

Curriculum Vitae

Huajian Gao
Walter H. Annenberg Professor of Engineering
School of Engineering
Brown University
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EDUCATION

Ph.D.	Engineering Science	Harvard University	1988
M.S.	Engineering Science	Harvard University	1984
B.S.	Solid Mechanics	Xian Jiaotong University	1982

EXPERIENCES

7/06-present Walter H. Annenberg Professor of Engineering
1/06-present Professor of Engineering
9/05-12/05 Visiting Professor
School of Engineering
Brown University

1/01-6/06 Director and Professor
Max Planck Institute for Metals Research

1/02-6/06 Honorar Professor
Faculty of Chemistry
University of Stuttgart

9/02-8/04 Visiting Professor
9/00-8/02 Professor
1/95-8/00 Associate Professor
9/88-12/94 Assistant Professor
Department of Mechanical Engineering
Department of Materials Science and Engineering (by courtesy)
Stanford University

4/88-8/88 Postdoctoral Research Fellow (w/ Prof. James R. Rice)
Division of Applied Science

Harvard University

6/85-3/88 Research Assistant (w/ Prof. James R. Rice)
Division of Applied Science

Harvard University

8/82-8/83 Lecturer
Department of Engineering Mechanics

Xian Jiaotong University

VISITING POSITIONS

08/12-01/13 Distinguished Visiting Professor
Department of Mechanical Engineering

The University of Hong Kong

01/12-07/12 Alexander von Humboldt Visiting Professor
Department of Biophysical Chemistry

University of Heidelberg

12/11- Kuang-piu Visiting Chair Professor
Department of Engineering Mechanics

Zhejiang University

04/07-03/12 VIP (Visiting Investigator Program) Professor
Institute of High Performance Computing

Agency for Science, Technology and Research of Singapore

12/02-12/05 Visiting Scientist
Institute of Metals Research

Chinese Academy of Sciences

08/00-08/05 Chang Jiang Visiting Chair Professor
Department of Engineering Mechanics

Tsinghua University

03/98-08/98 Alexander von Humboldt Visiting Scientist

Max Planck Institute for Metals Research

04/96-06/96 Visiting Professor
Department of Mechanical Engineering

Hong Kong University of Science and Technology

02/96-04/96 Visiting Professor
Department of Mechanical Engineering

University of Paderborn

06/95-01/96 Senior Visiting Scientist
Department of Applied Mathematics and Theoretical Physics
University of Cambridge

PROFESSIONAL AFFILIATIONS

Fellow, American Society of Mechanical Engineers
Fellow, Institute of Physics
Life Member, American Geophysical Union
Member, Materials Research Society
Member, Biophysical Society
Member The Minerals, Metals & Materials Society

RESEARCH INTERESTS

Nanomechanics of engineering and biological systems
Mechanics of thin films and nanocrystalline materials
Bio-inspired mechanics
Mechanics of cell adhesion and endocytosis
Size dependent mechanical properties
Mechanics of metallic glasses
Mechanics of energy storage materials

PUBLICATIONS AND IMPACT

Publication: 323 papers in refereed journals, including 38 in JMPS and 31 in IJSS
(**two most important journals in my field**), 4 in Nature, 1 in Nature
Nanotechnology, 1 in Science, 6 in PNAS, 6 in PRL and 4 in Nano Letters.

Total number of citations: > 11K

H-index impact factor: 56

EDITORS

Co-Editor-in-Chief, Journal of the Mechanics and Physics of Solids (The leading
journal of my field), 2006-

Editor, International Journal of Applied Mechanics, 2009-

Advisory Board, Acta Mechanica Sinica, 2011-.

Regional Editor, International Journal of Fracture, 2004-

Editorial Board, Modeling and Simulation in Materials Science and Engineering, 1998-

Editorial Board, Molecular & Cellular Biomechanics, Editorial Board, 2004-

Editorial Board, Journal of Computational & Theoretical Nanoscience, 2004-

Editorial Board, Journal of Nanoengineering and Nanosystems, 2004-

Editor-in-Chief, Acta Mechanica Sinica, 2001-2011 (The leading journal of my field in China)

Acting Editor-in-Chief, International Journal of Solids and Structures, 1997

Chief Editor, Continuum Mechanics and Thermodynamics, 2004-2006

Invited Editor, Proceedings of the National Academy of Sciences of USA, 2008

Associate Editor, Communications in Computational Physics, 2006-2007

Associate Editor, Journal of Applied Mechanics, 2000-2006

Editorial Board, International Journal of Solids and Structures, 2005-2011

AWARDS AND HONORS

Elected to Membership, National Academy of Engineering of USA, 2012

Rodney Hill Prize in Solid Mechanics (awarded to a single individual every 4 years in recognition of outstanding research in the field of solid mechanics), **International Union of Theoretical and Applied Mechanics, 2012**

Alexander von Humboldt Research Prize (Humboldt-Forschungspreis), **Federal Republic of Germany, 2012**

Honorary Professorship, Shanghai University, 2011

ASME Charles Russ Richards Memorial Award (in recognition of outstanding achievements in mechanical engineering for twenty years or more following graduation), **American Society of Mechanical Engineering, 2011**

Stanford S. and Beverley P. Penner Distinguished Lecture in the Mechanical & Aerospace Engineering, University of California, San Diego, 2011

Y.C. Fung Lecture, California Institute of Technology, 2011

Highly Commended Article, The James Clerk Maxwell Young Writers Prize, Journal of Philosophical Magazine, 2010 (with T.K. Bhandakkar, E. Chason)

Honorary Professorship, Xian Jiaotong University, 2009

William Mong Distinguished Lectures, The University of Hong Kong, 2009.

ASME Robert Henry Thurston Lecture Award (awarded to an outstanding leader in pure or applied science or engineering with the honor of presenting to the Society a lecture that encourages stimulating thinking on a subject of broad technical interest to engineers), **American Society of Mechanical Engineering, 2009**

Distinguished Scholars and Artists Advisor, John S. Guggenheim Foundation, 2008-2012

The Visiting Investigator Programme (VIP) Award (the only one in mechanics of materials), **Agency for Science, Technology and Research (A*STAR), Singapore, 2007-2012**

The Jerzy Nowinski Lecture, University of Delaware, 2007

Distinguished Scholar Lecture, Arizona State University, 2007

Co-Editor-in-Chief of Journal of Mechanics and Physics of Solids (the flagship journal in my field), 2006

Midwestern Mechanics Lecturer, 2005-2006

Wissenschaftspreis des Stifterverbands für die Deutsche Wissenschaft (Science Prize of the Donors' Association for German Science), **Max Planck Society, 2005**

Board of Directors, Society of Engineering Science, 2004-

Young Investigator Award, Society of Engineering Science, 2005

Elected to Fellow, Institute of Physics (Great Britain), 2004

George Wallace Melville Medal (the highest ASME honor for the best original paper which has been published in the ASME Transactions during the two calendar years immediately preceding the year of award), **American Society of Mechanical Engineering, 2004**

Elected to Fellow, American Society of Mechanical Engineering, 2004

Oversea Director, Shenyang Center for Interfacial Materials, Chinese Academy of Sciences, 2003-2005

Scientific Member (a prestigious title reserved to the 200+ scientific directors in the Max Planck Society), **Max Planck Society, 2001-2006**

Outstanding Oversea Young Investigator Award, National Science Foundation of China, 2000

Chang Jiang Chair Visiting Professor at Tsinghua University, Chinese Ministry of Education, 2000-2005

Special Achievement Award for Young Investigators in Applied Mechanics, American Society of Mechanical Engineers, 1999

Alexander von Humboldt Research Fellowship for Experienced Researchers, Federal Republic of Germany, 1997

Alcoa Science Award, 1996

John Simon Guggenheim Memorial Fellowship, 1995

NSF Young Investigator Award, 1993-1998

IBM Faculty Development Award, 1992-1993

Schlumberger Research Fellowship, 1988

Harvard University Graduate Scholarship, 1984

Xian Jiaotong University, "SAN HAO XUE SHENG" medals, 1979-1982

SOCIETY LEADERSHIP/COMMITTEE MEMBERSHIPS

Director of Materials Research Science and Engineering Center ((MRSEC), Brown University, 2012-

German Excellence Initiative Evaluation Committee, University of Freiburg, 2012.

President, Society of Engineering Science, 2011

Vice President, Society of Engineering Science, 2010

Applied Mechanics Division Executive Committee, American Society of Mechanical Engineering, 2010-2015.

DOE/NNSA PSAAP Review Committee, Center for Prediction of Reliability, Integrity and Survivability of Microsystems (PRISM), Purdue University, 2009

US National Committee on Theoretical and Applied Mechanics, 2008-

Advisor of Guggenheim Fellowships in Engineering, John S. Guggenheim Foundation, 2008-2012

IUTAM Solids Symposium Committee, International Union of Theoretical and Applied Mechanics, 2008-

Engineering Executive Committee Representative for Solid Mechanics, Brown University, 2008-2012

Committee on Diversity and Hiring, Brown University, 2007-2008

University Re-accreditation Steering Committee (preparing the re-accreditation of Brown University with the New England Association of Schools and Colleges), Brown University, 2007-2009

Board of Directors, Society of Engineering Science, 2004-

DOE/BES Review Committee, Materials Science Program, Sandia National Laboratories, 2006

Senior Advisory Board, Garching Supercomputer Center, Max Planck Society, 2001-2006

International Scientific Advisory Board, Shenyang National Laboratory for Materials Science (SYNL), Chinese Academy of Sciences, 2002-.

Scientific Advisory Board, Failure Mechanics Laboratory, Tsinghua University, Beijing, 2002-.

International Scientific Advisory Board, Laboratory for Nonlinear Mechanics, Institute of Mechanics, Chinese Academy of Sciences, 2001-.

Scientific Advisory Board, Department of Mechanical Engineering, University of Wyoming, 2001-2005

DOE/BES Review Committee, Materials Science Program, Sandia National Laboratories, 2003

**DOE/BES Review Committee, Materials Science Program, Los Alamos National
Laboratories, 2001**

REVIEW FOR ACADEMIC JOURNALS

Science
Nature
Nature Materials
Nature Nanotechnology
Proceedings of the National Academy of the United States of America
Physical Review Letters
Nano Letters
Journal of the Mechanics and Physics of Solids
International Journal of Solids and Structures
Journal of Applied Mechanics
International Journal of Fracture
Engineering Fracture Mechanics
European Journal of Mechanics
Mechanics of Materials
Acta Biomaterialia
Acta Materialia
Acta Mechanica
Advanced Materials
Applied Mechanics Reviews
Applied Physics Letters
ASCE Journal of Engineering Mechanics
Biomacromolecules
Biomaterials
Biomechanics
Biophysical Journal
Biotechnology and Bioengineering
BMMB
Carbon
Computational Methods in Applied Mechanics and Engineering
Computational Materials Science
Composite Science and Technology
Europhysics Letters
Experimental Mechanics
Geophysical Review Letters
International Journal of Engineering Science
International Journal of Nonlinear Mechanics
International Journal of Numerical Methods in Engineering
International Journal of Materials Science (Z Metallkunde)
International Journal of Plasticity
Journal of the American Chemical Society
Journal of Applied Physics

Journal of Biomechanical Engineering
Journal of Computational Materials Science
Journal of Engineering Materials and Technology
Journal of Engineering Mechanics
Journal of Geophysical Research
Journal of Mathematical Physics
Journal of Materials Research
Journal of Materials Science
Journal of Mechanics, Materials and Structures (JoMMS)
Journal of Tribology
Langmuir
Materials Letters
Mechanics & Chemistry of Biosystems
Materials Research Society Proceedings
Modeling and Simulations in Materials Science and Engineering
Nano Research
Nanotechnology
Philosophical Magazine
Philosophical Magazine Letters
Physical Review B
Physical Review E
PLOS ONE
Proceedings of the Royal Society of London A Physical Sciences
Proceedings of the Royal Society Interface
Quarterly Journal of Applied Mathematics and Mechanics
SIAM Journal of Applied Mathematics
Scripta Materialia
Small
Trends in Biotechnology
Tribology Letters
Thin Solid Films
ZAMM
ZAMP

LIST OF PUBLICATIONS OF HUAJIAN GAO

A. Archive Journals

- 1) H. Gao and J.R. Rice, "Shear Stress Intensity Factors for a Planar Crack With Slightly Curved Front," 1986, *Journal of Applied Mechanics*, Vol. **53**, pp. 774-778.
- 2) H. Gao and J.R. Rice, "Somewhat Circular Tensile Cracks," 1987, *International Journal of Fracture*, Vol. **33**, pp. 155-174.
- 3) H. Gao and J.R. Rice, "Nearly Circular Connections of Elastic Half Spaces," 1987, *Journal of Applied Mechanics*, Vol. **54**, pp. 627-634.
- 4) H. Gao, "Nearly Circular Shear Mode Cracks," 1988, *International Journal of Solids and Structures*, Vol. **24**, pp. 177-193.
- 5) H. Gao, "Weight Functions for External Circular Cracks," 1989, *International Journal of Solids and Structures*, Vol. **25**, pp. 107-127.
- 6) H. Gao, "Application of 3-D Weight Functions - I. Formulations of Problems of Crack Interaction with Transformation Strains and Dislocations," 1989, *Journal of the Mechanics and Physics of Solids*, Vol. **37**, pp. 133-153.
- 7) H. Gao and J.R. Rice, "Application of 3-D Weight Functions - II. The Stress Field and Energy of Three Dimensional Shear Dislocation Loops at a Crack Tip," 1989, *Journal of the Mechanics and Physics of Solids*, Vol. **37**, pp. 155-174.
- 8) H. Gao, "Linear Perturbation Analysis of a Shear Loaded Asperity," 1989, *Journal of Geophysical Research*, Vol. **94**, pp. 10259-10265.
- 9) H. Gao and J.R. Rice, "A First Order Perturbation Analysis on Crack Trapping By Arrays of Obstacles," 1989, *Journal of Applied Mechanics*, Vol. **56**, pp. 828-836.
- 10) H. Gao, "Mismatched Elastic Connections," 1990, *International Journal of Fracture*, Vol. **45**, pp. 131-143.
- 11) H. Gao, "On Mismatch Problems for Plane and Elliptical Connections," 1990, *Engineering Fracture Mechanics*, Vol. **36**, pp. 39-48.
- 12) H. Gao, "Fracture Analysis of Nonhomogeneous Materials via a Moduli-Perturbation Method," 1991, *International Journal of Solids and Structures*, Vol. **27**, pp. 1663-1682.
- 13) H. Gao, "Crack Interactions with 3D Dislocation Loops," 1991, *Journal of the Mechanics and Physics of Solids*, Vol. **39**, pp. 157-172.

- 14) H. Gao, "Stress Concentration at Slightly Undulating Surfaces," 1991, *Journal of the Mechanics and Physics of Solids*, Vol. **39**, pp. 443-458.
- 15) H. Gao, "A Boundary Perturbation Analysis for Elastic Inclusion and Interfaces," 1991, *International Journal of Solids and Structures*, **28**, pp. 703-726.
- 16) H. Gao, "Stress Analysis of Smooth Polygon Holes via a Boundary Perturbation Method," 1991, *Journal of Applied Mechanics*, Vol. **58**, pp. 851-853.
- 17) H. Gao, "Weight Function Analysis of Interface Cracks: Mismatch Versus Oscillation," 1991, *Journal of Applied Mechanics*, Vol. **58**, pp. 931-938.
- 18) H. Gao, J. R. Rice and Jin Lee, "Penetration of a Quasi-Static Slipping Crack into a Seismogenic Zone of Heterogeneous Fracture Resistance," 1991, *Journal of Geophysical Research*, Vol. **96**, pp. 21535-21548.
- 19) H. Gao and C.-h. Chiu, "Slightly Curved or Kinked Cracks in Anisotropic Elastic Solids," 1992, *International Journal of Solids and Structures*, Vol. **29**, pp. 947-972.
- 20) H. Gao, M. Abbudi and D. M. Barnett, "Interfacial Crack-Tip Fields in Anisotropic Elastic Solids," 1992, *Journal of the Mechanics and Physics of Solids*, Vol. **40**, pp. 393-416.
- 21) H. Gao and G. Herrmann, "On Estimates of Stress Intensity Factors for Cracked Beams and Pipes," 1992, *Engineering Fracture Mechanics*, Vol. **41**, pp. 695-706.
- 22) H. Gao, "Diffusion or Imperfection Modified Long Range Interaction Between a Line Dislocation and a Spherical Inclusion," 1992, *International Journal of Engineering Science*, Vol. **30**, pp. 1061-1071.
- 23) H. Gao, "Three Dimensional Slightly Non-Planar Cracks," 1992, *Journal of Applied Mechanics*, Vol. **59**, pp. 335-343.
- 24) H. Gao, "A Closed Interface Crack in Anisotropic Bimaterials," 1992, *International Journal of Fracture*, Vol. **55**, pp. R33-R39.
- 25) H. Gao, C.-h. Chiu and J. Lee, "Elastic Contact Versus Indentation Modeling of Multi-Layered Materials," 1992, *International Journal of Solids and Structures*, Vol. **29**, pp. 2471-2492.
- 26) H. Gao, "Stress Analysis of Holes in Anisotropic Elastic Solids: Conformal Mapping and Boundary Perturbation," 1992, *Quarterly Journal of Mechanics and Applied Mathematics*, Vol. **45**, pp. 149-168.
- 27) H. Gao, "Weight Function Method for Interfacial Cracks in Anisotropic Bimaterials," 1992, *International Journal of Fracture*, Vol. **56**, pp. 139-158.

- 28) H. Gao, "Variation of Elastic T-Stresses along Slightly Wavy 3-D Crack Fronts," 1992, *International Journal of Fracture*, Vol. **58**, pp. 241-257.
- 29) H. Gao, "Surface Roughening and Branching Instabilities in Dynamic Fracture," 1993, *Journal of the Mechanics and Physics of Solids*, Vol. **41**, pp. 457-486.
- 30) W. H. Mueller, G. Herrmann and H. Gao, "Elementary Strength Theory of Cracked Beams," 1993, *Theoretical and Applied Fracture Mechanics*, Vol. **18**, pp. 163-177.
- 31) W. H. Mueller, G. Herrmann and H. Gao, "A Note On Curved, Cracked Beams," 1993, *International Journal of Solids and Structures*, Vol. **30**, pp. 1527-1532.
- 32) C.-h. Chiu and H. Gao, "Stress Singularities Along a Cycloid Rough Surface," 1993, *International Journal of Solids and Structures*, Vol. **30**, pp. 2983-3012.
- 33) H. Gao and T.W. Wu, "A Note on the Elastic Contact Stiffness of a Layered medium," 1993, *Journal of Materials Research*, Vol. **8**, pp. 3229-3232.
- 34) J. Li, C.-h. Chiu, H. Gao and T. W. Wu, "Cusp-Like Flaws Along a Rough Surface," 1993, *Thin Solid Films*, Vol. **236**, pp. 240-246.
- 35) H. Gao, "Some General Properties of Stress-Driven Surface Evolution in a Heteroepitaxial Thin Film Structure," 1994, *Journal of the Mechanics and Physics of Solids*, Vol. **42**, pp. 741-772.
- 36) Y. Du, P. Segall and H. Gao, "Dislocations in Inhomogeneous Media via A Moduli-Perturbation Approach: General Formulation and 2-D Solutions," 1994, *Journal of Geophysical Research*, Vol. **99**, pp. 13767-13779.
- 37) J. Lee and H. Gao, "A Generalized Contact Model for Interface Cracks in Anisotropic Elastic Solids," 1994, *International Journal of Fracture*, Vol. **67**, pp. 53-68.
- 38) H. Gao, "Mass-Conserved Morphological Evolution of Hypocycloid Cavities: A Model of Diffusive Crack Initiation with No Associated Energy Barrier," 1995, *Proceedings of the Royal Society of London A*, Vol. **448**, pp. 465-483; **450**, pp. 732-734 (corrigendum).
- 39) J. Lee and H. Gao, "A Hybrid Finite Element Analysis of Interface Cracks," 1995, *International Journal for Numerical Methods in Engineering*, Vol. **38**, pp. 2465-2482.
- 40) N. Y. Chien, H. Gao, G. Herrmann and D. M. Barnett, "Diffusive Surface Instabilities Induced by Electromechanical Loading," 1996, *Proceedings of the Royal Society of London A*, Vol. **452**, pp. 527-541.

- 41) W. H. Mueller, H. Gao, C.-h. Chiu and S. Schmauder, "A Semi-Infinite Crack in Front of a Circular, Thermally Mismatched Heterogeneity," 1996, *International Journal of Solids and Structures*, Vol. **33**, pp. 731-746.
- 42) H. Gao, "A Theory of Local Limiting Speed in Dynamic Fracture," 1996, *Journal of the Mechanics and Physics of Solids*, Vol. **44**, pp. 1453-1474.
- 43) H. Gao and D. M. Barnett, "An Invariance Property of Local Energy Release Rates in a Strip Saturation Model of Piezoelectric Fracture," 1996, *International Journal of Fracture*, Vol. **79**, R25-R29.
- 44) H. Gao, T.-Y. Zhang and P. Tong, "Local and Global Energy Release Rates for an Electrically Yielded Crack in a Piezoelectric Ceramic," 1997, *Journal of the Mechanics and Physics of Solids*, Vol. **45**, pp. 491-510.
- 45) P. Muellner, H. Gao and C. S. Ozkan, "A Twinned Wedge in a Si-Ge Epitaxial Film: Twofold $\Sigma 9$ Twinning," 1997, *Philosophical Magazine A*, Vol. **75**, pp. 925-938.
- 46) C. S. Ozkan, W.D. Nix and H. Gao, "Strain Relaxation and Defect Formation in Heteroepitaxial $\text{Si}_{1-x}\text{Ge}_x$ Films Via Surface Roughening Induced by Controlled Annealing Experiments," 1997, *Applied Physics Letters*, Vol. **70**, pp. 2247-2249.
- 47) C. C. Fulton and H. Gao, "Electrical Nonlinearity in Fracture of Piezoelectric Ceramics," 1997, *Applied Mechanics Review*, Vol. **50**, pp. S56-S63.
- 48) Y. Du, P. Segall, H. Gao, "Quasi-Static Dislocations in Three Dimensional Inhomogeneous Media," 1997, *Geophysics Research Letters*, Vol. **24**, pp. 2347-2350
- 49) H. Gao, "Elastic Waves in a Hyperelastic Solid Near Its Plane Strain Equibiaxial Cohesive Limit," 1997, *Philosophical Magazine Letters*, Vol. **76**, pp. 307-314.
- 50) H. Gao, W.H. Mueller and G. Kemmer, "Mixed Mode Fracture in Epicycloid Specimens I. Thermal Inclusions," 1998, *International Journal of Solids and Structures*, Vol. **35**, pp. 1617-1633.
- 51) W.H. Mueller and H. Gao, "Mixed Mode Fracture in Epicycloid Specimens II. Point Force Loading," 1998, *International Journal of Solids and Structures*, Vol. **35**, pp. 205-217.
- 52) H. Gao and P. Klein, "Numerical Simulation of Crack Growth in an Isotropic Solid With Randomized Internal Cohesive Bonds," 1998, *Journal of the Mechanics and Physics of Solids*, Vol. **46**, pp. 187-218.
- 53) W. D. Nix and H. Gao, "Indentation Size Effects in Crystalline Materials: A Law for Strain Gradient Plasticity," 1998, *Journal of the Mechanics and Physics of Solids*, Vol. **46**, pp. 411-425.

- 54) A. B. Movchan, H. Gao and J. R. Willis, "Perturbation Studies of Plane Cracks," 1998, *International Journal of Solids and Structures*, Vol. **35**, 3419-3453.
- 55) F. F. Abraham and H. Gao, "Anomalous Brittle-Ductile Fracture Behaviors in FCC Crystals," 1998, *Philosophical Magazine Letters*, Vol. **78**, pp. 307-312.
- 56) F. F. Abraham, D. Brodbeck, W. E. Rudge, J. Q. Broughton, D. Schneider, B. Land, D. Lifka, J. Gerner, M. Rosenkrantz, J Skovira and H. Gao, "Ab initio Dynamics of Rapid Fracture," 1998, *Modeling and Simulation in Materials Science and Engineering*, Vol. **6**, pp. 639-670.
- 57) W.D. Nix and H. Gao, "An Atomistic Interpretation of Interface Stress," 1998, *Scripta Materialia*, Vol. **39**, pp. 1653-1661.
- 58) P. Klein and H. Gao, "Crack Nucleation and Growth as Strain Localization in a Virtual-Bond Continuum," 1998, *Engineering Fracture Mechanics*, Vol. **61**, pp. 21-48.
- 59) P. Gumbsch and H. Gao, "Dislocations Faster Than the Speed of Sound," 1999, *Science*, Vol. **283**, No. 5404, pp. 965-968.
- 60) H. Gao, C. S. Ozkan, W. D. Nix, J. A. Zimmerman and L. B. Freund, "Atomistic Models of Dislocation Formation at Crystal Surface Ledges in $\text{Si}_{1-x}\text{Ge}_x/\text{Si}(100)$ Heteroepitaxial Thin Films," 1999, *Philosophical Magazine A*, Vol. **79**, pp. 349-370.
- 61) H. Gao and W.D. Nix, "Surface Roughening of Heteroepitaxial Thin Films," 1999, *Annual Review of Materials Research*, Vol. **29**, pp. 173-209.
- 62) H. Gao, Y. Huang, W.D. Nix and J.W. Hutchinson, "Mechanism-Based Strain Gradient Plasticity - I. Theory," 1999, *Journal of the Mechanics and Physics of Solids*, Vol. **47**, pp. 1239-1263.
- 63) W.H. Mueller, W. Littmann and H. Gao, "Mixed Mode Fracture in Epicycloid Specimens III. Dislocations," 1999, *International Journal of Solids and Structures*, Vol. **36**, pp. 3339-3348.
- 64) H. Gao, Y. Huang, P. Gumbsch and A.J. Rosakis, "On Radiation-Free Transonic Motion of Cracks and Dislocations," 1999, *Journal of the Mechanics and Physics of Solids*, Vol. **47**, pp. 1941-1961.
- 65) Z. Li, H. Zhao and H. Gao, "A Numerical Study of Electro-Migration Voiding by Evolving Level Set Functions on a Fixed Cartesian Grid," 1999, *Journal of Computational Physics*, Vol. **152**, pp. 281-304.

- 66) H. Gao, L. Zhang, W. D. Nix, C. V. Thompson, E. Arzt, "Crack-Like Grain Boundary Diffusion Wedges in Thin Metal Films," 1999, *Acta Materialia*, Vol. **47**, pp. 2865-2878.
- 67) Y. Huang, H. Gao, W.D. Nix and J.W. Hutchinson, "Mechanism-Based Strain Gradient Plasticity - II. Analysis," 2000, *Journal of the Mechanics and Physics of Solids*, Vol. **48**, pp. 99-128.
- 68) C. S. Ozkan, W.D. Nix and H. Gao, "Stress Driven Surface Evolution in Heteroepitaxial Thin Films: Anisotropy of 2-D Roughening Mode," 1999, *Journal of Materials Research*, Vol. **14**, pp. 3247-3256.
- 69) H. Gao, Y. Huang and W.D. Nix, "Modeling Plasticity at the Micron Scale," 1999, *Naturwissenschaften*, Vol. **86**, pp. 507-515.
- 70) C. C. Fulton and H. Gao, "Electromechanical Fracture in Piezoelectric Ceramics," 1999, *International Journal of Fracture*, Vol. **98**, pp. L17-L22.
- 71) T. Bai, D.D. Pollard and H. Gao, "Explanation for Fracture Spacing in Layered Materials," 2000, *Nature*, Vol. **403**, No. 6771, pp. 753-756.
- 72) J.A. Zimmerman, H. Gao and F.F. Abraham, "Generalized Stacking Fault Energies for Embedded Atom FCC Metals," 2000, *Modeling and Simulation in Materials Science and Engineering*, Vol. **8**, pp. 103-115.
- 73) F. F. Abraham and H. Gao, "How Fast Can Cracks Propagate?" 2000, *Physical Review Letters*, Vol. **84**, pp. 3113-3116.
- 74) P. Gumbsch and H. Gao, "Driving Force and Nucleation of Supersonic Dislocations," 1999, *Journal of Computer-Aided Materials Design*, Vol. **6**, pp. 137-144.
- 75) T. Bai, D.D. Pollard and H. Gao, "Spacing of Edge Fractures in Layered Materials," 2000, *International Journal of Fracture*, Vol. **103**, pp. 373-395.
- 76) M.X. Shi, Y. Huang, H. Gao and K.C. Hwang, "Non-Existence of Separable Crack Tip Field in Mechanism-Based Strain Gradient Plasticity," 2000, *International Journal of Solids and Structures*, Vol. **37**, pp. 5995-6010.
- 77) Y. Huang, Z. Xue, H. Gao and Z. C. Xia, "A Study of Micro-Indentation Hardness Tests by Mechanism-Based Strain Gradient Plasticity," 2000, *Journal of Materials Research*, Vol. **15**, pp. 1786-1796.
- 78) J. Lore, H. Gao, and A. Aydin, "Viscoelastic Thermal Stress in Cooling Basalt Flows," 2000, *Journal of Geophysical Research*, Vol. **105**, B10, pp. 23695-23709.

- 79) Y. A. Antipov and H. Gao, "Exact Solution of Integro-Differential Equations of Diffusion Along a Grain Boundary," 2000, *Quarterly Journal of Mechanics and Applied Mathematics*, Vol. **53**, pp. 645-674.
- 80) M. Lane, R. H. Dauskardt, A. Vainchtein and H. Gao, 2000, "Plasticity Contributions to Interface Adhesion in Thin-Film Interconnect Structures," *Journal of Materials Research*, Vol. **15**, pp. 2758-2769.
- 81) C. C. Fulton and H. Gao, "Effect of Local Polarization Switching on Piezoelectric Fracture," 2001, *Journal of the Mechanics and Physics of Solids*, Vol. **49**, pp. 927-952.
- 82) H. Gao and Y. Huang, "Taylor-Base Nonlocal Theory of Plasticity," 2001, *International Journal of Solids and Structures*, Vol. **38**, pp. 2615-2637.
- 83) Y. Huang and H. Gao, "Intersonic Crack Propagation—Part I: The Fundamental Solution," 2001, *Journal of Applied Mechanics*, Vol. **68**, pp. 169-175.
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