156. Gaudette, F., A.E. Giannakopoulos and S. Suresh, “Interface Cracks in Layered Materials Subjected to Temperature Variations”, *International Journal of Fracture*, 110, 325-349, June 2001.
 157. Gouldstone, A., Van Vliet, K.J. and Suresh, S., “Experimental Simulation of Defect Nucleation during Nanoindentation”, *Nature*, 411, p. 656, June 7, 2001.
 158. Suresh, S., “Graded Materials for Resistance to Contact Deformation and Damage”, *Science*, 292, 2447-2451, June 29, 2001.
 159. Alcalá, J., Gaudette, F., Suresh, S. and Sampath, S., “Instrumented Spherical Micro-Indentation of Plasma-Sprayed Coatings”, *Materials Science and Engineering A*, 316, No. 1-2, 1-10, July 2001.
 160. Pender, D. C., Padture, N. P., Giannakopoulos, A.E. and Suresh, S., “Gradients in Elastic Modulus for Improved Contact-Damage Resistance. Part I: The Silicon Nitride-Oxynitride Glass System”, *Acta Materialia*, 49, 3255-3262, October 2001.

161. Pender, D. C., Padture, N. P., Giannakopoulos, A.E. and Suresh, S., "Gradients in Elastic Modulus for Improved Contact-Damage Resistance. Part II: The Silicon Nitride-Silicon Carbide System", *Acta Materialia*, 49, 3263-3268, October 2001.
162. Giannakopoulos, A. E., Blech, I. A. and Suresh, S., "Large Deformation of Thin Films and Layered Flat Panels: Effects of Gravity", *Acta Materialia*, 49, 3671-3688, October 2001.
163. Vaidyanathan, R., Dao, M., Ravichandran, G. and Suresh, S., "Interpretation of Mechanical Deformation of Bulk Metallic Glass Through Multi-Scale Indentation", *Acta Materialia*, 49, 3781-3789, October 2001.
164. Dao, M., Chollacoop, N., Van Vliet, K. J., Venkatesh, T.A., and Suresh, S., "Computational Modeling of the Forward and Reverse Problems in Instrumented Sharp Indentation", *Acta Materialia*, 49, 3899-3918, November 2001.
165. Flemings, M. C. and Suresh, S., "Materials Education for the New Century", *Materials Research Society Bulletin*, 24(11), 918-924, November 2001.
166. Andrews, E.W., Plisson, E., Giannakopoulos, A.E. and Suresh, S., "Analysis of Dynamic Sharp Indentation", *International Journal of Solids and Structures*, 39(1), 281-295, January 2002.
167. Kim, J.-J., Choi, Y., Suresh, S. and Argon, A.S., "Nanocrystallization during Nanoindentation of a Bulk Amorphous Metal Alloy at Room Temperature", *Science*, 295, 654-657, January 25, 2002.
168. Choi, Y. and Suresh, S., "Size Effects on the Mechanical Properties of Thin Polycrystalline Films on Substrates", *Acta Materialia*, 50, 1881-1893, April 19, 2002.
169. Van Vliet, K. J. and Suresh, S., "Simulations of Cyclic Normal Indentation of Crystal Surfaces using the Bubble-raft Model", *Philosophical Magazine A*, 82, No. 10, 1993-2001, June 2002.
170. Li, J., Van Vliet, K. J., Zhu, T., Yip, S. and Suresh, S., "Atomistic Mechanisms Governing Incipient Plasticity in Crystals", *Nature*, 418, 307-310, July 18, 2002.
171. Thompson, S., Pandit, A., Padture, N. P. and Suresh, S., "Stepwise Graded Si₃N₄-SiC Ceramics with Improved Wear Properties", *Journal of the American Ceramic Society*, 85, 2059-2064, August 2002.
172. Legros, M., Hemker, K. J., Gouldstone, A., Suresh, S., Keller-Flaig, R.-M., and Arzt, E., "Microstructural Evolution in Passivated Aluminum Films on Silicon Substrates during Thermal Cycling", *Acta Materialia*, 50, No. 13, 3435-3452, August 2002.
173. Choi, Y. and Suresh, S., "Nanoindentation of Patterned Metal Lines on a Si Substrate", *Scripta Materialia*, 48, No. 2, 249-254, January 2003.
174. Kumar, K. S., Suresh, S., Chisholm, M. F., Horton, J. A. and Wang, P., "Deformation of Electrodeposited Nanocrystalline Nickel", *Acta Materialia*, 51, No. 2, 387-405, January 2003.
175. Van Vliet, K. J., J. Li, T. Zhu, S. Yip and S. Suresh, "Quantifying the Early Stages of Plasticity through Nanoscale Experiments and Simulations", *Physical Review B*, 67, 104105-1 to 104105-15, March 2003.
176. Chollacoop, N., Dao, M. and Suresh, S. "Depth-Sensing Instrumented Indentation with Dual Sharp Indenters", *Acta Materialia*, 51, 3713-3729, July 2003.
177. Van Vliet, K. J., S. Tsikada and S. Suresh, "Model Experiments for Direct Visualization of Grain Boundary Deformation in Nanocrystalline Metals", *Applied Physics Letters*, 83, No. 7, 1441-1443, August 2003.

178. Mukai, T., Suresh, S., Kita, K., Sasaki, H. Kobayashi, N., Higashi, K. and Inoue, A. "Nanostructured Al-Fe Alloys Produced by E-Beam Deposition: Static and Dynamic Tensile Properties", *Acta Materialia*, 51, No. 14, 4197-4208, August 2003.
179. Hanlon, T., Kwon, Y.-N. and Suresh, S., "Grain Size Effects on the Fatigue Response of Nanocrystalline Metals", *Scripta Materialia*, 49, No. 7, 675-680, October 2003.
180. Schwaiger, R., Moser, B., Dao, M., Chollacoop, N. and Suresh, S., "Some critical experiments on the strain-rate sensitivity of nanocrystalline nickel", *Acta Materialia*, 51, 5159-5172, November 2003.
181. Choi, Y., Van Vliet, K. J., Li, J. and Suresh, S., "Size effects on the onset of plastic deformation during nanoindentation of thin films and patterned lines", *Journal of Applied Physics*, 94(9), 6050-6058, September 2003.
182. Kumar, K. S., Van Swygenhoven, H. and Suresh, S., "Mechanical Response of Nanocrystalline Metals and Alloys", *Acta Materialia*, 51, No. 19, 5743-5774, December 2003.
183. Van Vliet, K. J., Bao, G., and Suresh, S., "The Biomechanics Toolbox: Experimental Approaches to Living Cells and Biomolecules", *Acta Materialia*, 51, No. 19, 5881-5905, November 2003.
184. Bao, G. and Suresh, S., "Cell and Molecular Mechanics of Biological Materials", *Nature Materials*, 2, 715-725, November 2003.
185. Lu, J., Suresh, S., and Ravichandran, G., "Dynamic Indentation for Determining the Strain-Rate Sensitivity of Metals", *Journal of the Mechanics and Physics of Solids*, 51, 1923-1938, December 2003.
186. Dao, M., Lim, C. T., and Suresh, S., "Mechanics of the Human Red Blood Cell Deformed by Optical Tweezers", *Journal of the Mechanics and Physics of Solids*, 51, 2259-2280, December 2003.
187. Park, T.-S., S. Suresh, A. J. Rosakis and J. Ryu, "Measuring the Curvature in Full-Field by CGS Interferometry: An Example Featuring Thin Film Substrate Systems Undergoing Geometric Instabilities", *Journal of the Mechanics and Physics of Solids*, 51, 2149-2166, December 2003.
188. Zhu, T., Li, J., Van Vliet, K. J., Ogata, S., Yip, S. and Suresh, S., "Predictive Modeling of Nanoindentation-Induced Homogeneous Defect Nucleation in Copper", *Journal of the Mechanics and Physics of Solids*, 52, 691-724, February 2004.
189. Lim, C.T., Dao, M., Suresh, S., Sow, C.H. and Chew, K. T., "Large Deformation of Living Cells using Laser Traps", *Acta Materialia*, 52, 1837-1845, April 2004.
190. Mills, J. P., Qie, L., Dao, M., Lim, C. T. and Suresh, S., "Nonlinear Elastic and Viscoelastic Deformation of Human Red Blood Cells with Optical Tweezers", *Mechanics and Chemistry of Biosystems*, 1, 169-180, September 2004.
191. Suresh, S., Spatz, J., Mills, J. P., Micoulet, A., Dao, M., Lim, C. T., Biel, M. and Seufferlein, T., "Single-cell Biomechanics and Human Disease States: Gastrointestinal Cancer and Malaria." *Acta Biomaterialia*, 1(1), 15-30, January 2005.
192. Lu, L., Schwaiger, R., Shan, Z., Dao, M., Lu, K., Suresh, S., "Nano-scale twins lead to increased rate-sensitivity of deformation in copper." *Acta Materialia*, 53(7), 2169-2179, March 2005.
193. Li, J., Dao, M., Lim, C.T. and Suresh, S., "Spectrin-level Modeling of the Cytoskeleton and Optical Tweezers Stretching of the Erythrocyte", *Biophysical Journal*, 88(5), 3707-3719, May 2005.

194. Asaro, R. and Suresh, S. "Mechanistic Models for the Activation Volume and Rate Sensitivity in Metals with Nanocrystalline Grains and Nano-Scale Twins", *Acta Materialia*, 53(11), 3369-3382, June 2005.
195. Waters, J.F., Guduru, P.R., Jouzi, M., Xu, J.M., Hanlon, T. and Suresh, S. "Shell Buckling of Individual Multiwalled Carbon Nanotubes using Nanoindentation", *Applied Physics Letters*, 87(9), 103109-1-3, September 2005.
196. Hanlon, T., Tabachnikova, E.D. and Suresh, S. "Fatigue crack growth behavior of nanocrystalline metals and alloys". *International Journal of Fatigue*, 27(11), 1147-1158, November 2005.
197. Hanlon, T., Chokshi, A. H., Manoharan, M. and Suresh, S. "Grain Size Effects on Friction and Damage Evolution under Repeated Sliding-Contact in Nanostructured Metals and Alloys", *International Journal of Fatigue*, 27(11), 1159-1163, November 2005.
198. Moser, B., Hanlon, T., Kumar, K.S. and Suresh, S. "Cyclic Strain Hardening of Nanocrystalline Nickel", *Scripta Materialia*, 54, 1151-1155, April 2006.
199. Suresh, S. "Crystal Deformation: Colloids Model for Atoms", *Nature Materials*, 5(4), 253-254, April 2006.
200. Dao, M., Li, J. and Suresh, S. "Molecularly Based Analysis of Deformation of Spectrin Network and Human Erythrocyte", *Materials Science and Engineering C*, 26, 1232-1244, July 2006.
201. Shen, Y.F., Lu, L., Dao, M. and Suresh, S., "Strain rate sensitivity of Cu with nanoscale twins", *Scripta Materialia*, 55, 319-322, July 2006.
202. Suresh, S., "Mechanical response of human red blood cells in health and disease: Some structure-property-function relationships", *Journal of Materials Research*, 21, 1871-1877, August 2006.
203. Dao, M., Lu, L., Shen, Y.F. and Suresh, S., "Strength, rate sensitivity and ductility of Cu with nano-scale twins", *Acta Materialia*, 54, 5421-5432, November 2006.
204. Bellemare, S., Dao, M. and Suresh, S., "The frictional sliding response of elastoplastic materials in contact with a conical indenter", *International Journal of Solids and Structures*, 2006, in press.
205. Zhu, T., Li, J., Samanta, A., Kim, H.-G. And Suresh, S., "Linking interfacial plasticity to ductility: A modeling framework for nanostructured metals", 2006, submitted for publication.
206. Tai, K., Dao, M., Suresh, S., Palazoglu, A. and Ortiz, C., "Nanoscale heterogeneity promotes energy dissipation in bone", 2006, submitted for publication.
207. Li, J., Lykotrafitis, G., Dao, M. and Suresh, S., "Cytoskeletal dynamics of the human erythrocyte", 2006, submitted for publication.
208. Choi, I.S., Dao, M. and Suresh, S. "Mechanics of indentation of plastically graded materials: I. Analysis", 2006, submitted for publication.
209. Choi, I.S., Detor, A., Schwaiger, R., Dao, M., Schuh, C. and Suresh, S., "Mechanics of indentation of plastically graded materials: II. Experiments on grain-size-graded nanostructured alloys", 2006, submitted for publication.

Refereed Proceedings of Conferences

1. Suresh, S. and Ritchie, R.O., "Mechanisms of Environmentally-Assisted Fatigue Crack Growth in Low Strength Steels", in Advances of Fracture Research, Edited by D. Francois, Pergamon Press, Oxford and New York, pp. 1873-1878, April 1981.
2. Ritchie, R.O. and Suresh, S., "Effects of Crack flank Oxide Debris and Fracture Surface Roughness on Near-Threshold Corrosion Fatigue", in Atomistics of Fracture, Proceedings of the NATO Advanced Research Institute Conference, Corsica, May 1981, Edited by R.M. Latanision and J. Pickens, Plenum Press, New York, pp. 452-460, May 1981.
3. Suresh, S., Zamiski, G.F. and Ritchie, R.O., "Fatigue Crack Propagation Behavior of 2 1/4 Cr-1 Mo Steel for Thick Wall Pressure Vessels", in Applications of 2 1/4 Cr-1 Mo Steel for Thick Wall Pressure Vessels, ASTM STP 755, Edited by G.S. Sangdahl and M. Semchysen, American Society for Testing and Materials, Philadelphia, pp. 49-67, June 1982.
4. Suresh, S., Parks, D.M. and Ritchie, R.O., "Crack-Tip Oxide Formation and Its Influence on Fatigue Thresholds", in Fatigue Thresholds, Conference Proceedings Stockholm, June 1981, Edited by J. Backlund, A. Blom and C.J. Beevers, EMAS, Ltd., Warley, U.K., 1, pp. 391-408, June 1982.
5. Ritchie, R.O., Suresh, S. and Liaw, P.K. "A Comparison of Environmentally Influenced Near-Threshold Fatigue Crack Growth", in Fatigue and Corrosion Fatigue up to Ultrasonic Frequencies, Edited by J. Wells and J.K. Tien, TMS-AIME, Engineering Foundation, Warrendale, PA, pp. 443-460, July 1982.
6. Suresh, S., Topolsky, J. and Ritchie, R.O., "A Mechanism for Environmentally Affected Near-Threshold Fatigue Crack Growth in Steels", in Fracture Mechanics, ASTM STP 791, Edited by J.C. Lewis and G. Sines, American Society for Testing and Materials, Philadelphia, pp. 1329-1348, October 1982.
7. Ritchie, R.O. and Suresh, S., "Mechanics and Physics of the Growth of Short Cracks in Airframe Components", Proceedings of 55th Specialists Meeting of AGARD Structural and Materials Panel, AGARD Proc. No. 328, North Atlantic Treaty Organization, AGARD, France, pp. 1-1-1-32, May 1983.
8. Suresh, S. and Ritchie, R.O., "Near-Threshold Fatigue Crack Propagation: A Perspective on the Role of Crack Closure", in Fatigue Crack Growth Threshold Concepts, Edited by D.L. Davidson and S. Suresh, TMS-AIME, Warrendale, PA, pp. 227-261, July 1984.
9. Suresh, S. and Vasudevan, A.K. "Application of Fatigue Threshold Concepts to Variable Amplitude Crack Propagation", in Fatigue Crack Growth Threshold Concepts, Edited by D.L. Davidson and S. Suresh, TMS-AIME, Warrendale, PA, pp. 361-378, July 1984.
10. Suresh, S., "Fatigue Crack Deflection Models", in Proceedings of Fatigue '84, Edited by C.J. Beevers, EMAS Ltd., Warley, U.K., 1, pp. 590-595, September 1984.
11. Petit, J., Suresh, S., Vasudevan, A.K. and Malcolm, R.C. "Influence of Composition and Microstructure on Constant and Variable Amplitude Fatigue Crack Growth in Aluminum-Lithium Alloys", in Proceedings of the 3rd International Conference on Aluminum-Lithium Alloys, Edited by C. Baker, Oxford, July 1985, The Institute of Metals, London, pp. 257-262, December 1985.
12. Suresh, S. and Vasudevan, A.K. "Influence of Composition and Aging Treatment on the Fracture Toughness of Lithium-Containing Aluminum Alloys", in Proceedings of the 3rd International Conference on Aluminum-Lithium Alloys, Edited by C. Baker, Oxford, July 1985, The Institute of Metals, London, pp. 595-601, December 1985.
13. Suresh, S. and Lewis, R.E. "Geometrical Consequences of Fatigue Crack Deflection in Composite Materials", in Proceedings of Fifth International Conference on Composite materials,

Edited by W.G. Harrigan, July 1985, The Metallurgical Society for AIME, Warrendale, PA, pp. 315-325, July 1985.

14. Suresh, S., Christman, T. and Bull, C. "Crack Initiation and Growth Under Far-Field Cyclic Compression: Theory, Experiments and Applications", An invited paper published in Small Fatigue Cracks, Edited by R.O. Ritchie and J. Lankford, The Metallurgical Society of AIME, Warrendale, PA, pp. 513-540, October 1986.
15. Suresh, S., "Constitutive Behavior of Ceramics: Implications for Fracture under Cyclic Compressive Loads", in Proceedings of Symposium on Constitutive Modelling of Non-Traditional Materials, Edited by V. Stokes and D. Krcajinovic, ASME, New York, pp. 233-243, December 1987.
16. Suresh, S., "Micromechanisms of Load Interaction Effects on Fatigue Crack Growth in Metals and Ceramics", in Proceedings of International Symposium on Amplitude Fatigue, June 1988, Paris, Edited by J. Petit, P. Rabbe, D.L. Davidson and Suresh, S., The French Metallurgical Society, Paris, pp. 146-161, January 1989.
17. Suresh, S., "Ambient and Elevated Temperature Fatigue Crack Growth in Ceramics and Ceramic Composites", An invited paper published in Proceedings of 7th International Conference on Fracture, March 1989, Houston, Edited by K. Salama, Pergamon Press, New York, 2, pp. 963-972, March 1989.
18. Duffy, J., Nakamura, T., Yeshurun, Y. and Suresh, S., "Dynamic Fracture of Ceramics", in Proceedings of 4th International Conference on the Mechanical Properties of Materials at High Rates of Strain, March 1989, Oxford, Edited by J. Harding, IOP Publishing Ltd., Bristol, U.K., pp. 355-360, March 1989.
19. Suresh, S., "Fatigue Crack Growth in Cementitious Solids under Cyclic Compression: Theory and Experiments", in International Conferences on Recent Developments in the Fracture of Concrete and Rock, Cardiff, Wales, September 1989, Edited by S.P. Shah and B. Barr, Elsevier Sequoia, U.K., pp. 162-171, September 1989.
20. Suresh, S. and Brockenbrough, J.R., "Cyclic Damage Zones Ahead of Tensile Fatigue Cracks in Ceramic Materials", in Fatigue '90, Edited by H. Kitagawa and T. Tanaka, Materials and Component Engineering Publications, Birmingham, England, Vol. II, p. 739-744, July 1990.
21. Suresh, S., "Fatigue Crack Growth in Ceramic Materials at Ambient and Elevated Temperatures", in Fatigue '90, Edited by H. Kitagawa and T. Tanaka, Materials and Component Engineering Publications, Birmingham, England, Vol. II, pp. 759-768, July 1990.
22. Aswath, P.B., Sobeyejo, W.O. and Suresh, S., "Microstructural Effects on Fatigue Crack Growth in Titanium Aluminides", in Fatigue '90, Edited by H. Kitagawa and T. Tanaka, Materials and Component Engineering Publications, Birmingham, England, Vol. III, pp. 1941-1946, July 1990.
23. Suresh, S., "Effects of Reinforcement Clustering on Deformation of Metal-Matrix Composites with Fibers and Whiskers", in Morris E. Fine Symposium, Edited by P.K. Liaw et al., The Metals, Minerals and Materials Society, Warrendale, PA, pp. 226-231, October 1990.
24. Christman, T., LLorca, J., Suresh, S. and Needleman, A., "The Effect of Superposed Hydrostatic Stress on the Mechanical Response of Metal-Matrix Composites", in Inelastic Deformation of Composites, Edited by G. Dvorak (Proceedings of an IUTAM Symposium, May 1990) Springer-Verlag, pp. 309-323, December 1990.
25. Aswath, P.B. and Suresh, S., "Microstructural Effects on Fatigue Crack Growth in Titanium Aluminides", in Elevated Temperature Materials, Edited by S. Mall and T. Nicholas, ASME Winter Annual Meeting, Dallas, American Society of Mechanical Engineers, New York, pp. 69-77, December 1990.

26. Suresh, S. and Pruitt, L. "Fatigue Crack Growth in Polymers and Organic Composites Under Cyclic Compressive Loads", in Deformation, Yield and Fracture of Polymers, Edited by R.J. Young, The Plastics and Rubber Institute, London, pp. 32-1-32-4, April 1991.
27. Needleman, A., Suresh, S. and Tvergaard, V. "Deformation of a Metal-Ceramic Composite with a Crystal Matrix: Reinforcement Distribution Effects", in Local Mechanics Concepts for Composite Material Systems, Edited by J.N. Reddy and K.L. Reifsnider, Springer-Verlag, Berlin, pp. 199-214, August 1992.
28. Suresh, S., "Micromechanisms and Micromechanical Modelling of Cyclic Damage Ahead of Fatigue Cracks", in Modelling of Plastic Deformation and Its Engineering Applications, Edited by S.I. Anderson et al., Risø National Laboratory, Roskilde, Denmark, pp. 111-124, September 1992.
29. Suresh, S. "Creep Fracture and Creep-Fatigue Fracture in Ceramics and Ceramic Composites", in Critical Issues in the Development of High-Temperature Materials, Edited by N. Stoloff, D. Duquette and A.F. Giamai, The Metallurgical Society, Warrendale, PA, pp. 385-396, November 1993.
30. Shih, C.F. and Suresh, S. "Crack Growth at Bimaterial Interfaces under Monotonic and Cyclic Loading", in Mis-Matching of Welds, ESIS 17, Edited by K.-H. Schwalbe and M. Kocak, pp. 3-17, Mechanical Engineering Publications, London, May 1994.
31. Suresh, S., "Modelling and Experiments on Deformation and Fracture in Some Advanced Materials", Invited keynote paper, in Numerical Predictions of Deformation Processes and the Behaviour of Real Materials, Edited by S.I. Andersen et al., Riso National Laboratory, pp. 135-148, Roskilde, Denmark, September 1994.
32. Giannakopoulos, A.E., Lindley, T.C. and Suresh, S., "Application of Fracture Mechanics in the Assessment of Fretting Fatigue", Invited paper, to be published in Fretting Fatigue: Current Technology and Practices, ASTM STP 1367, D.W. Hoepfner, V. Chandrasekaran and C.B. Elliot, Eds., American Society for Testing and Materials, 1999, in press.
33. Wittkowsky, B., Birch, P., Dominguez, J. and Suresh, S., "An Experimental Investigation of Fretting Fatigue with Spherical Contact in 7075-T6 Aluminum Alloy", to be published in Fretting Fatigue: Current Technology and Practices, ASTM STP 1367, D.W. Hoepfner, V. Chandrasekaran and C.B. Elliot, Eds., American Society for Testing and Materials, 1999.
34. Suresh, S. and Giannakopoulos, A.E., "Deformation and Properties of Homogeneous and Graded Surfaces: Theories and Experiments Involving Depth-Sensing Indentation" in Proceedings of 20th Risoe International Symposium on Materials Science, Edited by J.B. Bilde-Sorensen et al., pp. 183-200, Risoe National Laboratory, Roskilde, Denmark, 1999.
35. Mills, J. P., Qie, L., Dao, M., Tan, K.S.W., Lim, C.T. and Suresh, S. "Continuous force-displacement relationships for the human red blood cell at different erythrocytic developmental stages of Plasmodium falciparum malaria parasite." *Mater. Res. Soc. Symp. Proc.*, 844, Y7.8, 2005. (Selected for the "Ribbon Award" for the MRS Symposium as an outstanding paper.)

Other Major Publications: Chapters in Books

1. Suresh, S., "Cyclic Deformation and Fatigue", in Materials Science and Technology: An Advanced Treatise, 6, *Plastic Deformation and Fatigue of Materials*, edited by H. Mughrabi, Verlagsgesellschaft, Weinheim, Germany, pp. 509-563, January 1993.
2. Suresh, S. and Chawla, K.K., "Aging Characteristics of Reinforced Metals", Chapter 7, in Fundamentals of Metal-Matrix Composites, Edited by S. Suresh, A. Mortensen and A. Needleman, Butterworth-Heinemann, Stoneham, MA, pp. 121-133, December 1993.

3. Suresh, S. and Brockenbrough, J.R., "Continuum Models for Deformation: Metals Reinforced with Continuous Fibers", Chapter 10, in Fundamentals of Metal-Matrix Composites, Edited by S. Suresh, A. Mortensen and A. Needleman, Butterworth-Heinemann, Stoneham, MA, pp. 174-190, December 1993.
4. Needleman, A., Nutt, S.R., Suresh, S. and Tvergaard, V., "Matrix, Reinforcement and Interfacial Failure", Chapter 13, in Fundamentals of Metal-Matrix Composites, Edited by S. Suresh, A. Mortensen and A. Needleman, Butterworth-Heinemann, Stoneham, MA, pp. 233-250, December 1993.
5. Suresh, S., "Creep-Fatigue Crack Growth in Discontinuously Reinforced Ceramics", in Elevated Temperature Behavior of Ceramic-Matrix Composites, Edited by S.V. Nair and K. Jakus, Butterworth-Heinemann, Stoneham, MA, pp. 226-256, 1995.

Invited Lectures, Keynote Papers and Overview Lectures in International Conferences and Technical Meetings (since 1988)

February 1988, Invited Lecture, "Aging Characteristics and Deformation of Metal-Matrix Composites", TMS Annual Meeting, Phoenix.

March 1988, Invited Lecture, "Mechanics and Micromechanisms of Fatigue Crack Growth in Brittle Solids", IUTAM Conference on Non-Linear Fracture Mechanics, California Institute of Technology, Pasadena.

June 1988, Invited Lecture, "Micromechanisms of Load Interaction Effects on Fatigue Crack Growth in Metals and Ceramics", International Symposium on Variable Amplitude Fatigue, The French Metallurgical Society, Paris.

June 1988, Invited Lecture, "Fatigue of Ceramic Composites", Technical Meeting of the Japan Welding Society, Tokyo.

June 1988, Invited Lecture, "Mixed-Mode Fracture of Ceramics", Technical Meeting of Fracture Committee, The Japan Society of Mechanical Engineers, Tokyo, Japan.

August 1988, Invited Overview Lecture, "Cyclic and High-Strain-Rate Fracture of Ceramics", Gordon Research Conference on Ceramics, Meriden, New Hampshire.

October 1988, Invited Lecture, "High-Temperature Fatigue of Ceramics", Meeting of the New England Chapter of the American Ceramic Society, Cape Cod, Massachusetts.

November 1988, Invited Lecture, "Cyclic Fatigue in Brittle Solids", Committee E-9 Meeting, American Society for Testing and Materials, Atlanta, Georgia.

November 1988, Invited Lecture, "Modelling of Creep Deformation and Creep Fracture in Brittle Solids", ASME Winter Annual Meeting, Chicago.

February 1989, Invited Lecture, "Grain Boundary Fracture in Aluminum-Lithium Alloys", Symposium on Light Metals, TMS Annual Meeting, Las Vegas, Nevada.

March 1989, Invited Lecture, "Ambient and Elevated Temperature Fatigue Crack Growth in Ceramics and Ceramic Composites", Special Session on Fatigue Crack Closure, 7th International Conference on Fracture, Houston.

June 1989, Invited Lecture, "Micromechanisms of Fatigue in Ceramic Materials", Third International Conference on Atomistics of Fracture, Irsee, W. Germany.

October 1989, Invited Overview Lecture, "Life Prediction Methodology", Workshop on Life Prediction Sponsored by Office of Naval Research, National Institute of Standards and Technology, Gaithersburg, Maryland.

October 1989, Invited Lecture, "Numerical Modelling of Deformation in Metal-Matrix Composites", Symposium on Metal-Matrix Composites, TMS Fall Meeting, Indianapolis.

December 1989, Invited Lecture, "High-Temperature Crack Growth in Ceramic Materials", Symposium on Composites, ASME Winter Annual Meeting, San Francisco.

January 1990, Invited Lecture, "Continuum Modelling of Metal-Matrix Composites", URI Winter Annual Meeting, Department of Materials, University of California at Santa Barbara.

May 1990, Invited Lecture, "Modelling of Creep and Micromechanisms of Creep in Ceramic Composites", IUTAM Symposium, RPI, Troy, New York.

July 1990, Keynote Lecture, "Fatigue Crack Growth in Ceramic Materials at Ambient and Elevated Temperatures", Fatigue '90, Honolulu.

January 1991, Keynote Lecture, "High-Temperature Fatigue of Ceramic Materials", Engineering Foundation Conference on Fatigue of Advanced Materials, Santa Barbara, California.

June 1991, Three Keynote Lectures on "Fatigue", Workshop on Physics of Fracture, International Institute for Theoretical Physics, Trieste, Italy.

August 1991, Invited Lecture, "Critical Experiments on Microcrack Toughening", International Conference on Fracture of Engineering Materials, Singapore.

October 1991, Invited Lecture, "Toughening and Degradation of Brittle Solids By Microcracking", Symposium on Quasi-Brittle Fracture, TMS Fall Meeting, Cincinnati.

November 1991, Keynote Lecture, "Fatigue Crack Growth in Brittle Materials", International Conference on Science of Hard Materials, Madeira, Portugal.

December 1991, Invited Lecture, "High-Temperature Crack Growth in Ceramics", Symposium on Experimental Micromechanics, ASME Winter Annual Meeting, Atlanta.

April 1992, Keynote Lecture, "Elevated-Temperature Failure of Ceramics", Spanish-French Meeting on Fracture, Aiguablava, Spain.

June 1992, Keynote Lecture, "High-Strain-Rate Fracture of Ceramics", Annual Meeting of the Swedish Ceramic Institute, Göteborg, Sweden.

June 1992, Keynote Lecture, "Fatigue of Ceramics", Annual Meeting of the Swedish Ceramic Institute, Göteborg, Sweden.

September 1992, Keynote Lecture "Micromechanisms and Micromechanical Modelling of Cyclic Damage ahead of Fatigue Cracks", Risø International Conference on Modelling of Plastic Deformation and Its Engineering Applications, Risø National Laboratory, Roskilde, Denmark.

February 1993, Invited Lecture, "Fatigue at Interfaces: Theory, Experiments and Applications", International Symposium on Fatigue of Advanced Materials, TMS Annual Meeting, Denver.

March 1993, Keynote Lecture, "Creep Fracture and Creep-Fatigue Fracture in Ceramics and Ceramic Composites", Engineering Foundation Conference on Critical Issues in the Development of High-Temperature Materials, Kona, Hawaii.

May 1993, Overview Lecture, "Cyclic Damage Zones Ahead of Fatigue Cracks at Interfaces: Theory and Experiments", Fatigue '93, Montreal, Canada.

May 1993, Keynote Lecture, "Numerical Modelling of Reinforcement Clustering in Metal-Matrix Composites", NATO Symposium on Polyphase Materials, Palm Springs, California.

May 1993, Opening Keynote Lecture, "Fracture and Fatigue of Interface Cracks", International Conference on Mis-Match '93, Hamburg, Germany.

June 1993, Overview Lecture, "Fatigue of Interface: Experiments, Analyses and Applications", IUTAM Symposium on Computational Mechanics of Materials, Providence, Rhode Island.

August 1993, Two Invited Lectures, "Microstructural Aspects of Fatigue", Workshop on Mechanics-Materials Linkage, Institute of Mechanics and Materials Summer School, University of Maryland, College Park, Maryland.

September 1993, Keynote Lecture, "Thermal and Mechanical Fatigue at Interfaces", in International Symposium on Bridging the Length-Scale Gap in Interface Science, Institute of Mechanics and Materials, La Jolla, California.

October 1993, Invited Lecture, "Creep-Fatigue Crack Growth in Molydisilicide-Matrix Composites", International Symposium on Intermetallics, The Materials Society Fall Meeting, Pittsburgh.

November 1993, Invited Lecture, "Cyclic Failure in Layered Materials and Coatings", PAC-RIM Meeting of the American Ceramic Society, Honolulu.

February 1994, Opening Overview Lecture, "Numerical Modelling of Damage and Failure in Metal-Matrix Composites", International Symposium on "Creep and Fatigue of Metal-Matrix Composites", The Metallurgical Society, Annual Meeting, San Francisco, California.

June 1994, Keynote Lecture, "Fatigue at Interfaces", IUTAM Symposium of Layered and Coated Materials, Uppsala, Sweden.

June 1994, Overview Lecture, "High-Temperature Crack Growth in Brittle-Matrix Composites and Comparisons with Creep Fracture of Metals", Gordon Research Conference on Physical Metallurgy, New Hampshire.

July 1994, Invited Lectures, "Summer Workshop on Fracture", Institute of Mechanics and Materials, U.C. San Diego.

August 1994, Overview Lecture, "Plastic Deformation of Ceramics", International Symposium, Engineering Foundation, Snowbird Mountain, Utah.

August 1994, Invited Lecture, "Numerical Design of Metal-Matrix Composites", International Union of Theoretical and Applied Mechanics Conference on Composite Materials, Aalborg, Denmark.

September 1994, Opening Keynote Lecture, "Numerical Models and Experiments", 15th Risø International Conference on "Numerical Simulations and Comparisons with Experiments", Risø, Denmark.

October 1994, Invited Lecture, "High-Temperature Crack Growth in Brittle Solids under Static and Cyclic Loads", Symposium on High-Temperature Materials, ASM Annual Meeting, Rosemond Park, Illinois.

January 1995, Special Keynote Lecture, "Interfaces and Layered Materials", Organized by Korean Institute of Metals and Instron Korea Ltd., Seoul, S. Korea.

April 1995, Opening Overview Lecture, "Mechanical Response of Layered Materials", International Symposium on Functionally Graded Materials, American Ceramic Society Annual Meeting, Cincinnati, Ohio.

June 1995, Invited Keynote Lecture, "Compositional Design of Silicides", DOE-ONR Workshop on Molydisilicide, West Dennis, MA.

June 1995, Invited Lecture, "Multi-Layered Materials", ONR Program Review, Woods Hole, MA.

August 1995, Keynote Lecture, "Thermomechanical Behavior of Multi-Layered Materials", Engineering Foundation Symposium on Mechanics and Physics of Layered and Graded Materials, Davos, Switzerland.

August 1995, Invited Lecture, "Thermal Cycling of Multi-Layered Materials", IUTAM Symposium, Sevry, Paris.

September 1995, Invited Lecture, "Plasticity Aspects of Fracture in Multi-Layered Materials", IUTAM Symposium on Nonlinear Analysis of Fracture, Cambridge University.

November 1995, Invited Lecture, "Fracture Normal to Interfaces: Theory, Experiments and Industrial Applications", ASME Annual Meeting, San Francisco, CA.

December 1995, Keynote Lecture, "Multi-Layered Materials", International Conference on Perspectives in Materials Science, Indian Institute of Science, Bangalore, India.

January 1996, Keynote Lecture, "Layered and Graded Materials", International Symposium on Modeling of Materials, Institute of Theoretical Physics, University of California, Santa Barbara.

February 1996, ASM Sauveur Lecture, "Micromechanics and the Design of Materials", Cambridge, MA.

March 1996, Plenary Lecture, "Some Critical Issues in the Development of Advanced Functional Materials", Special Symposium Organized by the National Science and Technology Board at the National University of Singapore.

May 1996, Closing Plenary Lecture, "Fatigue of Multi-Layered Materials", Fatigue 96, International Conference, Berlin, Germany.

May 1996, Keynote Lecture, "Multi-Layered and Graded Materials", Engineering Foundation Conference on the Design of High Temperature Materials, Davos, Switzerland.

June 1996, Forum Lecture, "Micromechanical Modeling of Deformation and Failure in Microelectronics Applications", ASME Summer Meeting on Mechanics and Materials, Johns Hopkins University, Baltimore.

July 1996, Keynote Lecture, "Thermomechanical Behavior of Multi-Layered Materials", Max-Planck Institute Conference on High Temperature Materials, Ringberg Castle, Germany.

September 1996, Opening Keynote Lecture, "Fracture at Interfaces", 11th European Conference on Fracture, Poitiers, France.

October 1996, Keynote Lecture, "Plasticity Aspects of Fracture in Multi-Layered Materials", ASM Symposium on Metal-Ceramic Interfaces, Cincinnati, Ohio.

November 1996, Invited Lecture, "Fatigue Crack Growth along Metal-Polymer Interfaces for Microelectronic Packages", ASME Symposium on Electronic Packaging, Atlanta, GA.

April 1997, Overview Lecture, "Mechanical-Nonmechanical Interactions in Layered and Graded Materials in Integrated Systems", Acta/Scripta Workshop on Coupled Effects in Integrated Systems, Monterey, CA.

June 1997, Invited Lecture, "Fatigue at Interfaces", International Symposium on Fatigue, University of Erlangen, Germany.

June 1997, Keynote Lecture, "Control of Residual Stresses and Cracking in Layered and Graded Materials", 5th International Conference on Residual Stresses, Linköping, Sweden.

July 1997, Keynote Lecture, "Surface Engineering for Damage Tolerance", Symposium on Measurement of Residual Stresses, Los Alamos National Laboratory, Los Alamos, New Mexico.

September 1997, Keynote Lecture, "Mechanical-Nonmechanical Coupling in Integrated Systems", International Symposium on Multiscale Modeling of Industrial Materials, Cambridge, MA.

September 1997, Invited Lecture, "Special Symposium on Advanced Materials", Nanyang Technological University, Singapore.

November 1997, Keynote Lecture, "Indentation of Graded Materials", Special Symposium on Contact Mechanics, University of Barcelona, Spain.

November 1997, Keynote Lecture, "Contact-Damage Resistance of Graded Coatings", International Symposium on Functional and Smart Materials and Sensors, ASME International Congress, Dallas, TX.

December 1997, Keynote Lecture, "Design of Graded Surfaces for Contact-Damage Resistance", International Symposium on Functionally Graded Materials, MRS Meeting, Boston, MA.

December 1997, Keynote Lecture, "Stresses and Cracking in Thermally-Sprayed Coatings", International Symposium on Thermal Spray, MRS Meeting, Boston, MA.

March 1998, Keynote Lecture, "Probing Materials at the Nano-, Micro- and Macro-Scales", Fourth National Symposium on Progress in Materials Research, Singapore.

April 1998, Keynote Lecture, "Micromechanics of Electronic Packaging", MRS Meeting, San Francisco.

June 1998, Invited Lecture, "Gradient Materials for Surface Damage Protection", Max-Planck Institute Symposium on Small Volume Structures, Ringberg Castle, Tegernsee, Germany.

June 1998, Keynote Lecture, "The Engineering of Surfaces with Gradient Microstructures", Gordon Conference, New Hampshire.

August 1998, Keynote Lecture, "Crack Analogue Model for Fretting Fatigue" (with T.C. Lindley and A.E. Giannakopoulos), ASTM Symposium on Fretting Fatigue, Snowbird Mountain, Utah.

September 1998, Keynote Lecture, "Recent Advances in Contact Fatigue Analyses and Experiments", Engineering Foundation Conference on Fatigue Life Prediction in Metallic Structures, Hyannis, MA.

October 1998, Opening Plenary Lecture, "Thermomechanical Properties of Functionally Graded Materials", Fifth International Conference on Functionally Graded Materials, FGM 98, Dresden, Germany.

October 1998, Invited Lecture, "Indentation of Graded Materials", Acta Materialia Conference on Interfaces, La Jolla, CA.

December 1998, Invited Lecture, "The Engineering of Surface Microstructures for Enhanced Damage Tolerance", Symposium on Modelling of Metallic Materials, Materials Research Society, Boston, MA.

December 1998, Invited Lecture, "Contact Fatigue", Engineering Foundation Conference on Small Fatigue Cracks, Kona, Hawaii.

February 1999, Invited Lecture, "Residual Stresses and Thermomechanical Response of Miniature Structures and Devices", TMS Symposium on Miniature Structures, TMS Meeting, San Diego, CA.

June 1999, Keynote Lecture, "Probing Residual Stresses in Thin Films and Small Volume Structures", Engineering Foundation Conference on Thin Films, Il Coccio, Italy.

September 1999, Keynote Lecture, "Microstructural Design at Surfaces for Tribological Protection", Risoe Materials Conference, Risoe, Roskilde, Denmark.

December 1999, Keynote Lecture, "Contact Deformation at Surfaces and Thin Films", First Annual Conference, Netherlands Institute for Metals Research, The Netherlands.

April 2000, Invited Lecture, "Computational Modeling of Contact at Surfaces: Micromechanics, New Characterization Tools and Design of Surfaces", MRS Symposium O, San Francisco, CA.

July 2000, Invited Lecture, "Nanoindentation of Small-Volume Structures", Gordon Research Conference on Thin Films, New Hampshire.

August 2000, Sectional Lecture, "Properties of Small-Volume Structures for Thin Films, Coatings and MEMS", International Conference on Theoretical and Applied Mechanics, Chicago.

September 2000, Conference-Opening Plenary Lecture, "Stresses, Deformation and Property Characterization of Small-Volume Structures", American Ceramic Society Pacific Rim meeting, San Francisco.

September 2000, Plenary Lecture, "Advances in Functionally Graded Materials", International Conference on Functionally Graded Materials, Colorado.

September 2000, Invited Lecture, "Contact Fatigue", Damage Tolerance and Fatigue of Structural Materials, Office of Naval Research, Hyannis, MA.

October 2000, Keynote Lecture, "Advanced Functional Coatings", European Research Conference, Naples, Italy.

November 2000, Invited Lecture, "New Interpretations from Nanoindentation Experiments", MRS Symposium on Nanoindentation and Nanotribology, Materials Research Society Fall Meeting, Boston, MA.

November 2000, Invited Lecture, "Plastic Deformation at the Nanometer Scale: Experiments and Analysis", MRS Symposium on Multi-Scale Modeling of Materials, Materials Research Society Fall Meeting, Boston, MA.

December 2000, Plenary Lecture, "Graded Materials for Biomedical Applications", 10th International Conference on Biomedical Materials, Singapore.

May 2001, Plenary Lecture, "Crack Analogue Models: Applications to Thin Films, Contact Fatigue, Interfacial Adhesion and Graded Interfaces", Symposium on Fracture Mechanics, 50th Anniversary of the Japan Society for Materials, Osaka, Japan.

June 2001, Kelly Lecture, "Nano- and Micro-Scale Mechanical Properties for Miniature Technologies", Cambridge University, Cambridge, UK.

August 2001, Keynote Lecture, "Layered and Graded Materials", Gordon Research Conference on Ceramics, Plymouth, New Hampshire.

December 2001, Invited Lecture, "Nanomechanics of Deformation at Surfaces", Surface Engineering, MRS Symposium, Fall Meeting, Boston, MA.

December 2001, Plenary Lecture, "Graded Materials – Scientific Advances and Technological Possibilities", National Institute of Metals Research Annual Meeting, The Netherlands.

April 2002, Invited Lecture, "Computational Modeling of the Nanomechanics of Contact at Surfaces", Symposium on Multi-Scale Modeling, MRS Spring Meeting 2002, San Francisco, CA.

May 2002, Conference Inaugural Overview Lecture, "Materials Education for the New Century", University Materials Council (group comprising Heads of the Materials Science and Engineering Departments in the United States), College Park, Maryland.

June 2002, Overview Lecture, "Nano-Scale Mechanisms of Contact Fatigue", International Conference on Fatigue, Stockholm, Sweden.

June 2002, Plenary Lecture, "NanoMechanical Technology: Advances, Challenges and Opportunities", Nano2002, International Conference, Orlando, Florida.

June 2002, Plenary Lecture, "Nano- and Micro-Scale Mechanical Properties for Miniature Technologies", International Conference on Multi-Scale Modeling, Queen Mary College, London, UK.

July 2002, Plenary Lecture, "Nanostructured Materials", NATO Advanced Summer Institute on NanoTechnology, Crete, Greece.

October 2002, Invited Lecture, "Nanoscale Contact", Symposium on Structure-Property Relationship, TMS Meeting, Columbus, Ohio

December 2002, Invited Lecture, "MIT DURINT on Nanostructured Materials", Materials Research Society Symposium on Mechanical Properties of Nanostructured Materials, Boston, MA

January 2003, Invited Lecture, "Nanoscale Contact of Engineering and Biological Materials", Symposium on Dynamic Fracture and Thin Films, California Institute of Technology, Pasadena, CA.

March 2003, Invited Lecture, "Nanoscale Contact of Multifunctional Surfaces", Symposium on Multifunctional Materials, Max-Planck Institute, Stuttgart, Germany

April 2003, Invited Lecture, "Mechanotransduction of biological cells", MRS Symposium on Bio-MEMS, San Francisco, CA

June 2003, Laboratory Wide Distinguished Lecture, "Nanomechanics of Biological Materials", Naval Research Laboratory, Washington, D. C.

September 2003, Keynote Lecture, MRSEC Review Meeting, "Nanomechanics of Single Biological Cells", California Institute of Technology, Pasadena.

October 2003, Plenary Lecture, "Mechanical Properties of Single Biological Cells and Connections to Infectious Diseases", Society for Experimental Mechanics Meeting, Worcester, MA

January 2004, Inaugural Plenary Lecture, "Nanomechanics of Single Biological Cells and Connections to Human Diseases", International Symposium on Mechanical Behavior of Systems at Small Length Scales, Indian Institute of Science, Bangalore, India.

April 2004, Keynote Lecture, Plasticity 2004, Metz, France.

June 2004, Plenary Lecture, "Nano-Scale Mechanical Response", Nano 2004, Wiesbaden, Germany.

July 2004, Invited Perspective Lecture, "Mechanical Response of Single Biological Cells and Connections to Human Diseases", Gordon Research Conference on Thin Films and Small-Volume Structures, Colby College, Maine.

September 2004, Keynote Lecture, "Nanomechanics of Defects in Nanostructured Materials", Dislocations 2004, Nice, France.

December 2004, Invited Lecture, "Nanoindentation studies of the effects of nano-scale structural features on mechanical response", MRS Symposium R on Nanoindentation, Boston, MA.

January 2005, Invited Lecture, "Single-cell biomechanics". Computational and Systems Biology Symposium, MIT, Cambridge, MA

February 2005, Plenary Lecture, "Nanomechanics of biological cells and human disease states", Symposium on Biomaterials, TMS Meeting, San Francisco, CA

July 2005, Plenary Lecture, "Materials Science in Biology and Medicine", ICMAT-IUMRS Meeting, Singapore.

July 2005, Keynote Lecture, "Materials Science in Medicine", Gordon Research Conference on Ceramics, New Hampshire.

November 2005, Invited Lecture, "Symposium on Mechanical Properties of Tissues", Materials Research Society Meeting, Boston, MA.

August 2006, Plenary Lecture, "Nanomechanics of Cells and Molecules, and Human Diseases", Society for Engineering Science Meeting, Penn State University.

INVITED SEMINARS

- 1980 Lockheed Missiles and Space Company, Palo Alto, CA
NASA, Ames Research Center, Moffet Field, CA
- 1981 National Aeronautical Laboratory, Bangalore, India
Indian Institute of Technology, Madras, India
Lockheed Palo Alto Research Laboratory, California
- 1982 Georgia Institute of Technology, Atlanta, GA
Southwest Research Institute, San Antonio, TX
University of Houston, TX
University of Southern California, Los Angeles, CA
- 1983 Southwest Research Institute, San Antonio, TX
The American Welding Society, San Francisco, CA
Alcoa Research Center, Pittsburgh, PA
Westinghouse Research and Development Center, Pittsburgh, PA
Naval Research Laboratory, Washington, DC
Martin Marietta Research Laboratory, Baltimore, MD

- Sheffield University, England
 Rolls-Royce, Derby, England
 The Royal Institute of Technology, Stockholm, Sweden
 Saab-Scania AB, Linkoping, Sweden
 The University of Linkoping, Sweden
 Air Force Wright Aeronautical Laboratory, Dayton, OH
 Alcoa Research Center, Pittsburgh, PA
- 1984 Northrop Aircraft Division, Hawthorne, CA
 Rockwell International, Canoga Park, CA
 University of Connecticut, Storrs, CT
 Lehigh University, Bethlehem, PA
 General Electric Company, Schenectady, NY
 Rockwell International, Science Center, CA
 The Swedish Aeronautical Research Institute (FFA), Bromma, Sweden
 Southwest Research Institute, San Antonio, TX
 Northrop Aircraft Division, Hawthorne, CA
 GTE Research Laboratory Waltham, MA
- 1985 Lockheed Aircraft Company, Burbank, CA
 Carnegie-Mellon University, Pittsburgh, PA
 Ceramics Division, Alcoa Research Laboratory, Pittsburgh, PA
 Alloy Technology division, Alcoa research Laboratory, Pittsburgh, PA
 Air Force Wright Aeronautical Laboratory, Dayton, OH
 NKK, Tokyo, Japan
- 1986 Allied Signal Research Laboratory, Morristown, NJ
 University of Rhode Island, Kingston, RI
 Northrop Aircraft Company, Hawthorne, CA
 Ford Motor Company Research Laboratory, Dearborn, MI
 Los Alamos National Laboratory, Los Alamos, NM
 Air Force Wright Aeronautical Laboratory, Dayton, OH
 GTE Research Laboratory, Waltham, MA
 CNRS, University of Poitiers, Poitiers, France
 Ecole des Mines, Paris, France
 Alcoa Research Laboratory, Pittsburgh, PA
 Naval Research Laboratory, Washington, DC
 National Bureau of Standards, Gaithersburg, MD
 Carnegie-Mellon University, Pittsburgh, PA
 Pennsylvania State University, State College, PA
 Rockwell International Science Center, Thousand Oaks, CA
 Lockheed Palo Alto Research Laboratory, CA
 University of Maryland, College Park, MD
- 1987 Oakridge National Laboratory, TN
 Norton Research Center, Westboro, MA
 University of Connecticut, Storrs, CT
 University of Pennsylvania, Philadelphia, PA
 University of California, Santa Barbara, CA
 Pennsylvania State University, State College, PA
 University of California, San Diego, CA
 NASA Lewis Research Center, Cleveland, OH
 Case Western Reserve University, Cleveland, OH
 University of Vienna, Austria
 Max-Planck Institute, Stuttgart, W. Germany
 Max-Planck Institute, Dusseldorf, W. Germany
 Fracture Institute, Freiburg, W. Germany
 Harvard University, Cambridge, MA

- Rockwell International Science Center, Thousand Oaks, CA
 Northrop Aircraft Company, Hawthorne, CA
 Lockheed Palo Alto Research Laboratory, Palo Alto, CA
- 1988 Grumman Aerospace Corporation, Bethpage, NY
 University of California, Santa Barbara, CA
 Massachusetts Institute of Technology, Cambridge, MA
 IBM Thomas J. Watson Research Center, Yorktown Heights, NY
 Army Materials Technology Laboratory, Watertown, MA
 Nippon Steel Research Laboratory, Tokyo, Japan
 Tokyo Institute of Technology, Ookayama, Japan
 Northrop Aircraft Company, Hawthorne, CA
 Rockwell International Science Center, Thousand Oaks, CA
 Oxford University, Oxford, England
 Central Electricity Research Laboratory, Leatherhead, England
 Yale University, New Haven, CT
- 1989 University of Florida, Gainesville, FL
 University of Delaware, Newark, DE
 Worcester Polytechnic Institute, MA
 GE Aircraft Engines, Cincinnati, OH
 McDonnell-Douglas Research Laboratory, St. Louis, MO
 University of Madrid, Spain
 University of Pennsylvania, PA
- 1990 Allied Signal Research Laboratory, Morristown, NJ
 Case Western Reserve University, Cleveland, OH
- 1991 University of Michigan, MI
 Hitachi Research Laboratory, Hitachi City, Japan
 NKK Research Laboratory, Kawasaki, Japan
 Toshiba Heavy Industry Research Lab., Kawasaki, Japan
 Nippon Steel Research Laboratory I, Japan
 Nagaoka University of Technology, Nagaoka, Japan
- 1992 Northwestern University, IL
 Worcester Polytechnic Institute, Worcester, MA
 Volvo Flygmotor AB, Tröllhattan, Sweden
 The Technical University of Denmark, Lyngby, Denmark
 Massachusetts Institute of Technology, Cambridge, MA
- 1993 University of Vienna, Austria
 Austrian Chamber of Commerce, Vienna
 Institute of Mechanics, Beijing, China
 Tsinghua University, Beijing, China
 Chinese Academy of Sciences, Shenyang
- 1994 National University of Singapore
 Institute of Metals, Bangkok, Thailand
 General Electric Co., Schenectady, NY
 Notre Dame University, IN
 Illinois Institute of Technology, Chicago, IL
 University of Illinois, Urbana, IL
 Purdue University, West Lafayette, IN
 United Technologies Research Center, Hartford, CT
 The Royal Institute of Technology, Stockholm, Sweden
- 1995 National Taiwan University, Taipei, Taiwan

- Sun-Yat Sen University, Kauschung, Taiwan
 Nanyang Technological University, Singapore
 Northwestern University (Shell Distinguished Lecture), IL
 Harvard University, Cambridge, MA
 State University of New York at Stony Brook, NY
 University of Rhode Island, Kingston, RI
 Brown University, Providence, RI
 University of Michigan, Ann Arbor, MI
 Michigan State University, East Lansing, MI
 Ford Motor Company, Dearborn, MI
 University of Wisconsin, Madison, WI
 University of Minnesota, Minneapolis, MN
 Ecole Polytechnique Federal, Lausanne, Switzerland
 Massachusetts Institute of Technology, MA
 University of Connecticut, Storrs, CT
- 1996 Intel Corporation, Santa Clara, CA
 National University of Singapore
 Nanyang Technological University, Singapore
 Royal Institute of Technology, Stockholm
 Michigan Technological University, Houghton, MI
- 1997 Southwest Research Institute, San Antonio, TX
 Shell Development Company Research Center, Houston, TX
 The University of Houston, Houston, TX
 The University of Texas, Arlington, TX
 The Royal Institute of Technology, Stockholm, Sweden
 Lund Institute of Technology, Lund, Sweden
 University of Linköping, Linköping, Sweden
 Technical University of Denmark, Lyngby, Denmark
- 1998 Yale University, New Haven, CT
 Massachusetts Institute of Technology, Cambridge, MA
 Erich-Schmid Institute, Leoben, Austria
 University of Connecticut, Storrs, CT
- 1999 California Institute of Technology, Pasadena, CA
 National University of Singapore
 Los Alamos National Laboratory, CA
 Intel Corporation, Santa Clara, CA
 Exxon Corporation, Linden, NJ
- 2000 California Institute of Technology, Pasadena, CA
 General Motors Corporation, R&D Center, Warren, MI
 University of Groningen, Groningen, The Netherlands
 Intel Corporation, Portland, OR
- 2001 University of California, Berkeley, CA
 Intel Corporation, Santa Clara, CA
 Ohio State University, Columbus, OH
 University of Illinois, Urbana, IL
 Cambridge University, Cambridge, UK
 United Technologies Research Center, Hartford, CT
- 2002 The University of Texas at Austin, TX (Trull Distinguished Lecture)
 Stanford University, Palo Alto, CA
 University of Rhode Island, Kingston, RI
 Max-Planck Institut fur Metallforschung, Stuttgart, Germany

- Rensselaer Polytechnic Institute, Troy, NY (GE Distinguished Lecture)
- 2003 Sematech Corporation, Austin, TX
 Arizona State University, Tempe, AZ
 University of Florida, Gainesville, FL (Millsaps-Taylor Memorial Lecture)
 Iowa State University, Ames, Iowa
 Lehigh University, Bethlehem, PA
 Naval Research Laboratory, Washington, DC (Pan-Lab. Assoc. Director Lecture)
 Institute of Bioengineering and Nanotechnology, Singapore (Distinguished Lecture)
- 2004 Indian Institute of Science, Bangalore (Brahm Prakash Chair lectures)
 The Ile de Paris Lecture, Ecole des Ponts et Chausees, Paris.
 Ecoles des Mines, Paris, France
 Oxford University, England
 University of California, San Diego (S. S. Penner Distinguished Lecture)
 Institut Pasteur, Paris, France
 Ecole Polytechnique, Paris, France
- 2005 University of Illinois, Urbana-Champaign
 New England Chapter of American Society of Materials, Intl., Cambridge, MA
 University of Maryland, College Park
 Northeastern University, Boston
- 2006 Bio-X Seminar, Stanford University, California
 Lecture by Gordon Moore Distinguished Scholar, Caltech, Pasadena, California
 The H.C. Oersted Lecture, Technical University of Denmark
 The Peter Winchell Lecture, Purdue University, Indiana
 Conference Plenary Lecture, Nano 2006, Bangalore, India
 Acta Materialia Gold Medal Lecture, MRS Fall Meeting, Boston, MA

SERVICE

INSTITUTE/UNIVERSITY

- 2005
 Founding Director, Global Enterprise for Micro-Mechanics and Molecular Medicine
 Head, Dept of Materials Science and Engineering, MIT
 Member, Engineering Council, MIT
 Director and Lead PI, Defense University Research Initiative (DURINT) on
 Nanostructured Materials, funded at MIT by the US Office of Naval Research
- 2004
 Head, Dept of Materials Science and Engineering, MIT (except during sabbatical leave
 during Jan.-Sept. 2004)
 Member, Engineering Council, MIT
 Director and Lead PI, Defense University Research Initiative (DURINT) on
 Nanostructured Materials, funded at MIT by the US Office of Naval Research
- 2003
 Head, Dept of Materials Science and Engineering, MIT
 Member, Engineering Council, MIT
 Director and Lead PI, Defense University Research Initiative (DURINT) on
 Nanostructured Materials, funded at MIT by the US Office of Naval Research
- 2002
 Head, Dept of Materials Science and Engineering, MIT
 Member, Engineering Council, MIT

Lead PI, DURINT on Nanostructured Materials
Chair, Search Committee for Director, International Scholars Office, MIT

2001

Head, Dept of Materials Science and Engineering, MIT
Member, Engineering Council, MIT
Program Advisor, Advanced Materials, Singapore-MIT Alliance
Lead PI, DURINT on Nanostructured Materials

2000

Head, Dept of Materials Science and Engineering, MIT
Member, Engineering Council, MIT
Program Advisor, Advanced Materials, Singapore-MIT Alliance

1999

Program Chair, Advanced Materials, Singapore-MIT Alliance.
DMSE Qualifier Examination Committee
Career Development Committees of two junior faculty members

1998

Thrust Area Leader, Advanced Materials, Singapore-MIT Alliance.
DMSE Qualifier Examination Committee
Registration Officer, Metallurgy and Materials Science Degree Programs
Member, Faculty Search Committee, Materials Science

1997

Co-Director, MIT-Harvard Program on Modeling of Materials
Member, MIT Panel for Evaluation of Universities in Singapore
Registration Office, Metallurgy and Materials Science Programs, MIT

1996

Co-Director, MIT-Harvard Program on Modeling of Materials
Chair, Committee on Mechanical Property Course Development

1995

Co-Director, MIT-Harvard Program on Modeling of Materials
Member, Policy Committee, Dept. Mater. Sci. and Engineering, MIT

1994

Member, Policy Committee, Dept. Mater. Sci. and Engineering, MIT

1992-1993

Co-Director, ARO-URI on "Dynamic Behavior of Brittle Materials", Brown University
Director, Central Facility for Mechanical Testing

1991-1992

Freshman Advisor, Brown University
Director, Central Facility for Mechanical Testing

1990-1991

Director, Central Facility for Mechanical Testing, Brown University
Faculty Advisor, Brown chapter Am. Ceramic Soc., until March 1991
Member, Committee on Machine Shop
Freshman Advisor

1989-1990

Member, Executive Committee, Division of Eng., Brown University
Chairman, Search Committee, Faculty Position in Materials Science
Director, MRG Central Facility for Mechanical Testing

Chairman, Committee on Short Courses
Faculty Advisor, Student Chapter of the American Ceramic Society

1988-1989

Member, Executive Committee, Division of Engineering
Director, MRG Central Facility for Mechanical Testing
Faculty Advisor, Student Chapter of the American Ceramic Society
Member, Committee on Joint Engineering-Physics Workshop

1987-1988

Chairman, Search committee, Faculty Position in Materials Science
Director, MRG Central Facility for Mechanical Testing
Member, Committee on Engineering-Physics Undergraduate Teaching
Materials Science Seminar Organizer
Organizer, Raytheon Lecture in Materials Science
Faculty Advisor, Student Chapter of the American Ceramic Society

1986-1987

Member, Search Committee, Faculty Position in Electrical Sciences
Director, MRL Central Facility for Mechanical Testing
Materials Science Seminar Organizer
Freshman Advisor

1985-1986

Chairman, Search Committee, MRL Visiting Fellowships
Materials Science Seminar Organizer
Freshman Advisor
Member, Search committee, MRL Fellows
Materials Science Seminar Organizer

1984-1985

Materials Science Seminar Organizer

Professional Committees and International Panels

Chair, Materials Section, US National Academy of Engineering, 2005-2006. Vice Chair, 2004-5.

Chair, Materials Section Peer Committee, US National Academy of Engineering, 2005-2006.

Member, International Scientific Advisory Board, Max-Planck Institute, Stuttgart, Germany

Co-Chair, Presidential Advisory Board, Materials Science and Engineering Dept., Carnegie-Mellon University, 2001-.

Member, International Advisory Committee on Functionally Graded Materials, 1994-present.

Member, Executive Committee, Materials Division, ASME, 1992-1997; Program Chair, 1994. Chair of the Division: 1996-1997.

Co-Chairman, International symposium on Composites, Newport, RI 1988

Member, International Committee, Third International Conference on Multiaxial Fatigue, West Germany

Co-Chair, International Symposium on Micromechanics of Ceramics and Ceramic Composites, ASME Winter Annual Meeting, Anaheim, CA, November 1992.

Co-Chairman, Engineering Foundation Symposium on "The Mechanics and Physics of Layered and Graded Materials", Davos, Switzerland, August 1995.

Member, Board of Governors, The Institute of Mechanics and Materials, University of California, San Diego, July 1995-1998.

Member, Review Panel, National Science and Technology Board, Singapore, June 1996.

Member, International Advisory Panel, The Institute for Materials Research and Engineering, Singapore, 1997-1999.

Member, Organizing Committee, NATO Conference on Composites, 1993.

Chairman, Ceramics Committee, Materials Division, ASME, 1991-1994.

Member, International Committee on Variable Amplitude Fatigue, French Metallurgical Society, 1988.

International Journals

Senior Consulting Editor, Acta Biomaterialia, 2004-2005

Coordinating Editor, Acta/Scripta Materialia, 1998-2004, Principal Editor, 1994-2004

Member, Editorial Board, Materials Science and Engineering A, 1989-1997

Associate Editor, ASME Journal of Engineering Materials and Technology, 1992-1994

Member, Board of Review, 1984-1992, Metallurgical Transactions, published by the American Society for Metals and the Metallurgical Society of AIME

Member, Board of Review, 1989-1992, International Journal: Fatigue and Fracture of Engineering Materials and Structures

Membership in Professional Societies

Chair (2005-2006), Materials Section, US National Academy of Engineering

Elected Fellow of the Indian National Academy of Engineering, 2003

Elected Member of the US National Academy of Engineering, 2002

The Metals, Minerals and Materials Society (TMS), Elected Fellow, 2000.

American Society for Metals (ASM), Elected Fellow, 1994.

American Society of Mechanical Engineers (ASME), Elected Fellow, 1996.

American Ceramic Society, Elected Fellow. 1996.

Honorary Member, Materials Research Society of India, Elected 1997.

Materials Research Society (MRS), USA, Member since 1986.

Honorary Member, Indian Institute of Metals, 2004.

Member, Society for Experimental Mechanics, 2005

Member, Biophysical Society, 2005

Member, American Association for the Advancement of Science, 2005