

Curriculum Vitae

Huajian Gao
Distinguished University Professor
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EDUCATION

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

EXPERIENCES

6/2019-
College of Engineering
College of Science
Nanyang Technological University

6/2019-
7/2006-5/2019
1/2006-present
9/2005-12/2005
School of Engineering
Brown University

1/2001-6/2006
Max Planck Institute for Metals Research

1/2002-6/2006
Faculty of Chemistry
University of Stuttgart

9/2002-8/2004
9/2000-8/2002
1/1995-8/2000
9/1988-12/1994
Department of Mechanical Engineering
Department of Materials Science and Engineering (by courtesy)
Stanford University

4/1988-8/1988
Division of Applied Science

Harvard University

6/1985-3/1988 Research Assistant (w/ Prof. James R. Rice)
Division of Applied Science

Harvard University

8/1982-8/1983 Lecturer
Department of Engineering Mechanics

Xi'an Jiaotong University

VISITING POSITIONS

6/2012-present Visiting Professor
Center for Advanced Mechanics and Materials
Tsinghua University

1/2017-12/2019 Hagler Institute for Advanced Study Faculty Fellow
Department of Mechanical Engineering
Texas A&M University

1/2016-11/2017 Distinguished Visiting Chair Professor
Department of Mechanical Engineering
Hong Kong Polytechnic University

2/2012-1/2017 Visiting Professor
International Center of Applied Mechanics (ICAM)
Xi'an Jiaotong University

12/2014-12/2014 Visiting Professor
Soochow University

12/2011- 12/2014 Kuang-piu Visiting Professor
Department of Engineering Mechanics
Zhejiang University

1/2012-12/2013 Distinguished Visiting Professor
Department of Mechanical Engineering
The University of Hong Kong

10/2012-11/2012 Simpson Faculty Fellow
Department of Mechanical Engineering
Northwestern University

7/2012-12/2012 Timoshenko Visiting Professor
Department of Mechanical Engineering
Stanford University

1/2012-6/2012 Alexander von Humboldt Visiting Professor

Department of Biophysical Chemistry
University of Heidelberg

4/2007-4/2012 VIP Visiting Professor
Institute of High Performance Computing
Agency for Science, Technology and Research of Singapore

12/2002-12/2005 Visiting Scientist
Institute of Metals Research
Chinese Academy of Sciences

8/2000-8/2005 Chang Jiang Visiting Chair Professor
Department of Engineering Mechanics
Tsinghua University

3/1998-8/1998 Alexander von Humboldt Visiting Scientist
Max Planck Institute for Metals Research

4/1996-6/1996 Visiting Professor
Department of Mechanical Engineering
Hong Kong University of Science and Technology

2/1996-4/1996 Visiting Professor
Department of Mechanical Engineering
University of Paderborn

6/1995-1/1996 Senior Visiting Scientist
Department of Applied Mathematics and Theoretical Physics
University of Cambridge

ACADEMY MEMBERSHIPS

National Academy of Sciences

National Academy of Engineering

American Academy of Arts and Sciences

German National Academy of Sciences Leopoldina

Academia Europaea

Chinese Academy of Sciences

PROFESSIONAL SOCIETY MEMBERSHIPS

Honorary Fellow, International Congress on Fracture (ICF)

Fellow, American Society of Mechanical Engineers (ASME)

Fellow, Institute of Physics, Great Britain (IoP)

Life Member, American Geophysical Union (AGU)

Life Member, Society of Engineering Science (SES)

Member, Materials Research Society (MRS)

Member, Engineering Mechanics Institute, American Society of Civil Engineers (ASCE)

MAJOR SOCIETY RECOGNITIONS

Senior Distinguished Research Achievement Award, Brown University (only one award in physical sciences per year for the whole university), 2018

Theodore von Karman Medal (highest medal of ASCE in engineering mechanics), **Engineering Mechanics Institute, American Society of Civil Engineers (ASCE)**, 2017

Nadai Medal (highest medal of ASME in engineering materials), **American Society of Mechanical Engineers (ASME)**, 2015

William Prager Medal (highest medal of SES), **Society of Engineering Science (SES)**, 2015

Rodney Hill Prize in Solid Mechanics (highest international award in solid mechanics; only one awardee every four years), **International Union of Theoretical and Applied Mechanics**, 2012

Alexander von Humboldt Research Award (highest German award for international scientists), **Germany**, 2012

Charles Russ Richards Memorial Award (highest joint award of Pi Tau Sigma National Mechanical Engineering Honor Society and ASME), **Pi Tau Sigma and ASME**, 2011

Guggenheim Fellowship (for exceptional scholarship or creativity; only 1-2 awards in engineering per year), **John Simon Guggenheim Memorial Foundation**, 1995

RESEARCH INTERESTS

Solid Mechanics, nanomechanics, biomechanics

Mechanics of thin films and hierarchically structured materials

Mechanics of nanostructured and nanotwinned materials

Mechanics of biological and bio-inspired materials

Mechanics of cell-nanomaterials interactions

Mechanics of energy storage materials

Mechanics of cell adhesion

Mechanics of amorphous alloys

PUBLICATIONS & IMPACT

Publication: >400 papers in refereed journals, including Nature and Nature family journals, Science, PNAS, Physical Review Letters, Nano Letters, and Proceedings of the Royal Society, as well as important journals in my field (e.g., JMPS, IJSS, JAM).

H-index: 98 Google Scholar, 88 ISI Web of Science (Researcher ID F-9360-2010)

Total number of citations: >40K (Google Scholar), >29K (ISI Web of Science)

ISI Highly Cited Researcher, Institute for Scientific Information (ISI), 2015, 2018 (<http://hcr.stateofinnovation.thomsonreuters.com/>)

EDITORSHIPS

Editor-in-Chief, Journal of the Mechanics and Physics of Solids (co-editor 2006-2015), 2006-present

Special Invited Editor, PNAS (Proceedings of the National Academy of Sciences of USA), 2014

Editor, International Journal of Applied Mechanics, 2009-

Regional Editor, International Journal of Fracture, 2004-

Editorial Board, National Science Review (a topmost journal in China aimed at reviewing cutting-edge developments across science and technology in China and around the world under the auspices of the Chinese Academy of Sciences), 2013-present

Advisory Board, Science China Technological Sciences, 2018-

Advisory Board, Computational Materials Science and Engineering, 2012-

Advisory Board, Acta Mechanica Sinica, 2011-

Editorial Board, Acta Metallurgica Sinica, 2003-

Editorial Board, Acta Mechanica, 2014-

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, 2004-2012

Editorial Board, Journal of Nanoengineering and Nanosystems, 2004-2011

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

Editor-in-Chief, Acta Mechanica Sinica, 2001-2011

Board of Associate Editors, Cellular and Molecular Bioengineering, Biomedical Engineering Society, 2008-2013

Chief Editor, Continuum Mechanics and Thermodynamics, 2004-2006

Associate Editor, Journal of Applied Mechanics, 2000-2006

Associate Editor, Communications in Computational Physics, 2006-2007

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

HONORS AND AWARDS

James K. Knowles Lecture, California Institute of Technology, 2019

Elected Fellow of American Academy of Arts and Sciences, 2019

Elected Member of Academia Europae, 2018

The Dan and Carole Burack President's Distinguished Lecture Series, Department of Civil & Environmental Engineering, University of Vermont, 2018

Elected Member of National Academy of Sciences, 2018

The Raymond D. Mindlin Lecture, Department of Civil Engineering & Engineering Mechanics, Columbia University & ASCE Metropolitan Section, Engineering Mechanics Institute, American Society of Civil Engineering, 2018

Senior Distinguished Research Achievement Award, Brown University (only one award in physical sciences per year for the whole university), 2018

Honorary Professorship, Nanjing University of Aeronautics and Astronautics, 2018

Martin Weiner Lecture Series, Physics Department Colloquium, Brandeis University, 2017

Elected as Honorary Fellow, International Congress on Fracture (ICF), 2017

Theodore von Karman Medal (highest medal of ASCE in engineering mechanics), **Engineering Mechanics Institute, American Society of Civil Engineers (ASCE)**, 2017

Elected Member of German National Academy of Sciences Leopoldina, 2017

Faculty Fellow, Hagler Institute for Advanced Study (TIAS) at Texas A&M University, 2017

Southwest Mechanics Lecture Series (invited lecture tour of universities in the Southwestern region of USA), 2017

Wang Ren Lecture on Mechanics, Department of Mechanics and Engineering Science, **Peking University**, 2016

Fran and Eric Gebhardt Distinguished Lecture, Daniel Guggenheim School of Aerospace Engineering, **Georgia Institute of Technology**, 2016

Rockwell Distinguished Lecture, **University of Houston**, 2016

Fowler Distinguished Lecture, **Texas A&M University**, 2016

CU-Boulder Aerospace Engineering Distinguished Lecture Series, Department of Aerospace Engineering Sciences, **University of Colorado Boulder**, 2016

C.C. Mei Distinguished Speaker Seminar (DSS) Series, Department of Civil and Environmental Engineering, **Massachusetts Institute of Technology**, 2016

Distinguished Visiting Chair Professor Scheme (DCPS), Department of Mechanical Engineering, **Hong Kong Polytechnic University**, 2016-2017

Elected Foreign Member of Chinese Academy of Sciences, 2015

Distinguished Lecture Series, Department of Mechanical Engineering, **Boston University**, 2015

Nadai Medal (for distinguished contributions and outstanding achievements which broaden the field of materials engineering), **American Society of Mechanical Engineers**, 2015

William Prager Medal (for outstanding research contributions in theoretical solid mechanics), **Society of Engineering Science**, 2015

James F. Bell Memorial Lecture in Continuum Mechanics, Johns Hopkins University, 2015

Martin & Lucinda Glicksman Seminar Series, Mechanical & Aerospace Engineering Department, Florida Institute of Technology, 2015

ISI Highly Cited Researcher, Institute for Scientific Information (ISI), 2015

Winston Chen Distinguished Lecture, School of Engineering and Applied Sciences, Harvard University, 2014

Yunchuan Aisinjiro-Soo Distinguished Lecture, Department of Mechanical Science and Engineering, University of Illinois at Urbana-Champaign, 2014

Inaugural Distinguished Lecturer, Department of Mechanical and Industrial Engineering, **Northeastern University**, 2014

The 33rd Master Forum Lecturer, Shanghai Jiaotong University, 2014

Honorary Professorship, Shanghai Jiaotong University, 2013

Founding co-Director, Center for Advanced Mechanics and Materials, **Tsinghua University**, 2013

Van C. Mow Distinguished Lecture in Applied Mechanics, Department of Mechanical, Aerospace and Nuclear Engineering, **Rensselaer Polytechnic Institute**, 2013.

Lee Hsun Lecture, Institute of Metals Research, **Chinese Academy of Sciences**, 2012

Inaugural Simpson Faculty Fellow, Department of Mechanical Engineering **Northwestern University**, 2012

Distinguished Visiting Scholars Scheme (DVSS), Department of Mechanical Engineering, **University of Hong Kong**, 2012-2013

Timoshenko Distinguished Visitor, Mechanics and Computation Group, Department of Mechanical Engineering, **Stanford University**, 2012

Engineering Distinguished Lecture, University of Hong Kong, 2012

Institute of Advanced Study Distinguished Lecture, Hong Kong University of Science and Technology, 2012

Elected Member of National Academy of Engineering, 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

Founding Member and Deputy Director, International Center for Applied Mechanics, **Xi'an Jiaotong University**, 2012

Alexander von Humboldt Research Award (in recognition of a researcher's entire achievements to date to academics whose fundamental discoveries, new theories, or insights have had a significant impact on their own discipline), **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 Engineers**, 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

Honorary Professorship, **Xi'an Jiaotong University**, 2009

William Mong Distinguished Lectures, **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 Engineers**, 2009

Distinguished Scholars and Artists Advisor (Reader of Guggenheim Fellowship applications in Engineering), **John S. Guggenheim Foundation**, **2008-2011**

The Visiting Investigator Programme (VIP) Award (a prestigious award aimed to strengthen interdisciplinary research in Singapore by tapping on world renowned experts as Visiting Investigators to develop capabilities and groom local talents in key strategic areas; only one award in the mechanics of materials area), **A*STAR** (Agency for Science, Technology and Research), **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 of my field), 2006

Midwestern Mechanics Lecture Series (invited lecture tour of 10 universities in the Midwestern region of USA), 2005-2006

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

Board of Directors, Society of Engineering Science, 2004-2012

Young Investigator Award (awarded to a single individual per year), **Society of Engineering Science**, 2005

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

ASME 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 Engineers**, 2004

Elected to Fellow of American Society of Mechanical Engineers, 2003

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

ASME/AMD Young Investigator Award (renamed in 2008 as the Thomas J.R. Hughes Young Investigators Award - special achievement award for young investigators in Applied Mechanics under the age of 40), Applied Mechanics Division, **American Society of Mechanical Engineers**, 1999

Alexander von Humboldt Research Fellowship for Experienced Researchers, Germany, 1998

Alcoa Science Award, Alcoa Inc, 1996

Guggenheim Fellowship (awarded to those "who have demonstrated exceptional capacity for productive scholarship or exceptional creative ability in the arts", only

1-2 awards in engineering per year), **John Simon Guggenheim Memorial Foundation**, 1995

NSF Young Investigator Award, National Science Foundation, 1993-1998

IBM Faculty Development Award, IBM Inc, 1992-1993

Schlumberger Research Fellowship, Schlumberger Inc, 1988

Harvard Graduate Fellowship, Harvard University, 1984

"SAN HAO XUE SHENG" medals, Xi'an Jiaotong University, 1979-1982

SOCIETY LEADERSHIP/COMMITTEE MEMBERSHIPS

Chair, NRC liaison Committee for Section 10, National Academy of Engineering, 2018-2021

Mechanics Engineering Advisory Committee for Curriculum Development and Industrial Liaison, The University of Hong Kong, 2019-2010

Scientific Evaluation Committee of the Helmholtz Society Research Programs in Materials Science, Karlsruhe Institute of Technology, 2017

Engineering Executive Committee (representing the Solid Mechanics Faculty Group on all matters related to teaching, research and administration in the Brown School of Engineering), **Brown University**, 2008-2012, 2013-2014, 2015-present

Advisory Committee co-Chair, Tsien Elite Class Program, Tsinghua University, 2016-present

Academic Research Fund (AcRF) Tier 2 Expert Panel for the Physics and Engineering Discipline Cluster, Singapore Ministry of Education, 2017-2018

Advisory Committee, the State Key Laboratory of Structural Analysis for Industrial Equipment, Dalian University of Technology, 2015-present

Nadai Medal Selection Committee, American Society of Mechanical Engineers, 2015-2018

Academic Committee Chair, Department of Instrument Science and Engineering, School of Electronical Information and Electric Engineering, Shanghai Jiaotong University, 2014-2017.

Rodney Hill Prize Committee, International Union of Theoretical and Applied Mechanics, 2014-2015

US Representative to IUTAM General Assembly, International Union of Theoretical and Applied Mechanics, 2014

Journal of Applied Mechanics Paper Award Committee, Chair, 2014

Community and Program Committee, School of Engineering, Brown University, 2014-2017

Faculty Grievance Committee, Brown University, 2014-2017

International Advisory Committee, Suzhou Institute of Nano-Tech and Nanobionics (SINANO), Chinese Academy of Sciences, 2013-2017

Founding co-Director, Center for Advanced Mechanics and Materials, Tsinghua University, 2012-present

University Resources Committee (responsible for recommending the annual operating and capital budget of the whole university to the President), **Brown University, 2013-2016**

Mechanical Engineering Peer Committee (Member 2013, Vice Chair 2014, Chair 2015), **National Academy of Engineering, 2013-2015**

Selection Committee on Eshelby Mechanics Award for Young Faculty, (Member 2013-present, Chair 2015), 2013-present.

DOE/BES Review Committee, Materials Science Program, Sandia National Laboratories, 2013

IUTAM Congress Committee, International Union of Theoretical and Applied Mechanics, 2012-2020

Director of Materials Research Science and Engineering Center (MRSEC), Brown University, 2012-2014

Founding Deputy Director, International Center for Applied Mechanics, Xi'an Jiaotong University, 2012-present

German Excellence Initiative Evaluation Committee, University of Freiburg, 2012

Applied Mechanics Division Executive Committee, American Society of Mechanical Engineers (Program Chair 2013, Vice Chair 2014, Chair 2015, Past Chair 2016-2020), 2010-2020

Solid Mechanics Faculty Search Committees (Chair 2010 & 2016), **Brown University**, 2008-2017

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-present

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

IUTAM Solids Symposium Committee, **International Union of Theoretical and Applied Mechanics**, (Member 2008-2016, Chair 2016-), 2008-

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 (Member 2004-2009, **Vice President** 2010, **President** 2011, **Past President** 2012), **Society of Engineering Science**, 2004-2012

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**, 2002-2014

Scientific Advisory Board, **Failure Mechanics Laboratory**, **Tsinghua University**, Beijing, 2002-2012

International Scientific Advisory Board, **Laboratory for Nonlinear Mechanics**, **Institute of Mechanics**, **Chinese Academy of Sciences**, 2001-2011

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

LIST OF PAST PHD AND POSTDOCTORAL ADVISEE

Former PhD Advisee (current position and affiliation)

- (1) Tanmay Bhandakkar (Associate Professor, IIT Bombay, India)
- (2) Markus Buehler (McAfee Professor of Engineering and Head, Department of Civil and Environmental Engineering, Massachusetts Institute of Technology, USA)
- (3) Cheng-Hsin Chiu (Senior Lecturer, National University of Singapore, Singapore)
- (4) Chandler Fulton (Morgan Stanley Inc, New York, USA)
- (5) Hamed Haftbaradaran (Associate Professor, Department of Civil Engineering, Faculty of Engineering, University of Isfahan, Iran)
- (6) Patrick A. Klein (Franklin Templeton Investments, California, USA)
- (7) Kristina Langer (Aerospace Systems Directorate, Air Force Research Laboratory, Wright-Patterson Air Force Base, USA)
- (8) Jin Lee (President, LS Silicon Valley, California, USA)
- (9) Xiaoyan Li (Associate Professor, Tsinghua University, China)
- (10) Thao D. Nguyen (Associate Professor and Marlin U. Zimmerman, Jr. Faculty Scholar, Department of Mechanical Engineering, Johns Hopkins University, USA)
- (11) Cengiz S. Ozkan, (Professor, University of California at Riverside, USA)
- (12) Jin Qian (Professor, Zhejiang University, China)
- (13) Wendong Shi (Professor, Renmin University of China, China)
- (14) Xinghua Shi (Professor, National Center for Nanoscience and Technology, Chinese Academy of Sciences, China)
- (15) Haimin Yao (Associate Professor, Hong Kong Polytechnic University, Hong Kong, China)
- (16) Xin Yi (Assistant Professor, Peking University, China)
- (17) Sheng Yin (Postdoc Fellow, UC Berkeley)
- (18) Lin Zhang (Synopsys Inc, California, USA)
- (19) Teng Zhang (Assistant Professor, Syracuse University, USA)
- (20) Jonathan A. Zimmerman (Principal Member of Technical Staff, Sandia National Laboratories, USA)

Former Postdoctoral advisee (current position and affiliation)

- (21) Andrea Cavicchi (Università degli Studi di Genova, Italy)
- (22) Bin Chen (Professor, Zhejiang University, China)
- (23) Shaohua Chen (Professor, Institute of Mechanics, Chinese Academy of Sciences, China)
- (24) Yuan Cheng (Institute of High Performance Computing, Singapore)
- (25) Audrey C. Chng (Institute of High Performance Computing, Singapore)
- (26) Daxiang Cui (Professor and Head, Department of Instrument Science and Engineering, Shanghai Jiaotong University, China)
- (27) Rumi De (Assistant Professor, Department of Physical Sciences, Indian Institute of Science Education and Research Kolkata, India)
- (28) Xu Guo (Professor and Head, Department of Engineering Mechanics, Dalian University of Technology, China)
- (29) Chung-Souk Han (Associate Professor, Department of Mechanical Engineering, University of Wyoming, USA)
- (30) Alexander Hartmaier (Professor and Director, Interdisciplinary Centre for Advanced Materials Simulation, Ruhr-Universität Bochum, Germany)
- (31) Baohua Ji (Professor and Head, Department of Mechanics, Beijing Institute of Technology, China)
- (32) Zhaohui Jin (Professor, School of Materials Science and Engineering, Shanghai Jiaotong University, China)
- (33) Haneesh Kesari (Assistant Professor, School of Engineering, Brown University, USA)
- (34) Ranjith Kunnath (Professor, VIT University, Tamil Nadu, India)
- (35) Jiaoyan Li (Research Associate, Idaho National Laboratory)
- (36) Bin Liu (Professor and Associate Dean, School of Aerospace and Aeronautical Engineering, Tsinghua University, China)
- (37) Xinglin Ma (Associate Professor, East China University of Science and Technology, China)
- (38) Thomas Michelitsch (Senior Researcher, Institut Jean le Rond d'Alembert, Université Pierre et Marie Curie, France)
- (39) S. Mohadeseh Taheri Mousavi (Department of Materials Science and Engineering, MIT)
- (40) Murali Palla (Assistant Professor, BITS Pilani, India)

- (41) Hui Pan (Associate Professor, University of Macau, Macau, China)
- (42) Ill Ryu (Assistant Professor, University of Texas at Dallas, USA)
- (43) Anna Vainchtein (Professor, Department of Mathematics, University of Pittsburgh, USA)
- (44) Jizeng Wang (Professor, College of Civil Engineering and Mechanics, Lanzhou University, China)
- (45) Xiang Wang (Chinese Aerospace Science and Technology Corporation, China)
- (46) Xuyue Wang (Professor, Shenzhen Graduate School, Harbin Institute of Technology, China)
- (47) Yujie Wei (Professor and Deputy Director, Institute of Mechanics, Chinese Academy of Sciences, China)
- (48) Hongyan Yuan (Assistant Professor, University of Rhode Island, USA)
- (49) Zuoqi Zhang (Professor, Wuhan University, China)
- (50) Haofei Zhou (Associate Professor, Zhejiang University, China)
- (51) Wenpeng Zhu (Professor, Sun Yat-sen University, China)
- (52) Ramsharan Rangarajan (Assistant Professor, Indian Institute of Science, Bangalore, India)

LIST OF PUBLICATIONS OF HUAJIAN GAO

A. Archive Journals

- 1) **H.J. 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. DOI: 10.1115/1.3171857
- 2) **H.J. Gao** and J.R. Rice, “Somewhat Circular Tensile Cracks,” 1987, *International Journal of Fracture*, Vol. **33**, pp. 155-174. DOI: 10.1007/BF00013168
- 3) **H.J. Gao** and J.R. Rice, “Nearly Circular Connections of Elastic Half Spaces,” 1987, *Journal of Applied Mechanics*, Vol. **54**, pp. 627-634. DOI:10.1115/1.3173080
- 4) **H.J. Gao**, “Nearly Circular Shear Mode Cracks,” 1988, *International Journal of Solids and Structures*, Vol. **24**, pp. 177-193. DOI: 10.1016/0020-7683(88)90028-5
- 5) **H.J. Gao**, “Weight Functions for External Circular Cracks,” 1989, *International Journal of Solids and Structures*, Vol. **25**, pp. 107-127. DOI: 10.1016/0020-7683(89)90002-4
- 6) **H.J. 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. DOI: 10.1016/0022-5096(89)90007-0
- 7) **H.J. 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. DOI: 10.1016/0022-5096(89)90008-2
- 8) **H.J. Gao**, “Linear Perturbation Analysis of a Shear Loaded Asperity,” 1989, *Journal of Geophysical Research*, Vol. **94**, pp. 10259-10265. DOI: 10.1029/JB094iB08p10259
- 9) **H.J. 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. DOI: 10.1115/1.3176178
- 10) **H.J. Gao**, “Mismatched Elastic Connections,” 1990, *International Journal of Fracture*, Vol. **45**, pp. 131-143. DOI: 10.1007/BF00037171
- 11) **H.J. Gao**, “On Mismatch Problems for Plane and Elliptical Connections,” 1990, *Engineering Fracture Mechanics*, Vol. **36**, pp. 39-48. DOI: 10.1016/0013-7944(90)90094-W

- 12) **H.J. Gao**, “Fracture Analysis of Nonhomogeneous Materials via a Moduli-Perturbation Method,” 1991, *International Journal of Solids and Structures*, Vol. **27**, pp. 1663-1682. DOI: 10.1016/0020-7683(91)90068-Q
- 13) **H.J. Gao**, “Crack Interaction with 3D Dislocation Loops,” 1991, *Journal of the Mechanics and Physics of Solids*, Vol. **39**, pp. 157-172. DOI: 10.1016/0022-5096(91)90001-5
- 14) **H.J. Gao**, “Stress Concentration at Slightly Undulating Surfaces,” 1991, *Journal of the Mechanics and Physics of Solids*, Vol. **39**, pp. 443-458. DOI: 10.1016/0022-5096(91)90035-M
- 15) **H.J. Gao**, “A Boundary Perturbation Analysis for Elastic Inclusion and Interfaces,” 1991, *International Journal of Solids and Structures*, **28**, pp. 703-726. DOI: 10.1016/0020-7683(91)90151-5
- 16) **H.J. Gao**, “Stress Analysis of Smooth Polygon Holes via a Boundary Perturbation Method,” 1991, *Journal of Applied Mechanics*, Vol. **58**, pp. 851-853. DOI: 10.1115/1.2897276
- 17) **H.J. Gao**, “Weight Function Analysis of Interface Cracks: Mismatch Versus Oscillation,” 1991, *Journal of Applied Mechanics*, Vol. **58**, pp. 931-938. DOI: 10.1115/1.2897710
- 18) **H.J. 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. DOI: 10.1029/91JB02261
- 19) **H.J. 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. DOI: 10.1016/0020-7683(92)90068-5
- 20) **H.J. 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. DOI: 10.1016/S0022-5096(05)80018-3
- 21) **H.J. Gao** and G. Herrmann, “On Estimates of Stress Intensity Factors for Cracked Beams and Pipes,” 1992, *Engineering Fracture Mechanics*, Vol. **41**, pp. 695-706. DOI: 10.1016/0013-7944(92)90154-7
- 22) **H.J. 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. DOI: 10.1016/0020-7225(92)90030-K
- 23) **H.J. Gao**, “Three Dimensional Slightly Non-Planar Cracks,” 1992, *Journal of Applied Mechanics*, Vol. **59**, pp. 335-343. DOI: 10.1115/1.2899525

- 24) **H.J. Gao**, "A Closed Interface Crack in Anisotropic Bimaterials," 1992, *International Journal of Fracture*, Vol. **55**, pp. R33-R39. DOI: 10.1007/BF00017279
- 25) **H.J. 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. DOI: 10.1016/0020-7683(92)90004-D
- 26) **H.J. 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. DOI: 10.1093/qjmam/45.2.149
- 27) **H.J. Gao**, "Weight Function Method for Interfacial Cracks in Anisotropic Bimaterials," 1992, *International Journal of Fracture*, Vol. **56**, pp. 139-158. DOI: 10.1007/BF00015597
- 28) **H.J. Gao**, "Variation of Elastic T-Stresses along Slightly Wavy 3-D Crack Fronts," 1992, *International Journal of Fracture*, Vol. **58**, pp. 241-257. DOI: 10.1007/BF00015618
- 29) **H.J. Gao**, "Surface Roughening and Branching Instabilities in Dynamic Fracture," 1993, *Journal of the Mechanics and Physics of Solids*, Vol. **41**, pp. 457-486. DOI: 10.1016/0022-5096(93)90044-G
- 30) W.H. Mueller, G. Herrmann and **H.J. Gao**, "Elementary Strength Theory of Cracked Beams," 1993, *Theoretical and Applied Fracture Mechanics*, Vol. **18**, pp. 163-177. DOI: 10.1016/0167-8442(93)90042-A
- 31) W.H. Mueller, G. Herrmann and **H.J. Gao**, "A Note On Curved, Cracked Beams," 1993, *International Journal of Solids and Structures*, Vol. **30**, pp. 1527-1532. DOI: 10.1016/0020-7683(93)90076-J
- 32) C.H. Chiu and **H.J. Gao**, "Stress Singularities along a Cycloid Rough Surface," 1993, *International Journal of Solids and Structures*, Vol. **30**, pp. 2983-3012. DOI: 10.1016/0020-7683(93)90208-O
- 33) **H.J. 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. DOI: 10.1557/JMR.1993.3229
- 34) J.W. Li, C.H. Chiu, **H.J. Gao** and T.W. Wu, "Cusp-Like Flaws Along a Rough Surface," 1993, *Thin Solid Films*, Vol. **236**, pp. 240-246. DOI: 10.1016/0040-6090(93)90677-H

- 35) **H.J. 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. DOI: 10.1016/0022-5096(94)90041-8
- 36) Y.J. Du, P. Segall and **H.J. 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. DOI: 10.1029/94JB00339
- 37) J. Lee and **H.J. Gao**, "A Generalized Contact Model for Interface Cracks in Anisotropic Elastic Solids," 1994, *International Journal of Fracture*, Vol. **67**, pp. 53-68. DOI: 10.1007/BF00032364
- 38) **H.J. 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). DOI: 10.1098/rspa.1995.0028
- 39) J. Lee and **H.J. Gao**, "A Hybrid Finite Element Analysis of Interface Cracks," 1995, *International Journal for Numerical Methods in Engineering*, Vol. **38**, pp. 2465-2482. DOI: 10.1002/nme.1620381410
- 40) N. Y. Chien, **H.J. 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. DOI: 10.1098/rspa.1996.0027
- 41) W.H. Mueller, **H.J. 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. DOI: 10.1016/0020-7683(95)00059-J
- 42) **H.J. Gao**, "A Theory of Local Limiting Speed in Dynamic Fracture," 1996, *Journal of the Mechanics and Physics of Solids*, Vol. **44**, pp. 1453-1474. DOI: 10.1016/0022-5096(96)00038-5
- 43) **H.J. 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. DOI: 10.1007/BF00032938
- 44) **H.J. 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. DOI: 10.1016/S0022-5096(96)00108-1

- 45) P. Muellner, **H.J. 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. DOI: 10.1080/01418619708214002
- 46) C. S. Ozkan, W.D. Nix and **H.J. 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. DOI: 10.1063/1.118819
- 47) C.C. Fulton and **H.J. Gao**, “Electrical Nonlinearity in Fracture of Piezoelectric Ceramics,” 1997, *Applied Mechanics Review*, Vol. **50**, pp. S56-S63. DOI: 10.1115/1.3101851
- 48) Y.J. Du, P. Segall and **H.J. Gao**, “Quasi-Static Dislocations in Three Dimensional Inhomogeneous Media,” 1997, *Geophysics Research Letters*, Vol. **24**, pp. 2347-2350. DOI: 10.1029/97GL02341
- 49) **H.J. Gao**, “Elastic Waves in a Hyperelastic Solid Near Its Plane Strain Equibiaxial Cohesive Limit,” 1997, *Philosophical Magazine Letters*, Vol. **76**, pp. 307-314. DOI: 10.1080/095008397178896
- 50) **H.J. 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. DOI: 10.1016/S0020-7683(97)00123-6
- 51) W.H. Mueller and **H.J. Gao**, “Mixed Mode Fracture in Epicycloid Specimens II. Point Force Loading,” 1998, *International Journal of Solids and Structures*, Vol. **35**, pp. 205-217. DOI: 10.1016/S0020-7683(97)00063-2
- 52) **H.J. Gao** and P.A. 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. DOI: 10.1016/S0022-5096(97)00047-1
- 53) W.D. Nix and **H.J. 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. DOI: 10.1016/S0022-5096(97)00086-0
- 54) A.B. Movchan, **H.J. Gao** and J.R. Willis, “Perturbation Studies of Plane Cracks,” 1998, *International Journal of Solids and Structures*, Vol. **35**, 3419-3453. DOI: 10.1016/S0020-7683(97)00231-X
- 55) F.F. Abraham and **H.J. Gao**, “Anomalous Brittle-Ductile Fracture Behaviors in FCC Crystals,” 1998, *Philosophical Magazine Letters*, Vol. **78**, pp. 307-312. DOI: 10.1080/095008398177887

- 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.J. Gao**, “Ab initio Dynamics of Rapid Fracture,” 1998, *Modeling and Simulation in Materials Science and Engineering*, Vol. **6**, pp. 639-670. DOI: 10.1088/0965-0393/6/5/010
- 57) W.D. Nix and **H.J. Gao**, “An Atomistic Interpretation of Interface Stress,” 1998, *Scripta Materialia*, Vol. **39**, pp. 1653-1661. DOI: 10.1016/S1359-6462(98)00352-2
- 58) P.A. Klein and **H.J. Gao**, “Crack Nucleation and Growth as Strain Localization in a Virtual-Bond Continuum,” 1998, *Engineering Fracture Mechanics*, Vol. **61**, pp. 21-48. DOI: 10.1016/S0013-7944(98)00048-4
- 59) P. Gumbsch and **H.J. Gao**, “Dislocations Faster Than the Speed of Sound,” 1999, *Science*, Vol. **283**, No. 5404, pp. 965-968. DOI: 10.1126/science.283.5404.965
- 60) **H.J. 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. DOI: 10.1080/01418619908210303
- 61) **H.J. Gao** and W.D. Nix, “Surface Roughening of Heteroepitaxial Thin Films,” 1999, *Annual Review of Materials Research*, Vol. **29**, pp. 173-209. DOI: 10.1146/annurev.matsci.29.1.173
- 62) **H.J. Gao**, Y.G. 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. DOI: 10.1016/S0022-5096(98)00103-3
- 63) W.H. Mueller, W. Littmann and **H.J. Gao**, “Mixed Mode Fracture in Epicycloid Specimens III. Dislocations,” 1999, *International Journal of Solids and Structures*, Vol. **36**, pp. 3339-3348. DOI: 10.1016/S0020-7683(98)00146-2
- 64) **H.J. Gao**, Y.G. 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. DOI: 10.1016/S0022-5096(98)00126-4
- 65) Z.L. Li, H.K. Zhao and **H.J. 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. DOI: 10.1006/jcph.1999.6249
- 66) **H.J. Gao**, L. Zhang, W. D. Nix, C.V. Thompson and E. Arzt, “Crack-Like Grain Boundary Diffusion Wedges in Thin Metal Films,” 1999, *Acta Materialia*, Vol. **47**, pp. 2865-2878. DOI: 10.1016/S1359-6454(99)00178-0

- 67) Y.G. Huang, **H.J. 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. DOI: 10.1016/S0022-5096(99)00022-8
- 68) C.S. Ozkan, W.D. Nix and **H.J. 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. DOI: 10.1557/JMR.1999.0439
- 69) **H.J. Gao**, Y.G. Huang and W.D. Nix, "Modeling Plasticity at the Micron Scale," 1999, *Naturwissenschaften*, Vol. **86**, pp. 507-515. DOI: 10.1007/s001140050665
- 70) C.C. Fulton and **H.J. Gao**, "Electromechanical Fracture in Piezoelectric Ceramics," 1999, *International Journal of Fracture*, Vol. **98**, pp. L17-L22.
- 71) P. Gumbsch and **H.J. Gao**, "Driving Force and Nucleation of Supersonic Dislocations," 1999, *Journal of Computer-Aided Materials Design*, Vol. **6**, pp. 137-144. DOI: 10.1023/A:1008789505150
- 72) T.X. Bai, D.D. Pollard and **H.J. Gao**, "Explanation for Fracture Spacing in Layered Materials," 2000, *Nature*, Vol. **403**, No. 6771, pp. 753-756. DOI: 10.1038/35001550
- 73) J.A. Zimmerman, **H.J. 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. DOI: 10.1088/0965-0393/8/2/302
- 74) F.F. Abraham and **H.J. Gao**, "How Fast Can Cracks Propagate?" 2000, *Physical Review Letters*, Vol. **84**, pp. 3113-3116. DOI: 10.1103/PhysRevLett.84.3113
- 75) T.X. Bai, D.D. Pollard and **H.J. Gao**, "Spacing of Edge Fractures in Layered Materials," 2000, *International Journal of Fracture*, Vol. **103**, pp. 373-395. DOI: 10.1023/A:1007659406011
- 76) M.X. Shi, Y.G. Huang, **H.J. 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. DOI: 10.1016/S0020-7683(99)00217-6
- 77) Y.G. Huang, Z.Y. Xue, **H.J. 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. DOI: 10.1557/JMR.2000.0258
- 78) J. Lore, **H.J. Gao** and A. Aydin, "Viscoelastic Thermal Stress in Cooling Basalt Flows," 2000, *Journal of Geophysical Research*, Vol. **105**, B10, pp. 23695-23709. DOI: 10.1029/2000JB900226

- 79) Y.A. Antipov and **H.J. 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. DOI: 10.1093/qjmam/53.4.645
- 80) M. Lane, R.H. Dauskardt, A. Vainchtein and **H.J. Gao**, 2000, “Plasticity Contributions to Interface Adhesion in Thin-Film Interconnect Structures,” *Journal of Materials Research*, Vol. **15**, pp. 2758-2769. DOI: 10.1557/JMR.2000.0395
- 81) C. C. Fulton and **H.J. Gao**, “Effect of Local Polarization Switching on Piezoelectric Fracture,” 2001, *Journal of the Mechanics and Physics of Solids*, Vol. **49**, pp. 927-952. DOI: 10.1016/S0022-5096(00)00049-1
- 82) **H.J. Gao** and Y.G. Huang, “Taylor-Base Nonlocal Theory of Plasticity,” 2001, *International Journal of Solids and Structures*, Vol. **38**, pp. 2615-2637. DOI: 10.1016/S0020-7683(00)00173-6
- 83) Y.G. Huang and **H.J. Gao**, “Intersonic Crack Propagation—Part I: The Fundamental Solution,” 2001, *Journal of Applied Mechanics*, Vol. **68**, pp. 169-175. DOI: 10.1115/1.1357871
- 84) C.C. Fulton and **H.J. Gao**, “Microstructural Modeling of Ferroelectric Fracture,” 2001, *Acta Materialia*, Vol. **49**, pp. 2039-2054. DOI: 10.1016/S1359-6454(01)00100-8
- 85) D. Weiss, **H.J. Gao** and E. Arzt, “Constrained Diffusional Creep in UHV-Produced Copper Thin Films,” 2001, *Acta Materialia*, Vol. **49**, pp. 2395-2403. DOI: 10.1016/S1359-6454(01)00168-9
- 86) **H.J. Gao**, Y.G. Huang and F.F. Abraham, “Continuum and Atomistic Studies of Intersonic Crack Propagation,” 2001, *Journal of the Mechanics and Physics of Solids*, Vol. **49**, pp. 2113-2132. DOI: 10.1016/S0022-5096(01)00032-1
- 87) K.J. Hsia, **H.J. Gao** and Y.B. Xin, “On the Spacing Between Dislocation Nucleation Sources at Crack Tips,” 2001, *Materials Science and Engineering A*, Vol. **317**, pp. 257-263. DOI: 10.1016/S0921-5093(01)01165-0
- 88) Y. Guo, Y.G. Huang, **H.J. Gao**, Z. Zhuang and K.C. Hwang, “Taylor-Based Nonlocal Theory of Plasticity: Numerical Studies of the Micro-Indentation Experiments and Crack Tip Fields,” 2001, *International Journal of Solids and Structures*, Vol. **38**, pp. 7447-7460. DOI: 10.1016/S0020-7683(01)00047-6
- 89) X. Qiu, Y.G. Huang, W.D. Nix, K.C. Hwang and **H.J. Gao**, “Effect of Intrinsic Lattice Resistance in Strain Gradient Plasticity,” 2001, *Acta Materialia*, Vol. **49**, pp. 3949-3958. DOI: 10.1016/S1359-6454(01)00299-3

- 90) K.C. Hwang, H.Q. Jiang, Y.G. Huang, **H.J. Gao** and N. Hu, "A Finite Deformation Theory of Strain Gradient Plasticity," 2002, *Journal of the Mechanics and Physics of Solids*, Vol. **50**, pp. 81-99. DOI: 10.1016/S0022-5096(01)00020-5
- 91) P.A. Klein, J.W. Foulk, E.P. Chen, S.A. Wimmer and **H.J. Gao**, "Physics-Based Modeling of Brittle Fracture: Cohesive Formulations and the Application of Meshfree Methods," 2001, *Theoretical and Applied Fracture Mechanics*, Vol. **37**, pp. 99-166. DOI: 10.1016/S0167-8442(01)00091-X
- 92) D. Josell, T.P. Weihs and **H.J. Gao**, "Diffusional Creep: Stresses and Strain Rates in Thin Films and Multilayers," 2002, *MRS Bulletin*, Vol. **27**, pp. 39-44. DOI: 10.1557/mrs2002.18
- 93) Y.G. Huang and **H.J. Gao**, "Intersonic Crack Propagation - Part II: Suddenly Stopping Crack," 2002, *Journal of Applied Mechanics*, Vol. **69**, pp. 76-80. DOI: 10.1115/1.1410936
- 94) Z.P. Bazant, Y.D.S. Rajapakse, D.H. Allen, R. Ballarini, H.D. Espinosa, **H.J. Gao**, R. Gettu, M. Jirasek, G. Pijaudier-Cabot, J. Planas, F.J. Ulm, "Report on ONR Workshop on Fracture Scaling," 2002, *International Journal of Fracture*, Vol. **113**, pp. 345-366. DOI: 10.1023/A:1014293822196
- 95) P. Zhang , P.A. Klein, Y.G. Huang, **H.J. Gao** and P.D. Wu, "Numerical Simulation of Cohesive Fracture by the Virtual-Internal-Bond Model," 2002, *Computer Modeling in Engineering and Sciences*, Vol. **3**, pp. 263-289.
- 96) F.F. Abraham, R. Walkup, **H.J. Gao**, M. Duchaineau, T.D. De La Rubia, and M. Seager, "Simulating Materials Failure by Using Up to One Billion Atoms and the World's Fastest Computer: Brittle Fracture," 2002, *Proceedings of the National Academy of Sciences of USA*, Vol. **99**, pp. 5777-5782 (PNAS cover). DOI: 10.1073/pnas.062012699
- 97) F.F. Abraham, R. Walkup, **H.J. Gao**, M. Duchaineau, T.D. De La Rubia, and M. Seager, "Simulating Materials Failure by Using Up to One Billion Atoms and the World's Fastest Computer: Work-Hardening," 2002, *Proceedings of the National Academy of Sciences of USA*, Vol. **99**, pp. 5783-5787. DOI: 10.1073/pnas.062054999
- 98) L. Zhang and **H.J. Gao**, "Coupled Grain Boundary and Surface Diffusion in a Polycrystalline Thin Films Constrained by Substrate," 2002, *Zeitschrift fuer Metallkunde*, Vol. **93**, pp. 417-427. DOI: 10.3139/146.020417
- 99) **H.J. Gao**, L. Zhang and S.P. Baker, "Dislocation Core Spreading at Interfaces Between Metal Films and Amorphous Substrates," 2002, *Journal of the Mechanics and Physics of Solids*, Vol. **50**, pp. 2169-2202. DOI: 10.1016/S0022-5096(02)00010-8

- 100) Y.A. Antipov and **H.J. Gao**, “Atomic Diffusion From a Material Surface into a Grain Boundary,” 2002, *Proceedings of the Royal Society of London A*, Vol. **458**, pp. 1673-1694. DOI: 10.1098/rspa.2001.0925
- 101) N. Huber, W.D. Nix and **H.J. Gao**, “Identification of Elastic-Plastic Material Parameters from Pyramidal Indentation of Thin Films,” 2002, *Proceedings of Royal Society of London A*, Vol. **458**, pp 1593-1620. DOI: 10.1098/rspa.2001.0927
- 102) S.P.A. Gill, **H.J. Gao**, V. Ramaswamy and W.D. Nix, “Confined Capillary Stresses during the Initial Growth of Thin Films on Amorphous Substrates,” 2002, *Journal of Applied Mechanics*, Vol. **69**, pp. 425-432. DOI: 10.1115/1.1469001
- 103) P. Zhang, Y.G. Huang, **H.J. Gao** and K.C. Hwang, “Fracture Nucleation in Single-Wall Carbon Nanotubes Under Tension: a Continuum Analysis Incorporating Interatomic Potentials,” 2002, *Journal of Applied Mechanics*, Vol. **69**, pp. 454-458. DOI: 10.1115/1.1469002
- 104) S.P. Baker, L. Zhang and **H.J. Gao**, “Effect of Dislocation Core Spreading at Interfaces on Strength of Thin-Films,” 2002, *Journal of Materials Research*, Vol. **17**, pp. 1808-1813. DOI: 10.1557/JMR.2002.0268
- 105) V.M. Levin, T.M. Michelitsch and **H.J. Gao**, “Propagation of Electroacoustic Waves in the Transversely Isotropic Piezoelectric Medium Reinforced by Randomly Distributed Cylindrical Inhomogeneities,” 2002, *International Journal of Solids and Structures*, Vol. **39**, pp. 5013-2051. DOI: 10.1016/S0020-7683(02)00401-8
- 106) T.M. Michelitsch, V.M. Levin and **H.J. Gao**, “Dynamic Potentials and Green's Functions of a Quasi-Plane Piezoelectric Medium with Inclusion,” 2002, *Proceedings of the Royal Society of London A*, Vol. **458**, pp. 2393-2415. DOI: 10.1098/rspa.2002.0979
- 107) K.C. Hwang, H.Q. Jiang, Y.G. Huang and **H.J. Gao**, “Finite Deformation Analysis of Mechanism-based Strain Gradient Plasticity: Torsion and Crack Tip Field,” 2003, *International Journal of Plasticity*, Vol. **19**, pp. 235 - 251. DOI: 10.1016/S0749-6419(01)00039-0
- 108) **H.J. Gao** and Y.G. Huang, “Geometrically Necessary Dislocation and Size-Dependent Plasticity,” 2003, *Scripta Materialia*, Vol. **48**, pp. 113-118. DOI: 10.1016/S1359-6462(02)00329-9
- 109) X. Qiu, Y.G. Huang, Y. Wei, **H.J. Gao** and K.C. Hwang, “The Flow Theory of Mechanism-Based Strain Gradient Plasticity,” 2003, *Mechanics of Materials*, Vol. **35**, pp. 245-258. DOI: 10.1016/S0167-6636(02)00274-0
- 110) P. Huang, Z. Li, J. Sun and **H.J. Gao**, “Morphological Healing Evolution of Intragranular Penny-Shaped Microcracks by Surface Diffusion: Part I. Simulation,”

2003, *Metallurgical And Materials Transactions A-Physical Metallurgy And Materials Science*, Vol. **34**, pp. 277-285. DOI: 10.1007/s11661-003-0329-0

- 111) H. Zhang, J. Sun and **H.J. Gao**, “Morphological Healing Evolution of Intragranular Penny-Shaped Microcracks by Surface Diffusion: Part II. Experiments,” 2003, *Metallurgical and Materials Transactions A-Physical Metallurgy and Materials Science*, Vol. **34**, pp. 287-294. DOI: 10.1007/s11661-003-0330-7
- 112) T.C. Chang and **H.J. Gao**, “Size-Dependent Elastic Properties of a Single-Walled Carbon Nanotube via a Molecular Mechanics Model,” 2003, *Journal of the Mechanics and Physics of Solids*, Vol. **51**, pp. 1059-1074. DOI: 10.1016/S0022-5096(03)00006-1
- 113) T.M. Michelitsch, V.M. Levin and **H.J. Gao**, “Dynamic Eshelby Tensor and Potentials for Ellipsoidal Inclusions,” 2003, *Proceedings of the Royal Society of London A*, Vol. **459**, pp. 863-890. DOI: 10.1098/rspa.2002.1054
- 114) T.M. Michelitsch and **H.J. Gao**, “Dynamic Eshelby Inclusion Problem in a Quasipplane Transversely Isotropic Piezoelectric Medium,” 2003, *Chinese Journal of Mechanics-Series A*, Vol. **19**, pp. 113-118.
- 115) **H.J. Gao**, Y. Kong, D.X. Cui and C.S. Ozkan, “Spontaneous Insertion of DNA Oligonucleotides into Carbon Nanotubes,” 2003, *Nano Letters*, Vol. **3**, pp. 471-473. DOI: 10.1021/nl025967a
- 116) **H.J. Gao**, B.H. Ji, I.L. Jaeger, E. Arzt and P. Fratzl, “Materials Become Insensitive to Flaws at Nanoscale: Lessons from Nature,” 2003, *Proceedings of the National Academy of Sciences of USA*, Vol. **100**, pp. 5597–5600 (PNAS Cover Highlight). DOI: 10.1073/pnas.0631609100
- 117) **H.J. Gao** and B.H. Ji, “Modeling Fracture in Nano-Materials via a Virtual Internal Bond Method,” 2003, *Engineering Fracture Mechanics*, Vol. **70**, pp 1777–1791. DOI: 10.1016/S0013-7944(03)00124-3
- 118) Y.A. Antipov, T.J. Chuang and **H.J. Gao**, “On the Integro-Differential Equation Associated with Diffusive Crack Growth Theory,” 2003, *The Quarterly Journal of Mechanics and Applied Mathematics*, Vol. **56**, pp. 289-310. DOI: 10.1093/qjmam/56.2.289
- 119) Z.R. Liu, **H.J. Gao**, L. Q. Chen and K.J. Cho, “Patterned Nanostructure in AgCo/Pt/Mgo(001) Thin Films,” 2003, *Physical Review B*, Vol. **68**, pp. 035429-1-7. DOI: 10.1103/PhysRevB.68.035429
- 120) W.L. Guo, Y. Guo, **H.J. Gao**, Q.S. Zheng and W. Zhong, “Energy Dissipation in Gigahertz Oscillators from Multiwalled Carbon Nanotubes,” 2003, *Physical Review Letters*, Vol. **91**, pp. 125501-1-4. DOI: 10.1103/PhysRevLett.91.125501

- 121) J.Z. Wang, T. M. Michelitsch and **H.J. Gao**, “Dynamic Fiber Inclusions with Elliptical and Arbitrary Cross-sections and Related Retarded Potentials in a Quasi-Plane Piezoelectric Medium,” 2003, *International Journal of Solids and Structures*, Vol. **40**, pp. 6307-6333. DOI: 10.1016/S0020-7683(03)00419-0
- 122) M.J. Buehler, **H.J. Gao** and Y.G. Huang, “Atomic and Continuum Studies of a Suddenly Stopping Supersonic Crack,” 2003, *Computational Materials Science*, Vol. **28**, pp. 385-408. DOI: 10.1016/j.commatsci.2003.08.001
- 123) H.Q. Jiang, P. Zhang, B. Liu, Y.G. Huang, P.H. Geubelle, **H.J. Gao** and K.C. Hwang, “The Effect of Nanotube Radius on the Constitutive Model for Carbon Nanotubes,” 2003, *Computational Materials Science*, Vol. **28**, pp 429-442. DOI: 10.1016/j.commatsci.2003.08.004
- 124) J.Z. Wang, Y.H. Zhou and **H.J. Gao**, “Computation of the Laplace Inverse Transform by Application of the Wavelet Theory,” 2003, *Communications In Numerical Methods In Engineering*, Vol. **19**, pp. 959–975. DOI: 10.1002/cnm.645
- 125) M.J. Buehler, A. Hartmaier and **H.J. Gao**, “Atomistic and Continuum Studies of Crack-like Diffusion Wedges and Associated Dislocation Mechanisms in Thin Films on Substrates,” 2003, *Journal of the Mechanics and Physics of Solids*, Vol. **51**, pp. 2105-2125. DOI: 10.1016/j.jmps.2003.09.024
- 126) M.J. Buehler, F.F. Abraham and **H.J. Gao**, “Hyperelasticity Governs Dynamic Fracture at a Critical Length Scale,” 2003, *Nature*, Vol. **426**, pp. 141-146. DOI: 10.1038/nature02096
- 127) T. M. Michelitsch, **H.J. Gao** and V.M. Levin, “On the Dynamic Potentials of Ellipsoidal Shells,” 2003, *The Quarterly Journal of Mechanics and Applied Mathematics*, Vol. **56**, No. 4, pp. 629-648. DOI: 10.1093/qjmam/56.4.629
- 128) M. Yang, C.S. Ozkan and **H.J. Gao**, “Self Assembly of Polymer Structures Induced By Electric Field,” 2003, *Journal of Laboratory Automation*, Vol. **8**(2), pp/ 86-89 DOI: 10.1016/S1535-5535(04)00263-1
- 129) A. Hartmaier, M.J. Buehler, and **H.J. Gao**, “A Discrete Dislocation Plasticity Model of Creep in Polycrystalline Thin Films,” 2003, *Defects And Diffusion In Metals: An Annual Retrospective VI. Defect and Diffusion Forum*, Vol. **224-2**, pp. 107-125. DOI: 10.4028/www.scientific.net/DDF.224-225.107
- 130) B.H. Ji and **H.J. Gao**, “A Study of Fracture Mechanisms in Biological Nano-Composites via the Virtual Internal Bond Model,” 2004, *Materials Science & Engineering A*, Vol. **366**, pp. 96-103. DOI: 10.1016/j.msea.2003.08.121

- 131) D.X. Cui, F. Tian, Y. Kong, I. Titushikin and **H.J. Gao**, “Effects of Single-Walled Carbon Nanotubes on the Polymerase Chain Reaction,” 2004, *Nanotechnology*, Vol. **15**, pp. 154-157. DOI: 10.1088/0957-4484/15/1/030
- 132) B. Chen, Y.G. Huang, **H.J. Gao** and P.D. Wu, “Shear Crack Propagation along Weak Planes in Solids: A finite deformation analysis incorporating the linear harmonic potential,” 2004, *International Journal of Solids and Structures*, Vol. **41**, pp 1-14. DOI: 10.1016/j.ijsolstr.2003.09.005
- 133) M.J. Buehler and **H.J. Gao**, “Biegen und Brechen im Supercomputer: Duktile Verformungen und spröde Brüche von Kristallen,” 2004, *Physik in Unserer Zeit*, Vol. **35** (1), pp. 30-37. DOI: 10.1002/piuz.200401026
- 134) Y.G. Huang, S.X. Qu, K.C. Hwang, M. Li and **H.J. Gao**, “A Conventional Theory of Mechanism-Based Strain Gradient Plasticity,” 2004, *International Journal of Plasticity*, Vol. **20**, pp. 753-782. DOI: 10.1016/j.ijplas.2003.08.002
- 135) **H.J. Gao** and Y. Kong, “Simulation of DNA-Nanotube Interactions,” 2004, *Annual Review of Materials Research*, Vol. **34**, pp. 123-150. DOI: 10.1146/annurev.matsci.34.040203.120402
- 136) M.J. Buehler, **H.J. Gao** and Y. Huang, “Atomistic and Continuum Studies of Stress and Strain Fields near a Rapidly Propagating Crack in a Harmonic Lattice,” 2004, *Theoretical and Applied Fracture Mechanics*, Vol. **41**, pp. 21-42. DOI: 10.1016/j.tafmec.2003.11.022
- 137) **H.J. Gao**, B.H. Ji, M.J. Buehler and H.M. Yao, “Flaw Tolerant Bulk and Surface Nanostructures of Biological Systems,” 2004, *Molecular and Cellular Biomechanics*, Vol. **1** (1), pp. 37-52. DOI: 10.3970/mcb.2004.001.037
- 138) Z.R. Liu and **H.J. Gao**, “A Differential Cluster Variation Method for Analysis of Spinodal Decomposition in Alloys,” 2004, *European Physical Journal B*, Vol. **37**, pp. 369–374. DOI: 10.1140/epjb/e2004-00068-2
- 139) Y. Guo, Y. Kong, W.L. Guo and **H.J. Gao**, “Structural Transition of Copper Nanowires Confined in Single-Walled Carbon Nanotubes,” 2004, *Journal of Computational and Theoretical Nanoscience*, Vol. **1** (1), pp. 93-98. DOI: 10.1166/jctn.2004.011
- 140) B. Chen, Y.G. Huang, **H.J. Gao** and W. Yang, “On the Finite Opening of Interatomic Shear Cracks,” 2004, *International Journal of Solids and Structures*, Vol. **41**, pp. 2293-2306. DOI: 10.1016/j.ijsolstr.2003.12.014
- 141) **H.J. Gao** and H.M. Yao, “Shape Insensitive Optimal Adhesion of Nanoscale Fibrillar Structures,” 2004, *Proceedings of the National Academy of Sciences of*

USA, Vol. **101**, pp. 7851-7856 (PNAS Cover Highlight). DOI: 10.1073/pnas.0400757101

- 142) M.X. Shi, Y.G. Huang and **H.J. Gao**, “The J-integral and Geometrically Necessary Dislocations in Nonuniform Plastic Deformation,” 2004, *International Journal of Plasticity*, Vol. **20**, pp. 1739–1762. DOI: 10.1016/j.ijplas.2003.11.013
- 143) M.J. Buehler, A. Hartmaier and **H.J. Gao**, “Hierarchical Multi-Scale Modeling of Constrained Diffusional Creep in Thin Films,” 2004, *Modeling and Simulations in Materials Science and Engineering*, Vol. **12**, pp. S391-S413. DOI: 10.1088/0965-0393/12/4/S07
- 144) D.X. Cui, C.S.Ozkan, S. Ravindran, Y. Kong and **H.J. Gao**, “Encapsulation of Pt-Labelled DNA Molecules Inside Carbon Nanotubes,” 2004, *Molecular and Cellular Biomechanics*, Vol. **1** (2), pp. 113-122. DOI: 10.3970/mcb.2004.001.113
- 145) T.D. Nguyen, S. Govindjee, P.A. Klein and **H.J. Gao**, “A Rate-Dependent Cohesive Continuum Model for the Study of Crack Dynamics,” 2004, *Computer Methods in Applied Mechanics and Engineering*, Vol. **193**, pp. 3239-3265. DOI: 10.1016/j.cma.2003.09.024
- 146) M.J. Buehler, Y. Kong, and **H.J. Gao**, “Deformation Mechanisms of Very Long Single-Wall Carbon Nanotubes Subject to Compressive Loading,” 2004, *Journal of Engineering Materials and Technology*, Vol. **126** (3), pp. 245-249. DOI: 10.1115/1.1751181
- 147) D.L. Shi, X.Q. Feng, Y.G. Huang, K.C. Hwang and **H.J. Gao**, “The Effect of Nanotube Waviness and Agglomeration on the Elastic Property of Carbon Nanotube-Reinforced Composites,” 2004, *Journal of Engineering Materials and Technology*, Vol. **126** (3), pp. 250-257. DOI: 10.1115/1.1751182
- 148) B.H. Ji and **H.J. Gao**, “Mechanical Properties of Nanostructure of Biological Materials,” 2004, *Journal of the Mechanics and Physics of Solids*, Vol. **52** (9), pp. 1963-1990. DOI: 10.1016/j.jmps.2004.03.006
- 149) H.L. Zhang, P.Z. Huang, J. Sun and **H.J. Gao**, “Morphological Healing Evolution of Penny-Shaped Fatigue Microcracks in Pure Iron at Elevated Temperatures,” 2004, *Applied Physics Letters*, Vol. **85** (7), pp. 1143-1145. DOI: 10.1063/1.1780592
- 150) M.J. Buehler and **H.J. Gao**, “A Mother-Daughter-Granddaughter Mechanism of Shear Dominated Interfacial Crack Motion along Interfaces of Dissimilar Materials,” 2004, *Journal of the Chinese Institute of Engineers*, Vol. **27** (6), pp. 763-769. DOI: 10.1080/02533839.2004.9670927
- 151) B.H. Ji, **H.J. Gao** and T.C. Wang, “Flow Stress of Biomorphous Metal Matrix Composites,” 2004, *Materials Science & Engineering A*, Vol. **386** (1-2), pp. 435-441. DOI: 10.1016/j.msea.2004.07.060

- 152) M.J. Buehler, A. Hartmaier, **H.J. Gao**, M. Duchaineau, and F.F. Abraham, “Atomic Plasticity: Description and Analysis of a One-Billion Atom Simulation of Ductile Materials Failure,” 2004, *Computer Methods in Applied Mechanics and Engineering*, Vol. **193** (48-51), 5257-5282. DOI: 10.1016/j.cma.2003.12.066
- 153) B.H. Ji, **H.J. Gao** and K.J. Hsia, “How Do Slender Mineral Crystals Resist Buckling in Biological Materials?” 2004, *Philosophical Magazine Letters*, Vol. **84** (10), pp. 631-641. DOI: 10.1080/09500830512331329141
- 154) **H.J. Gao**, X. Wang, H.M. Yao, S. Gorb and E. Arzt, “Mechanics of Hierarchical Adhesion Structures of Gecko,” 2005, *Mechanics of Materials*, Vol. **37** (2-3), pp. 275-285. DOI: 10.1016/j.mechmat.2004.03.008
- 155) M.E. Kassner, S. Nemat-Nasser, Z.G. Suo, G. Bao, J.C. Barbour, L.C. Brinson, H. Espinosa, **H.J. Gao**, S. Granick, P. Gumbsch, K.S. Kim, W. Knauss, L. Kubin, J. Langer, B.C. Larson, L. Mahadevan, A. Majumdar, S. Torquato and F. van Swol, “New Directions in Mechanics,” 2005, *Mechanics of Materials*, Vol. **37** (2-3), pp. 231-259. DOI: 10.1016/j.mechmat.2004.04.009
- 156) J.Z. Wang, T.M. Michelitsch, **H.J. Gao** and V.M. Levin, “On the Solution of the Dynamic Eshelby Problem for Inclusions of Various Shapes,” 2005, *International Journal of Solids and Structures*, Vol. **42** (2), pp. 353-363. DOI: 10.1016/j.ijsolstr.2004.06.042
- 157) T.M. Michelitsch, J.Z. Wang, **H.J. Gao** and V.M. Levin, “On the Retarded Potentials of Inhomogeneous Ellipsoids and Sources of Arbitrary Shapes in the Three-Dimensional Infinite Space,” 2005, *International Journal of Solids and Structures*, Vol. **42** (1), pp. 51-67. DOI: 10.1016/j.ijsolstr.2004.07.022
- 158) T.D. Nguyen, S. Govindjee, P.A. Klein and **H.J. Gao**, “A Material Force Method for Inelastic Fracture Mechanics,” 2005, *Journal of the Mechanics and Physics of Solids*, Vol. **53** (1), pp. 91-121. DOI: 10.1016/j.jmps.2004.06.010
- 159) D.X. Cui, F.R. Tian, C.S. Ozkan, M. Wang and **H.J. Gao**, “Effect of Single Wall Carbon Nanotubes on Human HEK293 Cells,” 2005, *Toxicology Letters*, Vol. **155**, pp. 73-85. DOI: 10.1016/j.toxlet.2004.08.015
- 160) M.J. Buehler and **H.J. Gao**, “Computer Simulation in der Materialforschung – Wie Grossrechner zum Verstaendnis komplexer Materialphaenomene beitragen,” 2005, *Naturwissenschaftliche Rundschau*, Vol. **57** (11), pp. 593-601 (cover article).
- 161) R. Spolenak, S. Gorb, **H.J. Gao** and E. Arzt, “Effects for Contact Shape on Biological Attachments,” 2005, *Proceedings of the Royal Society of London A*, Vol. **461** (2054), pp. 305-320. DOI: 10.1098/rspa.2004.1326

- 162) B.N. Cox, **H.J. Gao**, D. Gross and D. Rittel, “Modern Topics and Challenges in Dynamic Fracture,” 2005, *Journal of the Mechanics and Physics of Solids*, Vol. **53** (3), pp. 565-596. DOI: 10.1016/j.jmps.2004.09.002
- 163) W.L. Guo and **H.J. Gao**, “Optimized Bearing and Interlayer Friction in Multiwalled Carbon Nanotubes,” 2005, *Computer Modeling in Engineering and Sciences*, Vol. **7** (1), pp.19-34. DOI: 10.3970/cmcs.2005.007.019
- 164) A. Hartmaier, M.J. Buehler and **H.J. Gao**, “Multiscale Modeling of Deformation in Polycrystalline Thin Metal Films on Substrates,” 2005, *Advanced Engineering Materials*, Vol. **7** (3), pp. 165-169. DOI: 10.1002/adem.200400172
- 165) C.S. Han, **H.J. Gao**, Y.G. Huang and W.D. Nix, “Mechanism-Based Strain Gradient Crystal Plasticity—I. Theory,” 2005, *Journal of the Mechanics and Physics of Solids*, Vol. **53** (5), pp. 1188–1203. DOI: 10.1016/j.jmps.2004.08.008
- 166) C.S. Han, **H.J. Gao**, Y.G. Huang and W.D. Nix, “Mechanism-Based Strain Gradient Crystal Plasticity—II. Analysis,” 2005, *Journal of the Mechanics and Physics of Solids*, Vol. **53** (5), pp. 1204–1222. DOI: 10.1016/j.jmps.2005.01.004
- 167) F. Kauffmann, B.H. Ji, G. Dehm, **H.J. Gao** and E. Arzt, “A Quantitative Study of the Hardness in a Superhard Nanocrystalline Titanium Nitride/Silicon Nitride Coating,” 2005, *Scripta Materialia*, Vol. **52** (12), pp. 1269-1274. DOI: 10.1016/j.scriptamat.2005.02.024
- 168) M.J. Buehler, A. Hartmaier, **H.J. Gao**, M.A. Duchaineau and F.F. Abraham, “The Dynamical Complexity of Work-Hardening: a Large-Scale Molecular Dynamics Simulation,” 2005, *Acta Mechanica Sinica*, Vol. **21** (2), pp. 103 – 111. DOI: 10.1007/s10409-005-0019-9
- 169) **H.J. Gao**, W.D. Shi and L.B. Freund, “Mechanics of Receptor-Mediated Endocytosis,” 2005, *Proceedings of the National Academy of Sciences of USA*, Vol. **102** (27), pp. 9469-9474 (PNAS Cover Highlight). DOI: 10.1073/pnas.0503879102
- 170) X.H. Shi, Y. Kong, Y.P. Zhao and **H.J. Gao**, “Molecular Dynamics Simulation of Peeling a DNA Molecule on Substrate,” 2005, *Acta Mechanica Sinica*, Vol. **21**, pp. 249–256. DOI: 10.1007/s10409-005-0027-9
- 171) A. Hartmaier, M.J. Buehler and **H.J. Gao**, “Two-Dimensional Discrete Dislocation Models of Deformation in Polycrystalline Thin Metal Films on Substrates,” 2005, *Materials Science and Engineering A*, Vol. **400–401**, pp. 260–263. DOI: 10.1016/j.msea.2005.03.069
- 172) **H.J. Gao** and S.H. Chen, “Flaw Tolerance in a Thin Strip under Tension,” 2005, *Journal of Applied Mechanics*, Vol. **72** (5), pp. 732-737. DOI: 10.1115/1.1988348

- 173) J.Z. Wang and **H.J. Gao**, "A Generalized Bead-Rod Model for Brownian Dynamics Simulations of Wormlike Chains under Strong Confinement," 2005, *The Journal of Chemical Physics*, Vol. 123, 084906. DOI: 10.1063/1.2008233
- 174) J.Z. Wang and **H.J. Gao**, "A Simplified Formula of Laplace Inversion Based on Wavelet Theory," 2005, *Communications in Numerical Methods in Engineering*, Vol. **21**, 527–530. DOI: 10.1002/cnm.765
- 175) K.Y. Volokh and **H.J. Gao**, "On the Modified Virtual Internal Bond Method," 2005, *Journal of Applied Mechanics*, Vol. **72**, 969-971. DOI: 10.1115/1.2047628
- 176) S.H. Chen and **H.J. Gao**, "Non-Slipping Adhesive Contact of an Elastic Cylinder on Stretched Substrates," 2006, *Proceedings of the Royal Society of London A*, Vol. **462**, 211–228. DOI: 10.1098/rspa.2005.1553
- 177) J. Qian and **H.J. Gao**, "Scaling Effects of Wet Adhesion in Biological Attachment Systems," 2006, *Acta Biomaterialia*, Vol. **2**, 51–58. DOI: 10.1016/j.actbio.2005.08.005
- 178) M.J. Buehler, Y. Kong, **H.J. Gao** and Y.G. Huang, "Self-Folding and Unfolding of Carbon Nanotubes," 2006, *Journal of Engineering Materials and Technology*, Vol. **128**, pp. 3-10. DOI: 10.1115/1.1857938
- 179) C.S. Han, A. Hartmaier, **H.J. Gao** and Y.G. Huang, "Discrete Dislocation Dynamics Simulations of Surface Induced Size Effects in Plasticity," 2006, *Materials Science And Engineering A*, Vol. **415**, pp. 225-233. DOI: 10.1016/j.msea.2005.09.075
- 180) M.J. Buehler and **H.J. Gao**, "Dynamical Fracture Instabilities due to Local Hyperelasticity at Crack Tips," 2006, *Nature*, Vol. **415**, pp. 307-310. DOI: 10.1038/nature04408
- 181) J.Z. Wang, X.J. Fan and **H.J. Gao**, "Stretching of Short DNAs in Electrolytes," 2006, *Molecular and Cellular Biomechanics*, Vol. **3**(1), pp. 13-20. DOI: 10.3970/mcb.2006.003.013
- 182) J. Zou, B.H. Ji, X.Q. Feng and **H.J. Gao**, "Self-Assembly of Single-Walled Carbon Nanotubes into Multi-Walled Carbon Nanotubes in Water: Molecular Dynamics Simulations," 2006, *Nano Letters*, Vol. **6**(3), pp. 430 - 434. DOI: 10.1021/nl052289u
- 183) H.M. Yao and **H.J. Gao**, "Mechanics of Robust and Releasable Adhesion in Biology: Bottom-up Designed Hierarchical Structures of Gecko," 2006, *Journal of the Mechanics and Physics of Solids*, Vol. **54**(6), pp 1120-1146. DOI: 10.1016/j.jmps.2006.01.002

- 184) H.M. Yao and **H.J. Gao**, “Optimal Shapes for Adhesive Binding between Two Elastic Bodies,” 2006, *Journal of Colloid and Interface Science*, Vol. **298**(2), pp. 564-572. DOI: 10.1016/j.jcis.2005.12.059
- 185) S.H. Chen and **H.J. Gao**, “Non-Slipping Adhesive Contact between Mismatched Elastic Spheres: a Model of Adhesion Mediated Deformation Sensor,” 2006, *Journal of the Mechanics and Physics of Solids*, Vol. **54**(8), pp. 1548-1567. DOI: 10.1016/j.jmps.2006.03.001
- 186) S.H. Chen and **H.J. Gao**, “Generalized Maugis-Dugdale Model of an Elastic Cylinder in Non-slipping Adhesive Contact with a Stretched Substrate,” 2006, *International Journal of Materials Research*, Vol. **97**, pp. 584-593. DOI: 10.3139/146.101275
- 187) **H.J. Gao**, “Application of Fracture Mechanics Concepts to Hierarchical Biomechanics of Bone and Bone-like Materials,” 2006, *International Journal of Fracture*, Vol. **138**, pp. 101–137. DOI: 10.1007/s10704-006-7156-4
- 188) M.J. Buehler, H.M. Yao, **H.J. Gao** and B.H. Ji, “Cracking and Adhesion at Small Scales: Atomistic and Continuum Studies of Flaw Tolerant Nanostructures,” 2006, *Modelling and Simulation in Materials Science and Engineering*, Vol. **14** (5), pp. 799-816. DOI: 10.1088/0965-0393/14/5/001
- 189) B. Liu, L.X. Zhang and **H.J. Gao**, “Poisson Ratio can Play a Crucial Role in Mechanical Properties of Biocomposites,” 2006, *Mechanics of Materials*, Vol. **38**(12), pp. 1128–1142. DOI: 10.1016/j.mechmat.2006.02.002
- 190) J. Zou, B.H. Ji, X.Q. Feng, and **H.J. Gao**, “Molecular-Dynamic Studies of Carbon–Water–Carbon Composite Nanotubes,” 2006, *Small*, Vol. **2**(11), pp. 1348 – 1355. DOI: 10.1002/smll.200600055
- 191) L.Y. Jiang, Y.G. Huang, H.Q. Jiang, G. Ravichandran, **H.J. Gao**, K.C. Hwang and B. Liu, “A Cohesive Law for Carbon Nanotube/Polymer Interfaces based on the Van Der Waals Force,” 2006, *Journal of the Mechanics and Physics of Solids*, Vol. **54**(11), pp. 2436-2452. DOI: 10.1016/j.jmps.2006.04.009
- 192) W.D. Shi, X. Q. Feng and **H.J. Gao**, “Two-Dimensional Model of Vesicle Adhesion on Curved Substrates,” 2006, *Acta Mechanica Sinica*, Vol. **22**, pp. 529-535. DOI: 10.1007/s10409-006-0036-3
- 193) N.C. Broedling, A. Hartmaier and **H.J. Gao**, “A Combined Dislocation-Cohesive Zone Model for Fracture in a Confined Ductile Layer,” 2006, *International Journal of Fracture*, Vol. **140**(1-4), pp. 169-181. DOI: 10.1007/s10704-005-6025-x

- 194) B.H. Ji and **H.J. Gao**, “Elastic Properties of Nanocomposite Structure of Bone,” 2006, *Composites Science and Technology*, Vol. **66**(9), pp. 1212-1218. DOI: 10.1016/j.compscitech.2005.10.017
- 195) S.H. Chen and **H.J. Gao**, “Non-Slipping Adhesive Contact between Mismatched Elastic Cylinders,” 2007, *International Journal of Solids and Structures*, Vol. **44**, pp. 1939–1948. DOI: 10.1016/j.ijsolstr.2006.07.021
- 196) C. Li, W.L. Guo, Y. Kong and **H.J. Gao**, “Size-Dependent Piezoelectricity in Zinc Oxide Nanofilms from First-Principles Calculations,” 2007, *Applied Physics Letters*, Vol. **90**(3), Art. No. 033108. DOI: 10.1063/1.2430686
- 197) W. Zhou, Y.G. Huang, B. Liu, K.C. Hwang, J.M. Zuo, M.J. Buehler and **H.J. Gao**, “Self-Folding of Single- and Multiwall Carbon Nanotubes,” 2007, *Applied Physics Letters*, Vol. **90** (7), Art. No. 073107. DOI: 10.1063/1.2535874
- 198) H.P. Zhao, X.Q. Feng and **H.J. Gao**, “Ultrasonic Technique for Extracting Nanofibers from Natural Materials,” 2007, *Applied Physics Letters*, Vol. **90**(7), Art. No. 073112. DOI: 10.1063/1.2450666
- 199) C. Li, W.L. Guo, Y. Kong and **H.J. Gao**, “First-Principles Study on ZnO Nanoclusters with Hexagonal Prism Structures,” 2007, *Applied Physics Letters*, Vol. **90** (22), Art. No. 223102. DOI: 10.1063/1.2743934
- 200) S.H. Chen and **H.J. Gao**, “Bio-inspired Mechanics of Reversible Adhesion: Orientation-Dependent Adhesion Strength for Non-slipping Adhesive Contact with Transversely Isotropic Elastic Materials,” 2007, *Journal of the Mechanics and Physics of Solids*, Vol. **55**, pp. 1001–1015. DOI: 10.1016/j.jmps.2006.10.008
- 201) Y.G. Huang, K.C. Hwang, J. Song and **H.J. Gao**, “Indentation Size Effect: a Study via the Mechanism-based Strain-Gradient Plasticity Theory,” 2007, *International Journal of Surface Science and Engineering*, Vol. **1**(2/3), pp. 156-179. DOI: 10.1504/IJSURFSE.2007.015023
- 202) K. Ranjith and **H.J. Gao**, “Stability of Frictional Slipping at an Anisotropic/Isotropic Interface,” 2007, *International Journal of Solids and Structures*, Vol. **44**(13), pp. 4318-4328. DOI: 10.1016/j.ijsolstr.2006.11.025
- 203) H. Wang, K.C. Hwang, Y. Huang, P.D. Wu, B. Liu, G. Ravichandran, C.S. Han and **H.J. Gao**, “A Conventional Theory of Strain Gradient Crystal Plasticity based on the Taylor Dislocation Model”, 2007, *International Journal of Plasticity*, Vol. **23**(9), pp. 1540-1554. DOI: 10.1016/j.ijplas.2007.01.004
- 204) Z.M. Chen, Z.H. Jin and **H.J. Gao**, “Repulsive Force between Screw Dislocation and Coherent Twin Boundary in Aluminum and Copper,” 2007, *Physical Review B*, Vol. **75**(21), Art. No. 212104. DOI: 10.1103/PhysRevB.75.212104

- 205) Y.H. Xie, Y. Kong, **H.J. Gao** and A.K. Soh, “Molecular Dynamics Simulation of Polarizable Carbon Nanotubes,” 2007, *Computational Materials Science*, Vol. **40**, pp. 460–465. DOI: 10.1016/j.commatsci.2007.01.016
- 206) C. Li, W.L. Guo, Y. Kong and **H.J. Gao**, “First-Principles Study of the Dependence of Ground-State Structural Properties on the Dimensionality and Size of ZnO Nanostructures,” 2007, *Physical Review B*, Vol. **76**(3), Art. No. 035322. DOI: 10.1103/PhysRevB.76.035322
- 207) Y.J. Wei, A.F. Bower and **H.J. Gao**, “Recoverable Creep Deformation due to Heterogeneous Grain-Boundary Diffusion and Sliding,” 2007, *Scripta Materialia*, Vol. **57**, pp. 933-936. DOI: 10.1016/j.scriptamat.2007.07.031
- 208) H.M. Yao, M. Ciavarella and **H.J. Gao**, “Adhesion Maps of Spheres Corrected for Strength Limit,” 2007, *Journal of Colloid and Interface Science*, Vol. **315**, pp. 786–790. DOI: 10.1016/j.jcis.2007.07.021
- 209) J.Z. Wang and **H.J. Gao**, “Stretching a Stiff Polymer in a Tube,” 2007, *Journal of Materials Science*, Vol. **42**(21), pp. 8838-8843. DOI: 10.1007/s10853-007-1846-9
- 210) H.M. Yao and **H.J. Gao**, “Mechanical Principles of Robust and Releasable Adhesion of Gecko,” 2007, *Journal of Adhesion Science and Technology*, Vol. **21** (12–13), pp. 1185–1212. DOI: 10.1163/156856107782328326
- 211) Y.H. Xie, Y. Kong, A.K. Soh and **H.J. Gao**, “Electric Field-Induced Translocation of Single-Stranded DNA through a Polarized Carbon Nanotube Membrane,” 2007, *The Journal of Chemical Physics*, Vol. **127**, Art. No. 225101. DOI: 10.1063/1.2799989
- 212) H.M. Yao and **H.J. Gao**, “Multi-Scale Cohesive Laws in Hierarchical Materials,” 2007, *International Journal of Solids and Structures*, Vol. **44**, pp. 8177–8193. DOI: 10.1016/j.ijsolstr.2007.06.007
- 213) J.Z. Wang and **H.J. Gao**, “Clustering Instability in Adhesive Contact Between Elastic Solids via Diffusive Molecular Bonds,” 2008, *Journal of the Mechanics and Physics of Solids*, Vol. **56**(1), pp. 251-266. DOI: 10.1016/j.jmps.2007.05.011
- 214) B. Liu, J.Z. Wang, X.J. Fan, Y. Kong and **H.J. Gao**, “An Effective Bead–Spring Model for Polymer Simulation,” 2008, *Journal of Computational Physics*, Vol. **227**, pp. 2794–2807. DOI: 10.1016/j.jcp.2007.11.012
- 215) J. Qian, J.Z. Wang and **H.J. Gao**, “Lifetime and Strength of Adhesive Molecular Bond Clusters between Elastic Media,” 2008, *Langmuir*, Vol. **24**(4), pp. 1262-1270. DOI: 10.1021/la702401b

- 216) N.C. Broedling, A. Hartmaier, M.J. Buehler and **H.J. Gao**, “The Strength Limit in a Bio-Inspired Metallic Nanocomposite,” 2008, *Journal of the Mechanics and Physics of Solids*, Vol. **56**(3), pp. 1086-1104. DOI: 10.1016/j.jmps.2007.06.006
- 217) B. Chen, X.H. Shi and **H.J. Gao**, “Apparent Fracture/Adhesion Energy of Interfaces with Periodic Cohesive Interactions,” 2008, *Proceedings of the Royal Society A-Mathematical Physical and Engineering Sciences*, Vol. **464**, 657-671. DOI: 10.1098/rspa.2007.0240
- 218) P. Liu, Y.W. Zhang, **H.J. Gao** and K.Y. Lam, “Sustained Surface Wave Propagation Induced by Surface Diffusion Driven by Strain Relaxation in a Heteroepitaxial Film,” 2008, *Applied Physics Letters*, Vol. **92**(6), Art. No. 061913. DOI: 10.1063/1.2883938
- 219) P. Liu, Y.W. Zhang, **H.J. Gao** and C. Lu, “Energetics and Stability of C60 Molecules Encapsulated in Carbon Nanotubes,” 2008, *Carbon*, Vol. **46**, pp. 649-655. DOI: 10.1016/j.carbon.2008.01.029
- 220) X.H. Shi, Y. Kong and **H.J. Gao**, “Coarse Grained Molecular Dynamics and Theoretical Studies of Carbon Nanotubes Entering Cell Membrane,” 2008, *Acta Mechanica Sinica*, Vol. **24**, pp. 161–169. DOI: 10.1007/s10409-007-0131-0
- 221) Z.H. Jin, **H.J. Gao** and P. Gumbsch, “Energy Radiation and Limiting Speeds of Fast Moving Edge Dislocations in Tungsten,” 2008, *Physical Review B*, Vol. **77**(9), Art. No. 094303. DOI: 10.1103/PhysRevB.77.094303
- 222) Y.J. Wei and **H.J. Gao**, “An Elastic-Viscoplastic Model of Deformation in Nanocrystalline Metals Based on Coupled Mechanisms in Grain Boundaries and Grain Interiors,” 2008, *Materials Science And Engineering A*, Vol. **478** (1-2), pp. 16-25. DOI: 10.1016/j.msea.2007.05.054
- 223) B. Chen, P.D. Wu and **H.J. Gao**, “Hierarchical Modelling of Attachment and Detachment Mechanisms of Gecko Toe Adhesion,” 2008, *Proceedings of the Royal Society A-Mathematical Physical and Engineering Sciences*, Vol. **464**, pp.1639-1652. DOI: 10.1098/rspa.2007.0350
- 224) H.M. Yao, G. Della Rocca, P.R. Guduru and **H.J. Gao**, “Adhesion and Sliding Response of a Biologically Inspired Fibrillar Surface: Experimental Observations,” 2008, *Journal of the Royal Society Interface*, Vol. **5**(24), pp. 723-734. DOI: 10.1098/rsif.2007.1225
- 225) Z.P. Xu, Q.S. Zheng, Q. Jiang, C.C. Ma, Y. Zhao, G.H. Chen, **H.J. Gao** and G.X. Ren, “Trans-Phonon Effects in Ultra-Fast Nanodevices,” 2008, *Nanotechnology*, Vol. **19**(25), Art. No. 255705. DOI: 10.1088/0957-4484/19/25/255705
- 226) Z.F. Shi, B. Huang, H. Tan, Y.G. Huang, T.Y. Zhang, P.D. Wu, PD, K.C. Hwang and **H.J. Gao**. “Determination of the Microscale Stress-Strain Curve and Strain

- Gradient Effect from the Micro-Bend of Ultra-Thin Beams,” 2008, *International Journal of Plasticity*, Vol. **24** (9), pp.1606-1624. DOI: 10.1016/j.ijplas.2007.12.007
- 227) L.A.G. Lin, A.Q. Liu, Y.F. Yu, C. Zhang, C.S. Lim, S.H. Ng, P.H. Yap and **H.J. Gao**, “Cell Compressibility Studies Utilizing Noncontact Hydrostatic Pressure Measurements on Single Living Cells in a Microchamber,” 2008, *Applied Physics Letters*, Vol. **92**(23), Art. No. 233901. DOI: 10.1063/1.2928229
- 228) P. Liu, **H.J. Gao** and Y.W. Zhang, “Spontaneous Generation and Propagation of Transverse Coaxial Traveling Waves in Multiwalled Carbon Nanotubes,” 2008, *Applied Physics Letters*, Vol. **93**(1), Art. 013106. DOI: 10.1063/1.2956420
- 229) J.Z. Wang, J. Qian and **H.J. Gao**, “Stability of Molecular Adhesion Mediated by Confined Polymer Repellers and Ligand-Receptor Bonds,” 2008, *Molecular and Cellular Biomechanics*, Vol. **5**(1), pp. 19-26. DOI: 10.3970/mcb.2008.005.019
- 230) P. Liu, **H.J. Gao** and Y.W. Zhang, “Effect of Defects on Oscillation Characteristics and Instability of Carbon Nanotube-Based Oscillators,” 2008, *Applied Physics Letters*, Vol. **93**(8), Art. No. 083107. DOI: 10.1063/1.2976127
- 231) L.T. Gao, X.Q. Feng, Y.J. Yin and **H.J. Gao**, “An Electromechanical Liquid Crystal Model of Vesicles,” 2008, *Journal of the Mechanics and Physics of Solids*, Vol. **56**(9), pp. 2844-2862. DOI: 10.1016/j.jmps.2008.04.006
- 232) S. Jungbauer, **H.J. Gao**, J.P. Spatz, and R. Kemkemer, “Two Characteristic Regimes in Frequency-Dependent Dynamic Reorientation of Fibroblasts on Cyclically Stretched Substrates,” 2008, *Biophysical Journal*, Vol. **95**, pp. 3470–3478. DOI: 10.1529/biophysj.107.128611
- 233) H.M. Yao, P.R. Guduru and **H.J. Gao**, “Maximum Strength for Intermolecular Adhesion of Nanospheres at an Optimal Size,” 2008, *Journal of the Royal Society Interface*, Vol. **5**(28), pp. 1363-1370. DOI: 10.1098/rsif.2008.0066
- 234) Q.X. Pei, C.G. Lim, Y. Cheng and **H.J. Gao**, “Molecular Dynamics Study on DNA Oligonucleotide Translocation Through Carbon Nanotubes,” 2008, *Journal of Chemical Physics*, Vol. **129**(12), Art. No. 125101. DOI: 10.1063/1.2981798
- 235) Y.J. Wei, A.F. Bower and **H.J. Gao**, “Enhanced Strain-Rate Sensitivity in F.C.C. Nanocrystals due to Grain-Boundary Diffusion and Sliding,” 2008, *Acta Materialia*, Vol. **56**, pp. 1741-1752. DOI: 10.1016/j.actamat.2007.12.028
- 236) Y.J. Wei, A.F. Bower and **H.J. Gao**, “Recoverable Creep Deformation and Transient Local Stress Concentration due to Heterogeneous Grain-Boundary Diffusion and Sliding in Polycrystalline Solids,” 2008, *Journal of the Mechanics and Physics of Solids*, Vol. **56**, pp. 1460-1483. DOI: 10.1016/j.jmps.2007.08.007

- 237) W.D. Shi, J.Z. Wang, X.J. Fan and **H.J. Gao**, “Size and Shape Effects on Diffusion and Absorption of Colloidal Particles near a Partially Absorbing Sphere: Implications for Uptake of Nanoparticles in Animal Cells,” 2008, *Physical Review E*, Vol. **78**(12), Art. No. 061914. DOI: 10.1103/PhysRevE.78.061914
- 238) J.A. Zimmerman, D.J. Bammann and **H.J. Gao**, “Deformation Gradients for Continuum Mechanical Analysis of Atomistic Simulations,” 2009, *International Journal of Solids and Structures*, Vol. **46**, pp. 238–253. DOI: 10.1016/j.ijsolstr.2008.08.036
- 239) H.M. Yao, S.H. Chen, P.R. Guduru and **H.J. Gao**, “Orientation-Dependent Adhesion Strength of a Rigid Cylinder in Non-Slipping Contact with a Transversely Isotropic Half-Space,” 2009, *International Journal of Solids and Structures*, Vol. **46**, pp. 1167–1175. DOI: 10.1016/j.ijsolstr.2008.10.011
- 240) T.K. Bhandakkar, Y.J. Wei and **H.J. Gao**, “Transient Stress Concentration in Diffusional Creep of a Thin Foil with Heterogeneous Grain Boundary Diffusivity,” 2009, *Mathematics and Mechanics of Solids*, Vol. **14** (1-2), pp. 179-191. DOI: 10.1177/1081286508092610
- 241) Q.H. Cheng, P. Liu, **H.J. Gao** and Y.W. Zhang, "A Computational Modeling for Micropipette-Manipulated Cell Detachment from a Substrate Mediated by Receptor–Ligand Binding,” 2009, *Journal of the Mechanics and Physics of Solids*, Vol. **57**(2), pp. 205–220. DOI: 10.1016/j.jmps.2008.11.003
- 242) Z. Han, W.F. Wu, Y. Li, Y.J. Wei and **H.J. Gao**, “An Instability Index of Shear Band for Plasticity in Metallic Glasses,” 2009, *Acta Materialia*, Vol. **57**, pp. 1367–1372. DOI: 10.1016/j.actamat.2008.11.018
- 243) B. Chen, P.D. Wu and **H.J. Gao**, “Geometry- and Velocity-Constrained Cohesive Zones and Mixed-Mode Fracture/Adhesion Energy of Interfaces with Periodic Cohesive Interactions,” 2009, *Proceedings of the Royal Society A-Mathematical Physical and Engineering Sciences*, Vol. **465**, pp. 1043-1053. DOI: 10.1098/rspa.2008.0373
- 244) T.K. Bhandakkar, E. Chason and **H.J. Gao**, “Formation of Crack-Like Diffusion Wedges and Compressive Stress Evolution during Thin Film Growth with Inhomogeneous Grain Boundary Diffusivity,” *International Journal of Applied Mechanics*, 2009, Vol. **1**(1), pp. 1–19. DOI: 10.1142/S1758825109000071
- 245) L.T. Gao, X.Q. Feng and **H.J. Gao**, “A Phase Field Method for Simulating Morphological Evolution of Vesicles in Electric Fields,” 2009, *Journal of Computational Physics*, Vol. **228**, pp. 4162–4181. DOI: 10.1016/j.jcp.2009.02.034
- 246) B. Chen, P.D. Wu and **H.J. Gao**, “Pretension Generates Strongly Reversible Adhesion of a Spatula Pad on Substrate,” 2009, *Journal of the Royal Society Interface*, Vol. **6** (35), pp. 529-537. DOI: 10.1098/rsif.2008.0322

- 247) B. Chen, P.D. Wu and **H.J. Gao**, “A Characteristic Length for Stress Transfer in the Nanostructure of Biological Composites,” 2009, *Composite Science and Technology*, Vol. **69**, pp. 1160-1164. DOI: 10.1016/j.compscitech.2009.02.012
- 248) L. Sun, Q.H. Cheng, **H.J. Gao** and Y.W. Zhang, “Computational Modeling for Cell Spreading on a Substrate Mediated by Specific Interactions, Long-Range Recruiting Interactions, and Diffusion of Binders,” 2009, *Physical Review E*, Vol. **79**(6), Art. No. 061907. DOI: 10.1103/PhysRevE.79.061907
- 249) S. Kumar, M.A. Haque and **H.J. Gao**, “Notch Insensitive Fracture in Nanoscale Thin Films,” 2009, *Applied Physics Letters*, Vol. **94**(25), Art. No. 253104. DOI: 10.1063/1.3157276
- 250) S.H. Chen, C. Yan, P. Zhang and **H.J. Gao**, “Mechanics of Adhesive Contact on a Power-Law Graded Elastic Half-Space,” 2009, *Journal of the Mechanics and Physics of Solids*, Vol. **57**(9), pp. 1437–1448. DOI: 10.1016/j.jmps.2009.06.006
- 251) Y. Cheng, Q.X. Pei and **H.J. Gao**, “Molecular Dynamics Studies of Competitive Replacement in Peptide–Nanotube Assembly for Control of Drug Release,” 2009, *Nanotechnology*, Vol. **20**, Art. No. 145101. DOI: 10.1088/0957-4484/20/14/145101
- 252) X.Y. Li, Y.J. Wei, W. Yang and **H.J. Gao**, “Competing Grain-Boundary- and Dislocation-Mediated Mechanisms in Plastic Strain Recovery in Nanocrystalline Aluminum,” 2009, *Proceedings of the National Academy of Sciences of USA*, Vol. **106** (38), pp. 16108-16113. DOI: 10.1073/pnas.0901765106
- 253) Y.J. Wei, **H.J. Gao** and A.F. Bower, “Numerical Simulations of Crack Deflection at a Twist-Misoriented Grain Boundary Between Two Ideally Brittle Crystals,” 2009, *Journal of the Mechanics and Physics of Solids*, Vol. **57**(11), pp. 1865–1879. DOI: 10.1016/j.jmps.2009.07.007
- 254) G.K. Xu, Y. Li, B. Li, X.Q. Feng and **H.J. Gao**, “Self-Assembled Lipid Nanostructures Encapsulating Nanoparticles in Aqueous Solution,” 2009, *Soft Matter*, Vol. **5**, pp. 3977–3983. DOI: 10.1039/B906918F
- 255) J.Z. Wang, J. Qian and **H.J. Gao**, “Effects of Capillary Condensation in Adhesion between Rough Surfaces,” 2009, *Langmuir*, Vol. **25**(19), pp. 11727-11731. DOI: 10.1021/la900455k
- 256) X.H. Shi, N.M. Pugno, Y. Cheng and **H.J. Gao**, “Gigahertz Breathing Oscillators Based on Carbon Nanoscrolls,” 2009, *Applied Physics Letters*, Vol. **95**, Art. No. 163113. DOI: 10.1063/1.3253423

- 257) J. Qian, J.Z. Wang, Y. Lin and **H.J. Gao**, “Lifetime and Strength of Periodic Bond Clusters Between Elastic Media Under Inclined Loading,” 2009, *Biophysical Journal*, Vol. **97**(9), pp. 2438–2445. DOI: 10.1016/j.bpj.2009.08.027
- 258) Y. Li, X.Q. Feng, Y.P. Cao and **H.J. Gao**, “Constructing Tensegrity Structures from One-Bar Elementary Cells,” 2010, *Proceedings of the Royal Society A*, Vol. **466**, pp. 45-61. DOI: 10.1098/rspa.2009.0260
- 259) X.H. Shi, Y. Cheng, N.M. Pugno and **H.J. Gao**, “A Translational Nanoactuator Based on Carbon Nanoscrolls on Substrates,” 2010, *Applied Physics Letters*, Vol. **96**(5), Art. No. 053115. DOI: 10.1063/1.3302284
- 260) Y.F. Cheng, Z.H. Jin, Y.W. Zhan and **H.J. Gao**, “On Intrinsic Brittleness and Ductility of Intergranular Fracture along Symmetrical Tilt Grain Boundaries in Copper,” 2010, *Acta Materialia*, Vol. **58**(7), pp. 2293–2299. DOI: 10.1016/j.actamat.2009.11.033
- 261) X.H. Shi, N.M. Pugno and **H.J. Gao**, “Tunable Core Size of Carbon Nanoscrolls,” 2010, *Journal of Computational and Theoretical Nanoscience*, Vol. **7**(3), pp. 517-521. DOI: 10.1166/jctn.2010.1387
- 262) T.K. Bhandakkar, A.C. Chng, W.A. Curtin and **H.J. Gao**, “Dislocation Shielding of a Cohesive Crack,” 2010, *Journal of the Mechanics and Physics of Solids*, Vol. **58**(4), pp. 530–541. DOI: 10.1016/j.jmps.2010.01.008
- 263) Y.J. Wei, A.F. Bower and **H.J. Gao**, “Analytical Model and Molecular Dynamics Simulations of the Size Dependence of Flow Stress in Amorphous Intermetallic Nanowires at Temperatures near the Glass Transition,” 2010, *Physical Review B*, Vol. **81**(12), Art. No. 125402. DOI: 10.1103/PhysRevB.81.125402
- 264) H. Haftbaradaran, **H.J. Gao** and W.A. Curtin, “A Surface Locking Instability for Atomic Intercalation into a Solid Electrode,” 2010, *Applied Physics Letters*, Vol. **96**(9), Art. No. 091909. DOI: 10.1063/1.3330940
- 265) T.K. Bhandakkar and **H.J. Gao**, “Cohesive Modeling of Crack Nucleation under Diffusion Induced Stresses in a Thin Strip: Implications on the Critical Size for Flaw Tolerant Battery Electrodes,” 2010, *International Journal of Solids and Structures*, Vol. **47**(10), pp. 1424–1434. DOI: 10.1016/j.ijsolstr.2010.02.001
- 266) X.H. Shi, Y. Cheng, N.M. Pugno and **H.J. Gao**, “Tunable Water Channels with Carbon Nanoscrolls,” 2010, *Small*, Vol. **6**(6), pp. 739-744. DOI: 10.1002/smll.200902286
- 267) B. Chen and H.J. Gao, “An Alternative Explanation of the Effect of Humidity in Gecko Adhesion: Stiffness Reduction Enhances Adhesion on a Rough Surface,” 2010, *International Journal of Applied Mechanics*, Vol. **2**(1), pp. 1–9. DOI: 10.1142/S1758825110000433

- 268) Y.W. Su, B.H. Ji, K. Zhang, **H.J. Gao**, Y.G. Huang and K. Hwang, “Nano to Micro Structural Hierarchy is Crucial for Stable Superhydrophobic and Water-Repellent Surfaces,” 2010, *Langmuir*, Vol. **26**(7), pp 4984-4989. DOI: 10.1021/la9036452
- 269) X.Y. Li, Y.J. Wei, L. Lu, K. Lu and **H.J. Gao**, “Dislocation Nucleation Governed Softening and Maximum Strength in Nanotwinned Metals,” 2010, *Nature*, Vol. **464**, pp. 877-881. DOI: 10.1038/nature08929
- 270) B.H. Ji and **H.J. Gao**, “Mechanical Principles of Biological Nanocomposites,” 2010, *Annual Review of Materials Research*, Vol. **40**, pp. 77-100. DOI: 10.1146/annurev-matsci-070909-104424
- 271) Y. Li, X.Q. Feng, Y.P. Cao and **H.J. Gao**, “A Monte Carlo Form-Finding Method for Large Scale Regular and Irregular Tensegrity Structures,” 2010, *International Journal of Solids and Structures*, Vol. **47**(14), pp. 1888–1898. DOI: 10.1016/j.ijsolstr.2010.03.026
- 272) B. Chen and **H.J. Gao**, “Mechanical Principle of Enhancing Cell-Substrate Adhesion via Pretension in the Cytoskeleton,” 2010, *Biophysical Journal*, Vol. **98**(10), pp. 2154–2162. DOI: 10.1016/j.bpj.2010.02.007
- 273) H. Pan, Y.W. Zhang, V.B. Shenoy and **H.J. Gao**, “Controllable Magnetic Property of SiC by Anion-Cation Codoping,” 2010, *Applied Physics Letters*, Vol. **96**(19), Art. No. 192510. DOI: 10.1063/1.3428428
- 274) Y.W. Gao, J.Z. Wang and **H.J. Gao**, “Persistence Length of Microtubules Based on a Continuum Anisotropic Shell Model,” 2010, *Journal of Computational and Theoretical Nanoscience*, Vol. **7**, pp. 1227–1237. DOI: 10.1166/jctn.2010.1476
- 275) H.M. Yao and **H.J. Gao**, “Gibson-Soil-Like Materials Achieve Flaw Tolerant Adhesion,” 2010, *Journal of Computational and Theoretical Nanoscience*, Vol. **7**(7), pp. 1299–1305. DOI: 10.1166/jctn.2010.1484
- 276) T.K. Bhandakkar, E. Chason and **H.J. Gao**, “Analytical Model of Transient Compressive Stress Evolution During Growth of High Diffusivity Thin Films on Substrates,” 2010, *Philosophical Magazine*, Vol. **90** (22), pp. 3037–3048. DOI: 10.1080/14786431003773007
- 277) J. Qian and **H.J. Gao**, “Soft Matrices Suppress Cooperative Behaviors among Receptor-Ligand Bonds in Cell Adhesion,” 2010, *PLoS ONE*, Vol. **5**(8), e12342. DOI: 10.1371/journal.pone.0012342
- 278) Y. Cheng, D.C. Li, B.H. Ji, X.H. Shi and **H.J. Gao**, “Structure-Based Design of Carbon Nanotubes as HIV-1 Protease Inhibitors: Atomistic and Coarse-Grained

- Simulations,” 2010, *Journal of Molecular Graphics and Modeling*, Vol. **29**, pp. 171–177. DOI: 10.1016/j.jmngm.2010.05.009
- 279) J.Z. Wang and **H.J. Gao**, “Size and Shape Dependent Steady-State Pull-Off Force in Molecular Adhesion Between Soft Elastic Materials,” 2010, *International Journal of Fracture*, Vol. **166**(1-2), 13–19. DOI: 10.1007/s10704-010-9463-z
- 280) Z.Q. Zhang, B. Liu, Y.G. Huang, K.C. Hwang, and **H.J. Gao**, “Mechanical Properties of Unidirectional Nanocomposites with Non-uniformly or Randomly Staggered Platelet Distribution,” 2010, *Journal of the Mechanics and Physics of Solids*, Vol. **58**(10), pp. 1646–1660. DOI: 10.1016/j.jmps.2010.07.004
- 281) Z. Han, Y. Li and **H.J. Gao**, “Effect of Frame Stiffness on the Deformation Behavior of Bulk Metallic Glass,” 2010, *Journal of Materials Research*, Vol. **25**(10), 1958–1962. DOI: 10.1557/JMR.2010.0256
- 282) S.H. Chen and **H.J. Gao**, “Dynamic Behaviors of Mode III Interfacial Crack under a Constant Loading Rate,” 2010, *Continuum Mechanics and Thermodynamics*, Vol. **22**(6-8), pp. 515-530. DOI: 10.1007/s00161-010-0141-1
- 283) J. Song, W.A. Curtin, T.K. Bhandakkar and **H.J. Gao**, “Dislocation Shielding and Crack Tip Decohesion at the Atomic Scale,” 2010, *Acta Materialia*, Vol. **58**(18), pp. 5933-5940. DOI: 10.1016/j.actamat.2010.07.009
- 284) X.H. Shi, N.M. Pugno and **H.J. Gao**, “Mechanics of Carbon Nanoscrolls: A Review,” 2010, *Acta Mechanica Solida Sinica*, Vol. **23**(6), pp. 484-497. DOI: 10.1016/S0894-9166(11)60002-5
- 285) H. Pan, Y.W. Zhang, V.B. Shenoy and **H.J. Gao**, “Metal-Functionalized Single-Walled Graphitic Carbon Nitride Nanotubes: A First-Principles Study on Magnetic Property,” 2011, *Nanoscale Research Letters*, Vol. **6**(1), Art. No. 97. DOI: 10.1186/1556-276X-6-97
- 286) H. Haftbaradaran, J. Song, W.A. Curtin and **H.J. Gao**, “Continuum and Atomistic Models of Strongly Coupled Diffusion, Stress, and Solute Concentration,” 2011, *Journal of Power Sources*, Vol. **196**(1), pp. 361-370. DOI: 10.1016/j.jpowsour.2010.06.080
- 287) X.C. Xiao, P. Liu, M.W. Verbrugge, H. Haftbaradaran and **H.J. Gao**, “Improved Cycling Stability of Silicon Thin Film Electrodes through Patterning for High Energy Density Lithium Batteries,” 2011, *Journal of Power Sources*, Vol. **196**(3), pp. 1409-1416. DOI: 10.1016/j.jpowsour.2010.08.058
- 288) J.Z. Wang and **H.J. Gao**, “On Hyperelastic Stress-Strain Law of F-Actin Bundles,” 2011, *Theoretical & Applied Mechanics Letters*, Vol. **1**, 014003. DOI: 10.1063/2.1101403

- 289) B. Li, Y.P. Cao, X.Q. Feng and **H.J. Gao**, "Surface Wrinkling of Mucosa Induced by Volumetric Growth: Theory, Simulation and Experiment," 2011, *Journal of the Mechanics and Physics of Solids*, Vol. **59**, pp. 758–774. DOI: 10.1016/j.jmps.2011.01.010
- 290) Z.Q. Zhang, Y.W. Zhang and **H.J. Gao**, "On Optimal Hierarchy of Load-Bearing Biological Materials," 2011, *Proceedings of the Royal Society B: Biological Sciences*, Vol. **278**, pp. 519-525. DOI: 10.1098/rspb.2010.1093
- 291) J.Z. Wang and **H.J. Gao**, "Brownian Dynamics Simulations of Charged Semiflexible Polymers Confined to Curved Surfaces," *Journal of the Mechanical Behavior of Biomedical Materials*, 2011, Vol. **4**(2), pp. 174-179. DOI: 10.1016/j.jmbbm.2010.11.008
- 292) Y.B. Wang, L.F. Wang, H.J. Joyce, Q.A. Gao, X.Z. Liao, Y.W. Mai, H.H. Tan, J. Zou, S.P. Ringer, **H.J. Gao** and C. Jagadish, "Super Deformability and Young's Modulus of GaAs Nanowires," 2011, *Advanced Materials*, Vol. **23**(11), pp. 1356-1360. DOI: 10.1002/adma.201004122
- 293) Z.Q. Zhang, B. Liu, K.C. Hwang, and **H.J. Gao**, "Surface-Adsorption-Induced Bending Behaviors of Graphene Nanoribbons," 2011, *Applied Physics Letters*, Vol. **98**(12), Art. No. 121909. DOI: 10.1063/1.3569589
- 294) J.F. Waters, **H.J. Gao** and P.R. Guduru, "On Adhesion Enhancement due to Concave Surface Geometries," 2011, *Journal of Adhesion*, Vol. **87**(3), pp. 194-213. DOI: 10.1080/00218464.2011.557325
- 295) L. Sun, Q.H. Cheng, **H.J. Gao** and Y.W. Zhang, "A Nonlinear Characteristic Regime of Biomembrane Force Probe," 2011, *Journal of Biomechanics*, Vol. **44**(4), pp. 662-668. DOI: 10.1016/j.jbiomech.2010.11.005
- 296) H. Pan, Y.W. Zhang, V.B. Shenoy and **H.J. Gao**, "Ab Initio Study on the Size and Chirality Effects on the Encapsulation of Tetrafluorotetracyano-p-quinodimethane inside Carbon Nanotubes," 2011, *Journal of Physical Chemistry C*, Vol. **115**(13), pp. 5280-5285. DOI: 10.1021/jp109566x
- 297) H. Pan, Y.W. Zhang, V.B. Shenoy and **H.J. Gao**, "Ab Initio Study on a Novel Photocatalyst: Functionalized Graphitic Carbon Nitride Nanotube," 2011, *ACS Catalysis*, Vol. **1**(2), pp. 99-104. DOI: 10.1021/cs100045u
- 298) H. Pan, Y.W. Zhang, V.B. Shenoy and **H.J. Gao**, "Effects of H-, N-, and (H, N)-doping on the photocatalytic activity of TiO₂," 2011, *Journal of Physical Chemistry C*, Vol. **115**(24), pp. 12224-12231. DOI: 10.1021/jp202385q
- 299) T.K. Bhandakkar and **H.J. Gao**, "Cohesive Modeling of Crack Nucleation in a Cylindrical Electrode under Axisymmetric Diffusion Induced Stresses," 2011,

- International Journal of Solids and Structures*, Vol. **48**(16-17), pp. 2304-2309. DOI: 10.1016/j.ijsolstr.2011.04.005
- 300) B. Li, Y.P. Cao, X.Q. Feng and **H.J. Gao**, “Surface Wrinkling Patterns on a Core-Shell Soft Sphere,” 2011, *Physical Review Letters*, Vol. **106**, Art. No. 234301. DOI: 10.1103/PhysRevLett.106.234301
- 301) S. Kumar, X.Y. Li, M.A. Haque and **H.J. Gao**, “Is Stress Concentration Relevant for Nanocrystalline Metals?” 2011, *Nano Letters*, Vol. **11**, pp. 2510–2516. DOI: 10.1021/nl201083t
- 302) G.J. Rizza, J. Qian and **H.J. Gao**, “Effects of Contact Surface Shape on Lifetime of Cellular Focal Adhesion,” 2011, *Journal of Mechanics of Materials and Structures*, Vol. **6**(1-4), pp. 495-510. DOI: 10.2140/jomms.2011.6.495
- 303) B. Chen and **H.J. Gao**, "Motor Force Homeostasis in Skeletal Muscle Contraction," 2011, *Biophysical Journal*, Vol. **101**(2), pp. 396-403. DOI: 10.1016/j.bpj.2011.05.061
- 304) P. Murali, T.K. Bhandakkar, W.L. Cheah, M.H. Jhon, **H.J. Gao** and R. Ahluwalia, “Role of Modulus Mismatch on Crack Propagation and Toughness Enhancement in Bioinspired Composites,” 2011, *Physical Review E*, Vol. **84**, Art. No. 015102. DOI: 10.1103/PhysRevE.84.015102
- 305) L.L. Zhu, H. Ruan, X.Y. Li, M. Dao, **H.J. Gao** and J. Lu, “Modeling Grain Size Dependent Optimal Twin Spacing for Achieving Ultimate High Strength and Related High Ductility in Nanotwinned Metals,” 2011, *Acta Materialia*, Vol. **59**, pp. 5544-5557. DOI: 10.1016/j.actamat.2011.05.027
- 306) **H.J. Gao**, J. Qian and B. Chen, “Probing Mechanical Principles of Focal Contacts in Cell–Matrix Adhesion with a Coupled Stochastic–Elastic Modeling Framework,” 2011, *Journal of the Royal Society Interface*, Vol. **8**(62), pp. 1217-1232. DOI: 10.1098/rsif.2011.0157
- 307) X. Yi, X.H. Shi and **H.J. Gao**, “Cellular Uptake of Elastic Nanoparticles,” 2011, *Physical Review Letters*, Vol. **107**(9), Art. No. 098101. DOI: 10.1103/PhysRevLett.107.098101
- 308) X. Guo, F. Jin and **H.J. Gao**, “Mechanics of Non-Slipping Adhesive Contact on a Power-Law Graded Elastic Half-Space,” 2011, *International Journal of Solids and Structures*, Vol. **48** (18), pp. 2565-2575. DOI: 10.1016/j.ijsolstr.2011.05.008
- 309) J. Wang, C.S. Lu, Q. Wang, P. Xiao, F. J. Ke, Y.L. Bai, Y.G. Shen, X.Z. Liao and **H.J. Gao**, “Understanding Large Plastic Deformation of SiC Nanowires at Room Temperature,” 2011, *Europhysics Letters*, Vol. **95**, Art. No. 63003. DOI: 10.1209/0295-5075/95/63003

- 310) Z.R. Guo, T.C. Chang, X.M. Guo and **H.J. Gao**, “Thermal-Induced Edge Barriers and Forces in Interlayer Interaction of Concentric Carbon Nanotubes,” 2011, *Physical Review Letters*, Vol. **107**(10), Art. No. 105502. DOI: 10.1103/PhysRevLett.107.105502
- 311) X.H. Shi, A. von dem Bussche, R.H. Hurt, A.B. Kane and **H.J. Gao**, “Cell Entry of One-Dimensional Nanomaterials Occurs by Tip Recognition and Rotation,” 2011, *Nature Nanotechnology*, Vol. **6**(11), pp. 714–719. DOI: 10.1038/NNANO.2011.151
- 312) P. Murali, T.F. Guo, Y.W. Zhang, R. Narasimhan, Y. Li and **H.J. Gao**, “Atomic Scale Fluctuations Govern Brittle Fracture and Cavitation Behavior in Metallic Glasses,” 2011, *Physical Review Letters*, Vol. **107**(21), Art. No. 215501. DOI: 10.1103/PhysRevLett.107.215501
- 313) X.D. Yang, P.F. He and **H.J. Gao**, "Modeling Frequency- and Temperature-Invariant Dissipative Behaviors of Randomly Entangled Carbon Nanotube Networks under Cyclic Loading," 2011, *Nano Research*, Vol. **4**(12), pp. 1191-1198. DOI: 10.1007/s12274-011-0169-y
- 314) X.H. Shi, N.M Pugno and **H.J. Gao**, “Constitutive Behavior of Pressurized Carbon Nanoscrolls,” 2011, *International Journal of Fracture*, Vol. **171**(2), pp. 163-168. DOI: 10.1007/s10704-010-9545-y
- 315) J. Wang, C.S. Lu, Q. Wang, P. Xiao, F.J. Ke, Y.L. Bai, Y.G. Shen, X.Z. Liao and **H.J. Gao**, “Influence of Microstructures on Mechanical Behaviours of SiC Nanowires: a Molecular Dynamics Study,” 2012, *Nanotechnology*, Vol. **23**(2), Art. No. 025703. DOI: 10.1088/0957-4484/23/2/025703
- 316) S. K. Soni, B.W. Sheldon, X.C. Xiao, M.W. Verbrugge, D. Ahn, H. Haftbaradaran and **H.J. Gao**, “Stress Mitigation during the Lithiation of Patterned Amorphous Si Islands,” 2012, *Journal of the Electrochemical Society*, Vol. **159**(1), pp. A38-A43. DOI: 10.1149/2.048201jes
- 317) Q.H. Cheng, B. Chen, **H.J. Gao** and Y.W. Zhang, “Sliding-Induced Non-Uniform Pretension Governs Robust and Reversible Adhesion: a Revisit of Adhesion Mechanisms of Geckos,” 2012, *Journal of the Royal Society Interface*, Vol. **9**(67), pp. 283-291. DOI: 10.1098/rsif.2011.0254
- 318) B. Chen and **H.J. Gao**, “Are Mammals Ferroelectric?” 2012, *Physics*, Vol. **5**, 19. DOI:10.1103/Physics.5.19
- 319) J.Z. Wang, J. Yao and **H.J. Gao**, “Specific Adhesion of a Soft Elastic Body on a Wavy Surface,” 2012, *Theoretical & Applied Mechanics Letters*, Vol. **2**, Art. No. 014002. DOI: 10.1063/2.1201402

- 320) Z.X. Wu, Y.W. Zhang, M.H. Jhon, **H.J. Gao** and D.J. Srolovitz, “Nanowire Failure: Long = Brittle and Short = Ductile,” 2012, *Nano Letters*, Vol. **12**, pp. 910–914. DOI: dx.doi.org/10.1021/nl203980u
- 321) Z.Q. Zhang, T. Zhang, Y.W. Zhang, K.S. Kim and **H.J. Gao**, “Strain-Controlled Switching of Hierarchically Wrinkled Surfaces between Superhydrophobicity and Superhydrophilicity,” 2012, *Langmuir*, Vol. **28**(5), pp. 2753–2760. DOI: dx.doi.org/10.1021/la203934z
- 322) H. Haftbaradaran, X.C. Xiao, M.W. Verbrugge and **H.J. Gao**, “Method to Deduce the Critical Size for Interfacial Delamination of Patterned Electrode Structures and Application to Lithiation of Thin-Film Silicon Islands,” 2012, *Journal of Power Sources*, Vol. **206**, pp. 357–366. DOI: 10.1016/j.jpowsour.2012.01.097
- 323) L. Sun, Q.H. Cheng, **H.J. Gao** and Y.W. Zhang, “Effect of Loading Conditions on the Dissociation Behavior of Catch Bond Clusters,” 2012, *Journal of the Royal Society Interface*, Vol. **9**(70), pp. 928-937. DOI: 10.1098/rsif.2011.0553
- 324) Z.N. Zhang and **H.J. Gao**, “Simulating Fracture Propagation in Rock and Concrete by an Augmented Virtual Internal Bond Method,” 2012, *International Journal for Numerical and Analytical Methods in Geomechanics*, Vol. **36**, pp. 459–482. DOI: 10.1002/nag.1015
- 325) J.F. Waters, J. Kalow, **H.J. Gao** and P.R. Guduru, “Axisymmetric Adhesive Contact under Equibiaxial Stretching,” 2012, *Journal of Adhesion*, Vol. **88**(2), pp. 134-144. DOI: 10.1080/00218464.2012.648061
- 326) S.W. Kim, X.Y. Li, **H.J. Gao** and S. Kumar, “In situ Observations of Crack Arrest and Bridging by Nanoscale Twins in Copper Thin Films,” 2012, *Acta Materialia*, Vol. **60**, 2959–2972. DOI: 10.1016/j.actamat.2012.02.002
- 327) H. Haftbaradaran and **H.J. Gao**, “Ratcheting of silicon island electrodes on substrate due to cyclic intercalation,” 2012, *Applied Physics Letters*, Vol. **100**(12), Art. No. 121907. DOI: 10.1063/1.3696298
- 328) J. Wang, C.S. Lu, Q. Wang, P. Xiao, F.J. Ke, Y.L. Bai, Y.G. Shen, Y.B. Wang, X.Z. Liao and **H.J. Gao**, “Self-Healing of Fractured One-Dimensional Brittle Nanostructures,” 2012, *EPL*, Vol. **98**, 16010. DOI: 10.1209/0295-5075/98/16010
- 329) H. Haftbaradaran, S.K. Soni, B.W. Sheldon, X.C. Xiao and **H.J. Gao**, “Modified Stoney Equation for Patterned Thin Film Electrodes on Substrates in the Presence of Interfacial Sliding,” 2012, *Journal of Applied Mechanics*, Vol. **79**, Art. No. 031018. DOI: 10.1115/1.4005900

- 330) T. Zhu and **H.J. Gao**, “Plastic Deformation Mechanism in Nanotwinned Metals: An Insight from Molecular Dynamics and Mechanistic Modeling,” 2012, *Scripta Materialia*, Vol. **66**, pp. 843–848. DOI: 10.1016/j.scriptamat.2012.01.031
- 331) X.J. Liu, Y.H. Zhou, **H.J. Gao** and J.Z. Wang, “Anomalous Flexural Behaviors of Microtubules,” 2012, *Biophysical Journal*, Vol. **102**, pp. 1793-1803. DOI: 10.1016/j.bpj.2012.02.046
- 332) B. Li, Y.P. Cao, X.Q. Feng and **H.J. Gao**, “Mechanics of Morphological Instabilities and Surface Wrinkling in Soft Materials: a Review,” 2012, *Soft Matter*, Vol. **8**, pp. 5728-5745. DOI: 10.1039/C2SM00011C
- 333) Y. Cheng, X.H. Shi, N.M. Pugno and **H.J. Gao**, “Substrate-Supported Carbon Nanoscroll Oscillator,” 2012, *Physica E: Low-dimensional Systems and Nanostructures*, Vol. **44**, pp. 955–959. DOI: 10.1016/j.physe.2011.07.016
- 334) X.H. Shi, B. Peng, N.M. Pugno and **H.J. Gao**, “Stretch-Induced Softening of Bending Rigidity in Graphene,” 2012, *Applied Physics Letters* Vol. **100**(19), 191913. DOI: 10.1063/1.4716024
- 335) G.K. Xu, X.Q. Feng, B. Li and **H.J. Gao**, “Controlled Release and Assembly of Drug Nanoparticles via pH Responsive Polymeric Micelles: a Theoretical Study,” 2012, *The Journal of Physical Chemistry B*, Vol. **116**, pp. 6003–6009. DOI: dx.doi.org/10.1021/jp3007816
- 336) W.L. Zhang, J. Qian, H.M. Yao, W.Q. Chen and **H.J. Gao**, “Effects of Functionally Graded Materials on Dynamics of Molecular Bond Clusters,” 2012, *Science China*, Vol. **55** (6), pp. 980–988. DOI: 10.1007/s11433-012-4726-5
- 337) Y. Shao, H.P. Zhao, X.Q. Feng and **H.J. Gao**, “Discontinuous Crack-Bridging Model for Fracture Toughness Analysis of Nacre,” 2012, *Journal of the Mechanics and Physics of Solids*, Vol. **60**(8), pp. 1400–1419. DOI: 10.1016/j.jmps.2012.04.011
- 338) Y.F. Li, X.J. Li, Z.H. Li and **H.J. Gao**, “Surface-Structure-Regulated Penetration of Nanoparticles across a Cell Membrane,” 2012, *Nanoscale*, Vol. **4**, pp. 3768-3775. DOI: 10.1039/c2nr30379e
- 339) Z.R. Guo, T.C. Chang, X.M. Guo and **H.J. Gao**, “Mechanics of Thermophoretic and Thermally Induced Edge Forces in Carbon Nanotube Nanodevices,” 2012, *Journal of the Mechanics and Physics of Solids*, Vol. **60**(9), pp. 1676–1687. DOI: 10.1016/j.jmps.2012.04.013
- 340) P. Murali, Y.W. Zhang and **H.J. Gao**, “On the Characteristic Length Scales Associated with Plastic Deformation in Metallic Glasses,” 2012, *Applied Physics Letters*, Vol. **100**(20), Art. No. 201901. DOI: 10.1063/1.4717744

- 341) D.C. Jang, X.Y. Li, **H.J. Gao** and J.R. Greer, “Deformation Mechanisms in Nanotwinned Metal Nanopillars,” 2012, *Nature Nanotechnology*, Vol. **7**(9), pp. 594–601. DOI: 10.1038/NNANO.2012.116
- 342) X.D. Yang, P.F. He and **H.J. Gao**, “Competing elastic and adhesive interactions govern deformation behaviors of aligned carbon nanotube arrays,” 2012, *Applied Physics Letters*, Vol. **101**(5), Art. No. 053105. DOI: 10.1063/1.4739414
- 343) M.X. Shi, B. Liu, Z.Q. Zhang, Y.W. Zhang and **H.J. Gao**, “Direct Influence of Residual Stress on the Bending Stiffness of Cantilever Beams,” 2012, *Proceedings of the Royal Society A.*, Vol. **468**, pp. 2595-2613. DOI: 10.1098/rspa.2011.0662
- 344) J. Wang, C.S. Lu, Q. Wang, P. Xiao, F.J. Ke, Y.L. Bai, Y.G. Shen, Y.B. Wang, B. Chen, X.Z. Liao and **H.J. Gao**, “Self-Healing in Fractured GaAs Nanowires,” 2012, *Acta Materialia*, Vol. **60**(15), pp. 5593–5600. DOI: 10.1016/j.actamat.2012.07.013
- 345) H.Y. Yuan and **H.J. Gao**, “On the Mechanics of Integrin Clustering during Cell-Substrate Adhesion,” 2012, *Acta Mechanica Solida Sinica*, Vol. **25**(5), pp. 467-472. DOI: 10.1016/S0894-9166(12)60041-X
- 346) J.Z. Wang, L. Li and **H.J. Gao**, “Compressed Wormlike Chain Moving out of Confined Space: A model of DNA Ejection from Bacteriophage,” 2012, *Acta Mechanica Sinica*, Vol. **28**(4), pp. 1219–1226. DOI: 10.1007/s10409-012-0121-8
- 347) T. Zhang, X.Y. Li, S. Kadkhodaei and **H.J. Gao**, “Flaw Insensitive Fracture in Nanocrystalline Graphene,” 2012, *Nano Letters*, Vol. **12**(9), pp. 4605-4610. DOI: dx.doi.org/10.1021/nl301908b
- 348) L.Y. Zhang, Y. Li, Y.P. Cao, X.Q. Feng and **H.J. Gao**, “Self-Equilibrium and Super-Stability of Truncated Regular Polyhedral Tensegrity Structures: a Unified Analytical Solution,” 2012, *Proceedings of the Royal Society A*, Vol. **468**, pp. 3323–3347. DOI: 10.1098/rspa.2012.0260
- 349) B. Chen, R. Kemkemer, M. Deibler, J. Spatz and **H.J. Gao**, “Cyclic Stretch Induces Cell Reorientation on Substrates by Destabilizing Catch Bonds in Focal Adhesions,” 2012, *Plos One*, Vol. **7**(11), e48346. DOI: 10.1371/journal.pone.0048346
- 350) Z.S. You, X.Y. Li, L.J. Gui, Q.H. Lu, T. Zhu, **H.J. Gao** and L. Lu, “Plastic Anisotropy and Associated Deformation Mechanisms in Nanotwinned Metals,” 2013, *Acta Materialia*, Vol. **61**, pp. 217–227. DOI: 10.1016/j.actamat.2012.09.052
- 351) X.Y. Sun, G.K. Xu, X.Y. Li, X.Q. Feng and **H.J. Gao**, “Mechanical Properties and Scaling Laws of Nanoporous Gold,” 2013, *Journal of Applied Physics*, Vol. **113**, Art. No. 023505. DOI: 10.1063/1.4774246

- 352) P. Murali, R. Narasimhan, T.F. Guo, Y.W. Zhang and **H.J. Gao**, “Shear Bands Mediate Cavitation in Brittle Metallic Glasses,” 2013, *Scripta Materialia*, Vol. **68**, pp. 567–570. DOI: 10.1016/j.scriptamat.2012.11.038
- 353) S. Kumar, M.A. Haque and **H.J. Gao**, “Transformation Induced Toughening and Flaw Tolerance in Pure Nanocrystalline Aluminum,” 2013, *International Journal of Plasticity*, Vol. **44**, pp. 121–128. DOI: 10.1016/j.ijplas.2012.12.005
- 354) H.M. Yao, Z.G. Song, Z.P. Xu and **H.J. Gao**, “Cracks Fail to Intensify Stress in Nacreous Composites,” 2013, *Composites Science and Technology*, Vol. **81**, pp. 24–29. DOI: 10.1016/j.compscitech.2013.03.016
- 355) I. Singh, T.F. Guo, P. Murali, R. Narasimhan, Y.W. Zhang and **H.J. Gao**, “Cavitation in Materials with Distributed Weak Zones: Implications on the Origin of Brittle Fracture in Metallic Glasses,” 2013, *Journal of the Mechanics and Physics of Solids*, Vol. **61**(4), pp. 1047-1064. DOI: 10.1016/j.jmps.2012.12.001
- 356) J. Qian, H.P. Liu, Y. Lin, W.Q. Chen and **H.J. Gao**, “A Mechanochemical Model of Cell Reorientation on Substrates under Cyclic Stretch,” 2013, *Plos One*, Vol. **8**(6), e65864. DOI: 10.1371/journal.pone.0065864
- 357) M. Diab, T. Zhang, R.K. Zhao, **H.J. Gao** and K.S. Kim, “Ruga Mechanics of Creasing: from Instantaneous to Setback Creases,” 2013, *Proceedings of the Royal Society of London A*, Vol. **469**, Art. No. 20120753. DOI: 10.1098/rspa.2012.0753
- 358) Z.D. Sha, Q.X. Pei, V. Sorken, P.S. Branicio, Y.W. Zhang and **H.J. Gao**, “On the Notch Sensitivity of CuZr Metallic Glasses,” 2013, *Applied Physics Letters*, Vol. **103**, Art. No. 081903. DOI: 10.1063/1.4819099
- 359) L.Y. Zhang, Y. Li, Y.P. Cao, X.Q. Feng and **H.J. Gao**, "A Numerical Method for Simulating Nonlinear Mechanical Responses of Tensegrity Structures Under Large Deformations," 2013, *Journal of Applied Mechanics*, Vol. **80**, Art. No. 061018. DOI: 10.1115/1.4023977
- 360) H.J. Lei, Z.Q. Zhang, F. Han, B. Liu, Y.W. Zhang and **H.J. Gao**, “Elastic Bounds of Bioinspired Nanocomposites,” 2013, *Journal of Applied Mechanics*, Vol. **80**(6), Art. No. 061018. DOI: 10.1115/1.4023976
- 361) J.L. Wang, Y.J. Wei, X.H. Shi and **H.J. Gao**, "Cellular Entry of Graphene Nanosheets: the Role of Thickness, Oxidization and Surface Adsorption," 2013, *RSC Advances*, Vol. **3**, pp. 15776-15782. DOI: 10.1039/c3ra40392k
- 362) C.J. Huang, Y. Zhang, H.Y. Yuan, **H.J. Gao** and S.L. Zhang, “Role of Nanoparticle Geometry in Endocytosis: Laying Down to Stand Up,” 2013, *Nano Letters*, Vol. **13**(9), pp. 4546-4550. DOI: dx.doi.org/10.1021/nl402628n

- 363) B. Chen, J. Wang, Q. Gao, Y.J. Chen, X.Z. Liao, C.S. Lu, H.H. Tan, Y.W. Mai, J. Zhou, S.P. Ringer, **H.J. Gao** and C. Jagadish, “Strengthening Brittle Semiconductor Nanowires through Stacking Faults: Insights from *in Situ* Mechanical Testing,” 2013, *Nano Letters*, Vol. **13**(9), pp. 4369-4373. DOI: dx.doi.org/10.1021/nl402180k
- 364) Y. Cheng, N.M. Pugno, X.H. Shi, B. Chen and **H.J. Gao**, “Surface Energy-Controlled Self-Collapse of Carbon Nanotube Bundles With Large and Reversible Volumetric Deformation,” 2013, *Journal of Applied Mechanics*, Vol. **80**(7), Art. No. 040902. DOI: 10.1115/1.4024174
- 365) Y.F. Li, H.Y. Yuan, A.von dem Bussche, M. Creighton, R.H. Hurt, A.B. Kane and **H.J. Gao**, “Graphene Microsheets Enter Cells through Spontaneous Membrane Penetration at Edge Asperities and Corner Sites,” 2013, *Proceedings of the National Academy of Sciences of USA*, Vol. **110**(30), pp. 12295–12300. DOI: 10.1073/pnas.1222276110
- 366) H. Haftbaradaran, X.C. Xiao and **H.J. Gao**, “Critical Film Thickness for Fracture in Thin-Film Electrodes on Substrates in the Presence of Interfacial Sliding,” Modeling and Simulation in Materials Science and Engineering, 2013, Vol. **21**, Art. No. 074008. DOI: 10.1088/0965-0393/21/7/074008
- 367) M.E. Stournara, X.C. Xiao, Y. Qi, P. Johari, P. Lu, B.W. Sheldon, **H.J. Gao** and V.B. Shenoy, “Li Segregation Induces Structure and Strength Changes at the Amorphous Si/Cu Interface,” 2013, *Nano Letters*, Vol. **13**(10), pp. 4759-4768. DOI: dx.doi.org/10.1021/nl402353k
- 368) W.L. Zhang, Y. Lin, J. Qian, W.Q. Chen and **H.J. Gao**, “Tuning Molecular Adhesion via Material Anisotropy,” 2013, *Advanced Functional Materials*, Vol. **23**, pp. 4729–4738. DOI: 10.1002/adfm.201300069
- 369) L. Chen, S.H. Chen and **H.J. Gao**, “Flaw Tolerance in a Viscoelastic Strip,” 2013, *Journal of Applied Mechanics*, Vol. **80**(4), Art. No. 041014. DOI: 10.1115/1.4007864
- 370) **H.J. Gao**, “Probing Mechanical Principles of Cell-Nanomaterial Interactions,” 2014, *Journal of the Mechanics and Physics of Solids*, Vol. **62**(1), pp. 312–339. DOI: 10.1016/j.jmps.2013.08.018
- 371) T. Zhang, Z.Q. Zhang, K.S. Kim and **H.J. Gao**, “An Accordion Model Integrating Self-Cleaning, Strong Attachment and Easy Detachment Functionalities of Gecko Adhesion,” 2014, *Journal of Adhesion Science and Technology*, Vol. **28**(3-4), pp. 226-239. DOI: 10.1080/01694243.2012.691788
- 372) I. Ryu, S.W. Lee, **H.J. Gao**, Y. Cui and W.D. Nix, “Microscopic Model for Fracture of Crystalline Si Nanopillars during Lithiation,” 2014, *Journal of Power Sources*, Vol. **255**, pp. 274-282. DOI: 10.1016/j.jpowsour.2013.12.137

- 373) X. Yi, X.H. Shi and **H.J. Gao**, “A Universal Law for Cell Uptake of One-Dimensional Nanomaterials,” 2014, *Nano Letters*, Vol. **14**(2), pp. 1049–1055. DOI: dx.doi.org/10.1021/nl404727m
- 374) Y.J. Wei, Y.Q. Li, L.C. Zhu, Y. Liu, X.Q. Lei, G. Wang, Y.X. Wu, Z.L. Mi, J.B. Liu, H.T. Wang and **H.J. Gao**, “Evading the Strength-Ductility Trade-off Dilemma in Steel through Gradient Hierarchical Nanotwins,” 2014, *Nature Communications*, Vol. **5**, Art. No. 3580. DOI: 10.1038/ncomms4580
- 375) X.H. Shi, Q.F. Yin, N.M. Pugno and **H.J. Gao**, “Tunable Mechanical Behavior of Carbon Nanoscroll Crystals Under Uniaxial Lateral Compression,” 2014, *Journal of Applied Mechanics*, Vol. **81**(2), Art. No. 021014. DOI: 10.1115/1.4024418
- 376) T. Zhang, X.Y. Li and **H.J. Gao**, “Defects Controlled Wrinkling and Topological Design in Graphene,” 2014, *Journal of the Mechanics and Physics of Solids*, Vol. **67**, pp. 2–13. DOI: 10.1016/j.jmps.2014.02.005
- 377) G. Bao, Y. Bazilevs, J.-H. Chung, P. Decuzzi, H.D. Espinosa, M. Ferrari, **H.J. Gao**, S.S. Hossain, T.J.R. Hughes, R.D. Kamm, W.K. Liu, A. Marsden and B. Schrefler, “USNCTAM Perspectives on Mechanics in Medicine,” 2014, *Journal of the Royal Society Interface*, Vol. **11**, Art. No. 20140301. DOI: 10.1098/rsif.2014.0301
- 378) X. Yi and **H.J. Gao**, “Phase Diagrams and Morphological Evolution in Wrapping of Rod-Shaped Elastic Nanoparticles by Cell Membrane: A Two-Dimensional Study,” 2014, *Physical Review E*, Vol. **89**, Art. No. 062712. DOI: 10.1103/PhysRevE.89.062712
- 379) S.J. He, Y.W. Su, B.H. Ji and **H.J. Gao**, “Some Basic Questions on Mechanosensing in Cell-Substrate Interaction,” 2014, *Journal of the Mechanics and Physics of Solids*, Vol. **70**, pp. 116–135. DOI: 10.1016/j.jmps.2014.05.016
- 380) Z.Q. Zhang, B. Liu, Y.W. Zhang, K.C. Hwang and **H.J. Gao**, “Ultra-Strong Collagen-Mimic Carbon Nanotube Bundles,” 2014, *Carbon*, Vol. **77**, pp. 1040-1053. DOI: 10.1016/j.carbon.2014.06.020
- 381) T.H. Hui, Z. L. Zhou, J. Qian, Y. Lin, A.H.W. Ngan and **H.J. Gao**, “Volumetric Deformation of Live Cells Induced by Pressure-Activated Cross-Membrane Ion Transport,” 2014, *Physical Review Letters*, Vol. **113**, Art. No. 118101. DOI: 10.1103/PhysRevLett.113.118101
- 382) R.H. Zhou and **H.J. Gao**, “Cytotoxicity of Graphene: Recent Advances and Future Perspective,” 2014, *WIREs Nanomed Nanobiotechnology*. Vol. **6**, pp. 452–474. DOI: 10.1002/wnan.1277
- 383) A. Pena-Francesch, B. Akgun, A. Miserez, W.P. Zhu, **H.J. Gao** and M.C. Demirel, “Pressure Sensitive Adhesion of an Elastomeric Protein Complex Extracted From

- Squid Ring Teeth,” 2014, *Advanced Functional Materials*, Vol. **24**, pp. 6227–6233. DOI: 10.1002/adfm.201401534
- 384) H.F. Zhou, X.Y. Li, S.X. Qu, W. Yang and **H.J. Gao**, “A Jogged Dislocation Governed Strengthening Mechanism in Nanotwinned Metals,” 2014, *Nano Letters*, Vol. **14**(9), pp 5075–5080. DOI: 10.1021/nl501755q
- 385) L. Chen, S.H. Chen and **H.J. Gao**, “Biomimetic Study of Rolling Transport through Smooth Muscle Contraction,” 2014, *Colloids and Surfaces B-Biointerfaces*, Vol. **123**, pp. 49-52. DOI: 10.1016/j.colsurfb.2014.08.014
- 386) T. Zhang, X.Y. Li and **H.J. Gao**, “Designing Graphene Structures with Controlled Distributions of Topological Defects: a Case Study of Toughness Enhancement in Graphene Ruga,” 2014, *Extreme Mechanics Letters*, Vol. **1**, pp. 3–8. DOI: 10.1016/j.eml.2014.12.007
- 387) X. Yi and **H.J. Gao**, “Cell Membrane Wrapping of a Spherical Thin Elastic Shell,” 2015, *Soft Matter*, Vol. **11**(6), pp. 1107–1115. DOI: 10.1039/C4SM02427C
- 388) T.C. Chang, H.W. Zhang, Z.R. Guo, X.M. Guo and **H.J. Gao**, “Nanoscale Directional Motion towards Regions of Stiffness,” 2015, *Physical Review Letters*, Vol. **114**(1), Art. No. 015504. DOI: 10.1103/PhysRevLett.114.015504
- 389) Q.Q. Qin, S. Yin, G.M. Cheng, X.Y. Li, T.-H. Chang, G. Richter, Y. Zhu and **H.J. Gao**, “Recoverable Plasticity in Penta-Twinned Metallic Nanowires Governed by Dislocation Nucleation and Retraction,” 2015, *Nature Communications*, Vol. **6**, Art. No. 5983. DOI: 10.1038/ncomms6983
- 390) X. Yi and **H.J. Gao**, “Cell interaction with Graphene Microsheets: Near-Orthogonal Cutting versus Parallel Attachment,” 2015, *Nanoscale*, Vol. **7**, pp. 5457–5467. DOI: 10.1039/c4nr06170e
- 391) X.C. Xiao, W.D. Zhou, Y.N. Kim, I. Ryu, M. Gu, C.M. Wang, G. Liu, Z.Y. Liu and **H.J. Gao**, “Regulated Breathing Effect of Silicon Negative Electrode for Dramatically Enhanced Performance of Li-Ion Battery,” 2015, *Advanced Functional Materials*, Vol. **25**, pp. 1426–1433. DOI: 10.1002/adfm.201403629
- 392) T. Zhang and **H.J. Gao**, “Toughening Graphene With Topological Defects: A Perspective,” 2015, *Journal of Applied Mechanics*, Vol. **82**(5), Art. No. 051001. DOI: 10.1115/1.4030052
- 393) R. Rangarajan and **H.J. Gao**, “A Finite Element Method to Compute Three-Dimensional Equilibrium Configurations of Fluid Membranes: Optimal Parameterization, Variational Formulation and Applications,” 2015, *Journal of Computational Physics*, Vol. **297**, pp. 266–294. DOI: 10.1016/j.jcp.2015.05.001

- 394) H.F. Zhou and **H.J. Gao**, “A Plastic Deformation Mechanism by Necklace Dislocations Near Crack-like Defects in Nanotwinned Metals,” 2015, *Journal of Applied Mechanics*, Vol. **82**(7), Art. No. 071015. DOI: 10.1115/1.4030417
- 395) I. Ryu, W. Cai, W.D. Nix and **H.J. Gao**, “Stochastic Behaviors in Plastic Deformation of Face-Centered Cubic Micropillars Governed by Surface Nucleation and Truncated Source Operation,” 2015, *Acta Materialia*, Vol. **95**, pp. 176–183. DOI: 10.1016/j.actamat.2015.05.032
- 396) X.Y. Li and **H.J. Gao**, “Atomistic Modelling of Deformation and Failure Mechanisms in Nanostructured Materials,” 2015, *National Science Review*, Vol. **2**, pp. 133–136. DOI: 10.1093/nsr/nwu049
- 397) C. Liu, Z.L. Du, Z. Sun, **H.J. Gao** and X. Guo, “Frequency-Preserved Acoustic Diode Model with High Forward-Power-Transmission Rate,” 2015, *Physical Review Applied*, Vol. **3**, Art. No. 064014. DOI: 10.1103/PhysRevApplied.3.064014
- 398) B. Chen, B.H. Ji and **H.J. Gao**, “Modeling Active Mechanosensing in Cell–Matrix Interactions,” 2015, *Annual Review of Biophysics*, Vol. **44**, pp. 1–32. DOI: 10.1146/annurev-biophys-051013-023102
- 399) S.W. Lee, H.W. Lee, I. Ryu, W.D. Nix, **H.J. Gao** and Y. Cui, “Kinetics and Fracture Resistance of Lithiated Silicon Nanostructure Pairs Controlled by Their Mechanical Interaction,” 2015, *Nature Communications*, Vol. **6**, Art. No. 7533. DOI: 10.1038/ncomms8533
- 400) Z.L. Zhao, H.P. Zhao, B.W. Li, B.D. Nie, X.Q. Feng and **H.J. Gao**, “Biomechanical Tactics of Chiral Growth in Emergent Aquatic Macrophytes,” 2015, *Scientific Reports*, Vol. **5**, Art. No. 12610. DOI: 10.1038/srep12610
- 401) G.M. Cheng, C.Y. Miao, Q.Q. Qin, J. Li, F. Xu, H. Haftbaradaran, E.C. Dickey, **H.J. Gao** and Y. Zhu, “Large Anelasticity and Associated Energy Dissipation in Single-Crystalline Nanowires,” 2015, *Nature Nanotechnology*, Vol. **10**, pp. 687–691. DOI: 10.1038/NNANO.2015.135
- 402) Y. Zhao, X. Han, G.Y. Li, C.H. Lu, Y.P. Cao, X.Q. Feng and **H.J. Gao**, “Effect of Lateral Dimension on the Surface Wrinkling of a Thin Film on Compliant Substrate Induced by Differential Growth/Swelling,” 2015, *Journal of the Mechanics and Physics of Solids*, Vol. **83**(10), pp. 129–145. DOI: 10.1016/j.jmps.2015.06.003
- 403) X. Su, T. Zhang, X. Liang, **H.J. Gao**, B.W. Sheldon, “Employing Nanoscale Surface Morphologies to Improve Interfacial Adhesion between Solid Electrolytes and Li Ion Battery Cathodes,” 2015, *Acta Materialia*, Vol. **98**, pp. 175–181. DOI: 10.1016/j.actamat.2015.06.047

- 404) J. Pan, H.F. Zhou, Z.T. Wang, Y. Li and **H.J. Gao**, “Origin of Anomalous Inverse Notch Effect in Bulk Metallic Glasses,” 2015, *Journal of the Mechanics and Physics of Solids*, Vol. **84**(11), pp. 85-94. DOI: 10.1016/j.jmps.2015.07.006
- 405) B. Chen, X. Chen and **H.J. Gao**, “Dynamics of Cellular Reorientation on a Substrate under Biaxial Cyclic Stretches,” 2015, *Nano Letters*, Vol. **15**(8), pp. 5525–5529. DOI: 10.1021/acs.nanolett.5b02095
- 406) J.X. Li, H.W. Zhang, Z.R. Guo, T.C. Chang and **H.J. Gao**, “Edge Forces in Contacting Graphene Layers,” 2015, *Journal of Applied Mechanics*, Vol. **82**, Art. No. 101011 DOI: 10.1115/1.4031085
- 407) H.F. Zhou, X.Y. Li, Y. Wang, Z.S. Liu, W. Yang and **H.J. Gao**, "Torsional Detwinning Domino in Nanotwinned One-Dimensional Nanostructures," 2015, *Nano Letters*, Vol. **15**(9), pp. 6082–6087. DOI: 10.1021/acs.nanolett.5b02330
- 408) S.L. Zhang, **H.J. Gao** and G. Bao, “Physical Principles of Nanoparticle Cellular Endocytosis,” 2015, *ACS Nano*, Vol. **9**(9), pp. 8655–8671. DOI: 10.1021/acsnano.5b03184
- 409) R.K. Zhao, T. Zhang, M. Diab, **H.J. Gao** and K.S. Kim, “The Primary Bilayer Ruga Phase Diagram I: Localizations in Ruga Evolution,” 2015, *Extreme Mechanics Letters*, Vol. **4**, pp. 76–82. DOI: 10.1016/j.eml.2015.04.006
- 410) Z.D. Sha, S.X. Qu, Z.S. Liu, T.J. Wang and **H.J. Gao**, “Cyclic Deformation in Metallic Glasses,” 2015, *Nano Letters*, Vol. **15** (10), pp. 7010-7015 DOI: 10.1021/acs.nanolett.5b03045
- 411) B. Ding, X.Y. Li, X. Zhang, H. Wu , Z.P. Xu and **H.J. Gao**, “Brittle Versus Ductile Fracture Mechanism Transition in Amorphous Lithiated Silicon: from Intrinsic Nanoscale Cavitation to Shear Banding,” 2015, *Nano Energy*, Vol. **18**, pp. 89–96 DOI: 10.1016/j.nanoen.2015.10.002
- 412) T. Zhang, X.Y. Li and **H.J. Gao**, “Fracture of Graphene: a Review,” 2015, *International Journal of Fracture*, Vol. **196**(1), pp. 1-31. DOI: 10.1007/s10704-015-0039-9
- 413) I. Ryu, W. Cai, W.D. Nix and **H.J. Gao**, “Anisotropic Size-Dependent Plasticity in Face-Centered Cubic Micropillars Under Torsion,” 2016, *JOM*, Vol. **68**(1), pp. 253-260. DOI: 10.1007/s11837-015-1692-1
- 414) J.W. Wang, B. Li, Y.P. Cao, X.Q. Feng and **H.J. Gao**, “Wrinkling Micropatterns Regulated by a Hard Skin Layer with a Periodic Stiffness Distribution on a Soft Material,” 2016, *Applied Physics Letters*, Vol. **108**, Art. No. 021903. DOI: 10.1063/1.4939741

- 415) S.Y. Kim, A. Ostadhosseini, A.C.T. van Duin, X.C. Xiao, **H.J. Gao** and Y. Qi, “Self-Generated Concentration and Modulus Gradient Coating Design to Protect Si Nano-Wire Electrodes During Lithiation,” 2016, *Physical Chemistry Chemical Physics*, Vol. **18**, pp. 3706-3715. DOI: 10.1039/c5cp07219k
- 416) Y.A. Shin, S. Yin, X.Y. Li, S.B. Lee, S.M. Moon, J.W. Jeong, M.H. Kwon, S.J. Yoo, Y.M. Kim, T. Zhang, **H.J. Gao** and S.H. Oh, “Nanotwin-Governed Toughening Mechanism in Hierarchically Structured Biological Materials,” 2016, *Nature Communications*, Vol. **7**, Art. No. 10772. DOI: 10.1038/ncomms10772
- 417) Z.W. Ma, J.B. Liu, G. Wang, H.T. Wang, Y.J. Wei and **H.J. Gao**, “Strength Gradient Enhances Fatigue Resistance of Steels,” 2016, *Scientific Report*, Vol. **6**, Art. No. 22156. DOI: 10.1038/srep22156
- 418) M. Creighton, W.P. Zhu, F. Van Krieken, R. Petteruti, **H.J. Gao** and R.H. Hurt, “Three-Dimensional Graphene-Based Microbarriers for Controlling Release and Reactivity in Colloidal Liquid Phases”, 2016, *ACS Nano*, Vol. **10**(2), pp. 2268–2276. DOI: 10.1021/acsnano.5b06963
- 419) L.Y. Zhang, C. Zhang, X.Q. Feng and **H.J. Gao**, “Snapping Instability in Prismatic Tensegrities under Torsion,” 2016, *Applied Mathematics and Mechanics*, Vol. **37**(3), pp. 275–288. DOI: 10.1007/s10483-016-2040-6
- 420) X.Y. Li and **H.J. Gao**, “Mechanical Metamaterials - Smaller and Stronger,” 2016, *Nature Materials*, Vol. **15**, pp. 373–374. DOI: 10.1038/nmat4591
- 421) Z.Y. Wang, W.P. Zhu, Y. Qiu, X. Yi, A. von dem Bussche, A. Kane, **H.J. Gao**, K. Koski and R. Hurt, “Biological and Environmental Interactions of Emerging Two-Dimensional Nanomaterials,” 2016, *Chemical Society Reviews*, Vol. **45**, pp. 1750-1780. DOI: 10.1039/c5cs00914f
- 422) X.Y. Li, M. Dao, C. Eberl, A.M. Hodge and **H.J. Gao**, “Fracture, Fatigue, and Creep of Nanotwinned Metals,” 2016, *MRS Bulletin*, Vol. **41**, pp. 298-304. DOI: 10.1557/mrs.2016.65
- 423) G.K. Xu, Z.S. Liu, X.Q. Feng and **H.J. Gao**, “Tension-Compression Asymmetry in the Binding Affinity of Membrane-Anchored Receptors and Ligands,” 2016, *Physical Review E*, Vol. **93**, Art. No. 032411. DOI: 10.1103/PhysRevE.93.032411
- 424) S.L. Xue, B. Li, X.Q. Feng and H.J. Gao, “Biochemomechanical Poroelastic Theory of Avascular Tumor Growth,” 2016, *Journal of the Mechanics and Physics of Solids*, Vol. **94**, pp. 409–432. DOI: 10.1016/j.jmps.2016.05.011
- 425) G.K. Xu, B. Li, X.Q. Feng and **H.J. Gao**, “A Tensegrity Model of Cell Reorientation on Cyclically Stretched Substrates,” 2016, *Biophysical Journal*, Vol. **111**, pp. 1478–1486. DOI: 10.1016/j.bpj.2016.08.036

- 426) J.T. Leng, Z.R. Guo, H.W. Zhang, T.C. Chang, X.M. Guo and **H.J. Gao**, “Negative Thermophoresis in Concentric Carbon Nanotube Nanodevices,” 2016, *Nano Letters*, Vol. **16**(10), pp. 6396–6402. DOI: 10.1021/acs.nanolett.6b02815
- 427) Z. Zeng, X.Y. Li, D.S. Xu, L. Lu, **H.J. Gao** and T. Zhu, “Gradient Plasticity in Gradient Nano-Grained Metals,” 2016, *Extreme Mechanics Letters*, 2016, Vol. **8**, pp. 213–219 DOI: 10.1016/j.eml.2015.12.005
- 428) W.P. Zhu, A. von dem Bussche, X. Yi, Y. Qiu, Z.Y. Wang, P. Weston, R.H. Hurt, A.B. Kane and **H.J. Gao**, “Nanomechanical Mechanism for Lipid Bilayer Damage Induced by Carbon Nanotubes Confined in Intracellular Vesicles,” 2016, *Proceedings of the National Academy of Sciences of USA*, Vol. **113**(44), pp. 12374–12379. DOI: 10.1073/pnas.1605030113
- 429) M.R. Yu, J.L. Wang, Y.W. Yang, C.L. Zhu, Q. Su, S.Y. Guo, J.S. Sun, Y. Gan, X.H. Shi, **H.J. Gao**, “Rotation-Facilitated Rapid Transport of Nanorods in Mucosal Tissues,” 2016, *Nano Letters*, 2016, Vol. **16**(11), pp. 7176–7182. DOI:10.1021/acs.nanolett.6b03515
- 430) X. Yi and **H.J. Gao**, “Incorporation of Soft Particles into Lipid Vesicles: Effects of Particle Size and Elasticity,” 2016, *Langmuir*, Vol. **32**(49), pp 13252–13260. DOI: 10.1021/acs.langmuir.6b03184
- 431) J.L. Lang, B. Ding, T. Zhu, H.X. Su, H. Luo, L.H. Qi, K. Liu, K. Wang, N. Hussain, C.S. Zhao, X.Y. Li, **H.J. Gao** and H. Wu, “Cycling of a Lithium-Ion Battery with a Silicon Anode Drives Large Mechanical Actuation,” 2017, *Advanced Materials*, Vol. **28**, 10236–10243. DOI: 10.1002/adma.201603061
- 432) P. Wang, S.F. Xu, J.B. Liu, X.Y. Li, Y.J. Wei, H.T. Wang, **H.J. Gao** and W. Yang, “Atomistic Simulation for Deforming Complex Alloys with Application toward TWIP Steel and Associated Physical Insights,” 2017, *Journal of the Mechanics and Physics of Solids*, Vol. **98**(1), pp. 290-308. DOI: 10.1016/j.jmps.2016.09.008
- 433) W. Chen, H.F. Zhou, Z. Liu, J. Ketkaew, N. Li, J. Yurko, N. Hutchinson, **H.J. Gao** and J. Schroers, “Processing Effects on Fracture Toughness of Metallic Glasses,” 2017, *Scripta Materialia*, Vol. **130**, pp. 152–156. DOI: 10.1016/j.scriptamat.2016.11.011
- 434) X. Yi and **H.J. Gao**, “Kinetics of Receptor-mediated Endocytosis of Elastic Nanoparticles,” 2017, *Nanoscale*, Vol. **9**(1), pp. 454-463. DOI: 10.1039/C6NR07179A
- 435) D. Akinwande, C.J. Brennan, J.S. Bunch, P. Egberts, J.R. Felts, **H.J. Gao**, R. Huang, J.S. Kim, T. Li, Y. Li, K.M. Liechti, N.S. Lu, H.S. Park, E.J. Reed, P. Wang, B.I. Yakobson, T. Zhang, Y.W. Zhang, Y. Zhou, Y. Zhu, “A Review on Mechanics and Mechanical Properties of 2D Materials - Graphene and Beyond,” 2017, *Extreme Mechanics Letters*, Vol. **13**, pp. 42–72. DOI: 10.1016/j.eml.2017.01.008

- 436) J. Qian , J. Lin, G.K. Xu, Y. Lin and **H.J. Gao**, “Thermally Assisted Peeling of an Elastic Strip in Adhesion with a Substrate via Molecular Bonds,” 2017, *Journal of the Mechanics and Physics of Solids*, Vol. **101**, pp. 197–208. DOI: 10.1016/j.jmps.2017.01.007
- 437) Y.M. Chen, J.C. Dong, L. Qiu, X.Y. Li, Q.Q. Li, H.T. Wang, S.J. Liang, H.M. Yao, H.T. Huang, **H.J. Gao**, J.K. Kim, F. Ding, and L.M. Zhou, "A Catalytic Etching-Wetting-Dewetting Mechanism in the Formation of Hollow Graphitic Carbon Fiber," 2017, *Chem*, Vol. **2**, pp. 299–310. DOI: 10.1016/j.chempr.2017.01.005
- 438) X.Y. Li, S. Yin, S.H. Oh and **H.J. Gao**, “Hardening and Toughening Mechanisms in Nanotwinned Ceramics,” 2017, *Scripta Materialia*, Vol. **133**, pp. 105–112. DOI: 10.1016/j.scriptamat.2017.02.003
- 439) Z.R. Guo, T.C. Chang, X.M. Guo and **H.J. Gao**, “Gas-Like Adhesion of Two Dimensional Materials onto Solid Surfaces,” 2017, *Scientific Reports*, Vol. **7**, Art. No. 159. DOI: 10.1038/s41598-017-00184-x
- 440) S.L. Xue, B. Li, X.Q. Feng and **H.J. Gao**, “A Non-Equilibrium Thermodynamic Model for Tumor Extracellular Matrix with Enzymatic Degradation,” 2017, *Journal of the Mechanics and Physics of Solids*, Vol. **104**, pp. 32-56. DOI: 10.1016/j.jmps.2017.04.002
- 441) Z.D. Sha, W.H. Wong, Q.X. Pei, P.S. Branicio, Z.S. Liu, T.J. Wang, T.F. Guo and **H.J. Gao**, “Atomistic Origin of Size Effects in Fatigue Behavior of Metallic Glasses,” 2017, *Journal of the Mechanics and Physics of Solids*, Vol. **104**, pp. 84–95. DOI: 10.1016/j.jmps.2017.04.005
- 442) H.L. Wang, X. Zhang, N. Wang, Y. Li, X. Feng, Y. Huang, C.S. Zhao, Z.L. Liu, M.H. Fang, G. Ou, **H.J. Gao**, X.Y. Li and H. Wu, “Ultra-Light, Scalable and High-Temperature Resilient Ceramic Nanofiber Sponges,” 2017, *Science Advances*, Vol. **3**(6), e1603170. DOI: 10.1126/sciadv.1603170
- 443) B. Ding, H. Wu, Z.P. Xu, X.Y. Li and **H.J. Gao**, “Stress Effects on Lithiation in Silicon,” 2017, *Nano Energy*, Vol. **38**, pp. 486–493. DOI: 10.1016/j.nanoen.2017.06.021
- 444) C.L. Xu, Z.H. Wei, **H.J. Gao**, Y.J. Bai, H.L. Liu, H.L. Yang, Y.K. Lai, L. Yang, “Bioinspired Mechano-Sensitive Macroporous Ceramic Sponge for Logical Drug and Cell Delivery,” 2017, *Advanced Science*, Vol. **4**(6), Art. No. 1600410. DOI: 10.1002/advs.201600410
- 445) X. Su, K. Guo, T. Ma, P. Tamirisa, H. Ye, **H.J. Gao**, B. W. Sheldon, "Deformation and Chemomechanical Degradation at Solid Electrolyte – Electrode Interfaces," 2017, *ACS Energy Letters*, Vol. **2**, pp. 1729–1733. DOI: 10.1021/acsenerylett.7b00481

- 446) X. Zhang, X.Y. Li and **H.J. Gao**, "Size and Strain Rate Effects in Tensile Strength of Penta-Twinned Ag Nanowires," 2017, *Acta Mechanica Sinica*, Vol. **33**(4), pp. 792–800. DOI: 10.1007/s10409-017-0675-6
- 447) M. Zelisko, F. Ahmadpoor, **H.J. Gao** and P. Sharma, "Determining the Gaussian Modulus and Edge Properties of 2D Materials: from Graphene to Lipid Bilayers," 2017, *Physical Review Letters*, Vol. **119**, Art. No. 068002. DOI: 10.1103/PhysRevLett.119.068002
- 448) C. Chang, X.Y. Li, Z.P. Xu and **H.J. Gao**, "Lithiation-Enhanced Charge Transfer and Sliding Strength at the Silicon-Graphene Interface: a First-Principles Study," 2017, *Acta Mechanica Solida Sinica*, Vol. **30**, pp. 254–262. DOI: 10.1016/j.camss.2017.03.011
- 449) J.L. Lang, B. Ding, S. Zhang, H.X. Su, B.H. Ge, L.H. Qi, **H.J. Gao**, X.Y. Li, Q.Y. Li and H. Wu, "Scalable Synthesis of Two-Dimensional Si Nanosheets," 2017, *Advanced Materials*, Vol. **29**, Art. No. 1701777. DOI: 10.1002/adma.201701777
- 450) Z.W. He, S.B. Xiao, **H.J. Gao**, J.Y. He and Z.L. Zhang, "Multiscale Crack Initiator Promoted Super-Low Ice Adhesion Surfaces," 2017, *Soft Matter*, Vol. **13**, pp. 6562–6568. DOI: 10.1039/C7SM01511A
- 451) Y.Y. Zhang, Q.X. Pei, Z.D. Sha, Y.W. Zhang and **H.J. Gao**, "Remarkable Enhancement in Failure Stress and Strain of Penta-Graphene via Chemical Functionalization," 2017, *Nano Research*, Vol. **10** (11), pp. 3865–3874. DOI: 10.1007/s12274-017-1600-9
- 452) Q.S. Pan, H.F. Zhou, Q.H. Lu, **H.J. Gao** and L. Lu, "History-Independent Cyclic Response of Nanotwinned Metals," 2017, *Nature*, Vol. **551**(7679), pp. 214–217. DOI: 10.1038/nature24266
- 453) X. Yi and **H.J. Gao**, "Budding of an Adhesive Elastic Particle out of a Lipid Vesicle," 2017, *ACS Biomaterials Science & Engineering*, Vol. **3**(11), pp 2954–2961. DOI: 10.1021/acsbiomaterials.6b00815
- 454) G.M. Cheng, S. Yin, T.H. Chang, G. Richter, **H.J. Gao** and Y. Zhu, "Anomalous Tensile Detwinning in Twinned Metallic Nanowires," 2017, *Physical Review Letters*, Vol. **119**, Art. No. 256101. DOI: 10.1103/PhysRevLett.119.256101
- 455) Z.D. Sha, C.M. She, G.K. Xu, Q.X. Pei, Z.S. Liu, T.J. Wang and **H.J. Gao**, "Metallic Glass-Based Chiral Nanolattice: Light Weight, Auxeticity, and Superior Mechanical Properties," 2017, *Materials Today*, Vol. **20**(10), pp. 569–576. DOI: 10.1016/j.mattod.2017.10.001

- 456) S. Li, Q.Z. Yao, Q.Y. Li, X.Q. Feng & **H.J. Gao**, “Contact Stiffness of Regularly Patterned Multi-Asperity Interfaces,” 2018, *Journal of the Mechanics and Physics of Solids*, Vol. **111**, pp. 277–289. DOI: 10.1016/j.jmps.2017.10.019
- 457) Z.W. Ma, Y. Ren, R.G. Li, Y.D. Wang, L.L. Zhou, X.L. Wu, Y.J. Wei and **H.J. Gao**, “Cryogenic Temperature Toughening and Strengthening due to Gradient Phase Structure,” 2018, *Materials Science and Engineering A*, Vol. **712**, pp. 358-364. DOI: 10.1016/j.msea.2017.11.107
- 458) J.T. Yang, Y. Wang, Y.F. Li, **H.J. Gao**, Y. Chai and H.M. Yao, “Edge Orientations of Mechanically Exfoliated Anisotropic Two-Dimensional Materials,” 2018, *Journal of the Mechanics and Physics of Solids*, Vol. **112**, pp. 157–168. DOI: 10.1016/j.jmps.2017.11.026
- 459) G.J. Zou, X. Yi, W.P. Zhu and **H.J. Gao**, “Packing of Flexible Nanofibers in Vesicles,” 2018, *Extreme Mechanics Letters*, Vol. **19**, pp. 20–26. DOI: 10.1016/j.eml.2017.12.003
- 460) W. Chen, H.F. Zhou, Z. Liu, J. Ketkaew, L. Shao, N. Li, P. Gong, W. Samela, **H.J. Gao** and J. Schroers, “Test Sample Geometry for Fracture Toughness Measurements of Bulk Metallic Glasses,” 2018, *Acta Materialia*, Vol. **145**, pp. 477–487. DOI: 10.1016/j.actamat.2017.12.026
- 461) J.L. Wang, Y.W. Yang, M.R. Yu, G.Q. Hu, Y. Gan, **H.J. Gao** and X.H. Shi, “Diffusion of Rod-Like Nanoparticles in Non-Adhesive and Adhesive Porous Polymeric Gels,” 2018, *Journal of the Mechanics and Physics of Solids*, Vol. **112**, pp. 431–457. DOI: 10.1016/j.jmps.2017.12.014
- 462) G.K. Xu, X.Q. Feng and **H.J. Gao**, “Orientations of Cells on Compliant Substrates under Biaxial Stretches: A Theoretical Study,” 2018, *Biophysical Journal*, Vol. **114**, pp. 701–710. DOI: 10.1016/j.bpj.2017.12.002
- 463) C. Zhang, Y.K. Hao, B.Li, X.Q. Feng and **H.J. Gao**, “Wrinkling Patterns in Soft Shells,” 2018, *Soft Matter*, Vol. **14**, pp. 1681-1688. DOI: 10.1039/c7sm02261a
- 464) K. Guo, P.A. Tamirisa, B.W. Sheldon, X.C. Xiao and **H.J. Gao**, “Pop-up Delamination of Electrodes in Solid-State Batteries,” 2018, *Journal of the Electrochemical Society*, Vol. **165**(3), pp. A618-A625. DOI: 10.1149/2.0831803jes
- 465) Y. Guo, Z. Chang, H.Y. Guo, W. Fang, Q.Y. Li, H.P. Zhao, X.Q. Feng and **H.J. Gao**, “Synergistic Adhesion Mechanisms of Spider Capture Silk,” 2018, *Journal of Royal Society Interface*, Vol. **15**, Art. No. 20170894. DOI: 10.1098/rsif.2017.0894
- 466) W.S. Kim, W.P. Zhu, G.L. Hendricks, D. Van Tyne, A.D. Steele, C.E. Keohane, N. Fricke, A.L. Conery, S. Shen, W. Pan, K.H. Lee, R. Rajamuthiah, B.B. Fuchs, P.M. Vlahovska, W.M. Wuest, M.S. Gilmore, **H.J. Gao**, F.M. Ausubel, E. Mylonakis, “A

New Class of Synthetic Retinoid Antibiotics Effective against Bacterial Persisters”, 2018, *Nature*, Vol. **556**, pp. 103–107. DOI:10.1038/nature26157

- 467) Y. Lin, J. Pan, H.F. Zhou, **H.J. Gao** and Y. Li, "Mechanical Properties and Optimal Grain Size Distribution Profile of Gradient Grained Nickel," 2018, *Acta Materialia*, Vol. **153**, pp. 279-289. DOI: 10.1016/j.actamat.2018.04.065
- 468) S.M.T. Mousavi, G.J. Zou, H.F. Zhou and **H.J. Gao**, "Correspondence: Anisotropy Governs Strain Stiffening in Nanotwinned-Materials," 2018, *Nature Communications*, Vol. **9**, Art. No. 1586. DOI: 10.1038/s41467-018-03972-9
- 469) **X. Zhang, H.J. Gao and X.Y. Li**, "Atomistic Simulations of Superplasticity and Amorphization of Nanocrystalline Anatase TiO₂," *Extreme Mechanics Letters*, Vol. **22**, pp. 131-137. DOI:10.1016/j.eml.2018.05.009
- 470) B. Han, R.P. Yu, Q.C. Zhang, **H.J. Gao**, Q. Zhang, T.J. Lu and B.H. Lu, "Creep of Closed-Cell Aluminum Foams: Effects of Imperfections and Predictive Modeling," 2018, *Materials and Design*, Vol. **156**, pp. 229–241. DOI: 10.1016/j.matdes.2018.06.050
- 471) G.J. Zou, X. Yi, W.P. Zhu and **H.J. Gao**, "Packing of Flexible 2D Materials in Vesicles," 2018, *Journal of Physics D: Applied Physics*, Vol. **51**, Art. No. 224001. DOI:10.1088/1361-6463/aabf79
- 472) M.R. Yu, L. Xu, F.L. Tian, Q. Su, N. Zheng, Y.W. Yang, J.L. Wang, A.H. Wang, C.L. Zhu, S.Y. Guo, X.X. Zhang, Y. Gan, X.H. Shi and **H.J. Gao**, "Rapid Transport of Deformation-Tuned Nanoparticles across Biological Hydrogels and Cellular Barriers," 2018, *Nature Communications*, Vol. **9**, Art. No. 2607. DOI: 10.1038/s41467-018-05061-3
- 473) J.Y. Li, B. Ni, T. Zhang and **H.J. Gao**, "Phase Field Crystal Modeling of Grain Boundary Structures and Growth in Polycrystalline Graphene," 2018, *Journal of the Mechanics and Physics of Solids*, Vol. **120**, pp. 36-48. DOI: 10.1016/j.jmps.2017.12.013
- 474) Z. Islam, B.M. Wang, K. Hattar, **H.J. Gao** and M.A. Haque, "Departing from the Mutual Exclusiveness of Strength and Ductility in Nanocrystalline Metals with Vacancy Induced Plasticity," 2018, *Scripta Materialia*, Vol. **157**, pp. 39–43. DOI: 10.1016/j.scriptamat.2018.07.037
- 475) Y. Guo, Z. Chang, B. Li, Z.L. Zhao, H.P. Zhao, X.Q. Feng and **H.J. Gao**, "Functional Gradient Effects on the Energy Absorption of Spider Orb Webs," 2018, *Applied Physics Letters*, Vol. **113**, Art. No. 103701. DOI: 10.1063/1.5039710
- 476) X. Zhang, J.H. Yao, B. Liu, J. Yan, L. Lu, Y. Li, **H.J. Gao** and X.Y. Li, "Three-Dimensional High-Entropy Alloy-Polymer Composite Nanolattices that Overcome

- the Strength-Recoverability Trade-Off,” 2018, *Nano letters*, Vol. **18**(7), pp 4247–4256. DOI:10.1021/acs.nanolett.8b01241
- 477) C.X. Huang, Y.F. Wang, X.L. Ma, S. Yin, H.W. Höpfe, M. Göken, X.L. Wu, H.J. Gao and Y.T. Zhu, “Interface Affected Zone for Optimal Strength and Ductility in Heterogeneous Laminate,” 2018, *Materials Today*, Vol. **21**(7), pp. 713-719. DOI: 10.1016/j.mattod.2018.03.006
- 478) Z. Cheng, H.F. Zhou, Q.H. Lu, **H.J. Gao** and L. Lu, “Extra Strengthening and Work Hardening in Gradient Nanotwinned Metals,” 2018, *Science*, Vol. **362**(6414), eaau1925. DOI: 10.1126/science.aau1925
- 479) E.F. Hacıoğlu, Y.C. Yang, B. Ni, Y.L. Li, X. Li, Q. Chen, H. Guo, J.M. Tour, **H.J. Gao** and J. Lou, "Toughening Graphene by Integrating Carbon Nanotubes," 2018, *ACS Nano*, Vol. **12**, 7901–7910. DOI: 10.1021/acsnano.8b02311
- 480) R. Christensen, Z. Li and **H.J. Gao**, “An Evaluation of the Failure Modes Transition and the Christensen Ductile/Brittle Failure Theory Using Molecular Dynamics,” 2018, *Proceedings of the Royal Society A*, Vol. **474**, Art. No. 20180361. DOI: 10.1098/rspa.2018.0361
- 481) W.S. Kim, A.D. Steele, W.P. Zhu, E.E. Csatory, N. Fricke, M.M. Dekarske, E. Jayamani, W. Pan, B. Kwon, I.F. Sinita, J.L. Rosen, A.L. Conery, B. B. Fuchs, P.M. Vlahovska, F.M. Ausubel, **H.J. Gao**, W.M. Wuest, E. Mylonakis, “Discovery and Optimization of nTZDpa as an Antibiotic Effective Against Bacterial Persisters,” 2018, *ACS Infectious Diseases*, Vol. **4**(11), pp. 1540-1545. DOI: 10.1021/acsinfectdis.8b00161
- 482) A.B. Kane, R.H. Hurt and **H.J. Gao**, “The Asbestos-Carbon Nanotube Analogy: an Update,” 2018, *Toxicology and Applied Pharmacology*, Vol. **361**, pp. 68–80. DOI: 10.1016/j.taap.2018.06.027
- 483) X. Yi, G.J. Zou and **H.J. Gao**, "Mechanics of Cellular Packing of Nanorods with Finite and Non-Uniform Diameters," 2018, *Nanoscale*, Vol. **10**, pp. 14090–14099. DOI: 10.1039/c8nr04110e
- 484) Z. Li, H.T. Wang, Q. Guo, Z.C. Li, D.B. Xiong, Y.S. Su, **H.J. Gao**, X.Y. Li and D. Zhang, “Regain Strain-Hardening in High-Strength Metals by Nanofiller Incorporation at Grain Boundaries,” 2018, *Nano Letters*, Vol. **18**, pp. 6255-6264. DOI:10.1021/acs.nanolett.8b02375
- 485) K. Guo, W. Zhang, B.W. Sheldon and **H.J. Gao**, “Concentration Dependent Properties Lead to Plastic Ratcheting in Thin Island Electrodes on Substrate Under Cyclic Charging and Discharging,” *Acta Materialia*, 2019, Vol. 164, 261e271. DOI: 10.1016/j.actamat.2018.10.027

- 486) Y.P. Liu, K. Guo, C.G. Wang, **H.J. Gao**, "Wrinkling and Ratcheting of a Thin Film on Cyclically Deforming Plastic Substrate: Mechanical Instability of the Solid-Electrolyte Interphase in Li-Ion Batteries," 2019, *Journal of the Mechanics and Physics of Solids*, Vol. **123**, pp. 103–118. DOI: 10.1016/j.jmps.2018.08.006
- 487) H.F. Cai, Y.F. Guo, **H.J. Gao** and W.L. Guo, "Tribo-Piezoelectricity in Janus Transition Metal Dichalcogenide Bilayers: A First-Principles Study," 2019, *Nano Energy*, Vol. **56**, pp. 33–39. DOI: 10.1016/j.nanoen.2018.11.027
- 488) S.M.T. Mousavi, H.F. Zhou, G.J. Zou and **H.J. Gao**, "Transition from Source- to Stress-Controlled Plasticity in Nanotwinned Materials below a Softening Temperature," 2019, *NPJ Computational Materials*, Vol. **5**, Art. No. 2. DOI: 10.1038/s41524-018-0140-5
- 489) R. Christensen, Z. Li and **H.J. Gao**, "An Independent Derivation and Verification of the Voids Nucleation Failure Mechanism: Significance for Materials Failure," 2019, *Proceedings of the Royal Society A*, Vol. **475**, Art.No. 20180755. DOI: 10.1098/rspa.2018.0755
- 490) W.B. Liu, L.R. Chen, Y.Y. Cheng, L. Yu, X. Yi, **H.J. Gao** and H.L. Duan, "Model of Nanoindentation Size Effect Incorporating the Role of Elastic Deformation," 2019, *Journal of the Mechanics and Physics of Solids*, Vol. **126**, pp. 245-255. DOI: 10.1016/j.jmps.2019.02.015
- 491) Y.P. Fang, Y. Wang, H. Intiaz, B. Liu B and **H.J. Gao**, "Energy-Ratio-Based Measure of Elastic Anisotropy," 2019, *Physical Review Letters*, Vol. **122**, Art. No. 045502. DOI: 10.1103/PhysRevLett.122.045502
- 492) M.R. Yu, W.Y. Song, F.L. Tian, Z. Dai, Q.L. Zhu, E. Ahmad, S.Y. Guo, C.L. Zhu, H.J. Zhong, Y.C. Yuan, T. Zhang, X. Yi, X.H. Shi, Y. Gana and **H.J. Gao**, "Temperature- and Rigidity-Mediated Rapid Transport of Lipid Nanovesicles in Hydrogels," 2019, *Proceedings of the National Academy of Sciences of USA*, Vol. **116**(12), pp. 5362-5369. DOI: 10.1073/pnas.1818924116
- 493) X. Lin, Y. Liu, A.B. Bai, H.H. Cai, Y.J. Bai, W. Jiang, H.L. Yang, X.H. Wang, L. Yang, N. Sun and **H.J. Gao**, "A Viscoelastic Adhesive Epicardial Patch for Treating Myocardial Infarction," 2019, *Nature Biomedical Engineering*. DOI: 10.1038/s41551-019-0380-9
- 494) X.D. Shi, Y. Liu, K.M. Copeland, S.R. McMahan, S. Zhang, J.R. Butler, Y. Hong, M. Cho, P. Bajona, **H.J. Gao** and J. Liao, "Epicardial Prestrained Confinement and Residual Stresses: A Newly Observed Heart Ventricle Confinement Interface," 2019, *Journal of the Royal Society Interface*, Vol. **16**, Art. No. 20190028. DOI: 10.1098/rsif.2019.0028
- 495) X. Zhang, A. Vyatskikh, **H.J. Gao**, J.R. Greer and X.Y. Li, "Lightweight, Flaw-Tolerant, and Ultrastrong Nanoarchitected Carbon," 2019, *Proceedings of the*

National Academy of Sciences of USA, Vol. **116**(14), pp. 6665–6672. DOI: 10.1073/pnas.1817309116

- 496) G.X. Cao and **H.J. Gao**, "Mechanical properties characterization of two-dimensional materials via nanoindentation experiment," 2019, *Progress in Materials Science*, Vol. **103**, pp. 558-595. DOI: 10.1016/j.pmatsci.2019.03.002
- 497) S. Yin, G.M. Cheng, T.H. Chang, G. Richter, Y. Zhu and **H.J. Gao**, "Hydrogen Embrittlement in Metallic Nanowires," 2019, *Nature Communications*, Vol. **10**(1), Art. No. 2004. DOI:10.1038/s41467-019-10035-0
- 498) X.Z. Zheng, H. Castaneda, **H.J. Gao** and A. Srivastava, "Synergistic Effects of Corrosion and Slow Strain Rate Loading on the Mechanical and Electrochemical Response of an Aluminum Alloy," 2019, *Corrosion Science*, DOI: 10.1016/j.corsci.2019.03.018

B. Book Chapters

- 1) **H.J. Gao**, "Morphological Instabilities along Surfaces of Anisotropic Solids," *Modern Theory of Anisotropic Elasticity and Applications*, eds. J. J. Wu, T. C. T. Ting, and D. M. Barnett, SIAM, Philadelphia, pp. 139-150, 1991.
- 2) P.A. Klein and **H.J. Gao**, "Study of Crack Dynamics Using the Virtual Internal Bond Method," *Multiscale Deformation and Fracture in Materials and Structures - The James R. Rice 60th Anniversary Volume*, eds. T.-J. Chuang and J. W. Rudnicki, pp. 275-309, Kluwer Academic Publishers, Dordrecht, The Netherlands, December 2000.
- 3) **H.J. Gao**, "Strain Gradient Plasticity," *Encyclopedia of Materials: Science and Technology*, Eds. K.H.J. Buschow, R.W. Kahn, M.C. Flemings, B. Ilshner, E.J. Kramer, and S. Mahajan, Elsevier, London, Vol. 9, pp 8861-8865, 2001.
- 4) A. Vainchtein, P.A. Klein, **H.J. Gao** and Y.G. Huang, "A Strain-Gradient Virtual-Internal-Bond Model," *Modeling and Simulation-based Life Cycle Engineering*, eds. K.P. Chong, S. Saigal, S. Thynell, and H.S. Morgan, Spon Press, London, pp 31-46, 2002.
- 5) **H.J. Gao** and B.H. Ji, "Modeling Fracture in Nanomaterials," *Asymptotics, Singularities and Homogenisation in Problems of Mechanics*, ed. A.B. Movchan, Kluwer Academic Publishers, London, pp. 307-316, 2003.
- 6) M.J. Buehler, F.F. Abraham and **H.J. Gao**, "Stress and Energy Flow Field near a Rapidly Propagating Mode I Crack". *Multiscale Modelling and Simulation*, Springer Lecture Notes in Computational Science and Engineering, Vol. 39, Eds. Attinger, Sabine; Koumoutsakos, Petros, ISBN 3-540-21180-2, pp. 143-156, 2004.
- 7) T.M. Michelitsch, J.Z. Wang, **H.J. Gao** and V.M. Levin, "On the Solution of the Inhomogeneous Helmholtz Wave Equation for Ellipsoidal Sources," *Continuum*

Models and Discrete Systems, eds. D. Bergman et al., Kluwer Academic Publishers, The Netherlands, pp. 115-122, 2004.

- 8) **H.J. Gao**, B.H. Ji, M.J. Buehler and H.M. Yao, "Flaw Tolerant Nanostructures of Biological Materials," *Mechanics of the 21st Century*, eds. W. Gutkowsky and T.A. Kowalewsky, Springer, The Netherlands, pp. 131-1138, 2005.
- 9) O. Kraft and **H.J. Gao**, "Measurement of Stresses in Thin Films and Their Relaxation," *Diffusion Processes in Advanced Technological Materials*, ed. Davendra Gupta, William Andrew Publishing, Springer, New York, Chapter 8, pp. 365-404, 2005.
- 10) M.J. Buehler and **H.J. Gao**, "Ultra-Large Scale Simulations of Dynamic Materials Failure," *Handbook of Computational and Theoretical Nanotechnology*, eds. M. Rieth and W. Schommers, American Scientific Publisher, Vol. 2, Chap. 10, p. 427, 2006.
- 11) M.J. Buehler, T.J. Balk, E. Arzt and **H.J. Gao**, "Constrained Diffusional Creep in Thin Copper Films," *Handbook of Computational and Theoretical Nanotechnology*, eds. M. Rieth and W. Schommers, American Scientific Publisher, Vol. 5, Chap. 14, p. 215, 2006.
- 12) B.H. Ji and **H.J. Gao**, "Mechanics of Nanocomposite Structures of Biological Materials", *Handbook of Theoretical and Computational Nanotechnology*, eds. M. Rieth and W. Schommers, American Scientific Publisher, Vol. 9. Chap. 9, p. 455, 2006.
- 13) **H.J. Gao**, B.H. Ji and H.M. Yao, "Nanostructures of Biological Materials," in *Nanostructure Control of Materials*, eds. A. J. Hill and R. H. J. Hannink, Woodhead Publishing, 2006.
- 14) M.J. Buehler and **H.J. Gao** "Modeling Dynamic Fracture Using Large-Scale Atomistic Simulations," *Dynamic Fracture Mechanics*, ed. A. Shukla, World Scientific, Chap. 1, pp. 1-68, 2006.
- 15) H.M. Yao and **H.J. Gao**, "Mechanics of Self-Similar Hierarchical Adhesive Structures Inspired by Gecko Feet," *Structural Interfaces and Attachments in Biology*, ed. S. Thomopoulos, V. Birman and G. Genin, Springer, Chap. 10, pp. 201-226, 2012.
- 16) X.Y. Li and **H.J. Gao**, "Mechanics of Nanotwinned Hierarchical Metals," *Nano and Cell Mechanics*, ed. H.D. Espinosa and G. Bao, Wiley, Chap. 11, pp. 129-162, 2012.

C. Edited Books/Volumes

- 1) W.W. Gerberich, **H.J. Gao**, J.-E. Sundgren and S.P. Baker (Eds.) *Thin Films: Stresses and Mechanical Properties VI*, MRS Proceedings Volume 436, 1997.

- 2) C.S. Ozkan, L.B. Freund, R.C. Cammarata and **H.J. Gao** (Eds.) Thin Films: Stresses and Mechanical Properties IX, MRS Proceedings Volume 695, 1997.
- 3) C.H. Chiu, Z. Chen, **H.J. Gao**, K.Y. Lam, A.A.O. Tay (Eds.) Modeling of Materials and Its Applications in Advanced Technologies, Trans Tech Publications, 2002.
- 4) C.S. Ozkan, J.T. Santini Jr., **H.J. Gao** and G. Bao (Eds.) *Biomicroelectromechanical Systems (BioMEMS)*, MRS Proceedings Volume 773, 2003.
- 5) C.S. Ozkan, Y. Gogotsi, R. Kaner and **H.J. Gao** (Eds.) *De Novo Graphene*, MRS Proceedings Volume, 2014.

D. Refereed Conference Proceedings

- 1) C.H. Chiu and **H.J. Gao**, "Numerical Simulation of Diffusion Controlled Surface Evolution," 1994, *Materials Research Symposium Proceedings*, Vol. **317**, pp. 369-374.
- 2) J. Li, CH. Chiu and **H.J. Gao**, "Nucleation of Dislocations from a Surface Cusp," 1994, *Materials Research Symposium Proceedings*, Vol. **317**, pp. 303-308.
- 3) CH. Chiu and **H.J. Gao**, "A Numerical Study of Stress Controlled Surface Diffusion During Epitaxial Film Growth," 1995, *Materials Research Symposium Proceedings*, Vol. **356**, pp. 33-44.
- 4) J.A. Zimmerman and **H.J. Gao**, "Investigation of Relationships Between Dislocations and Crystal Surface Ledges", 1996, *Materials Research Symposium Proceedings*, Vol. **399**, pp. 401-406.
- 5) C.S. Ozkan, W.D. Nix and **H.J. Gao**, "Strain Relaxation in Heteroepitaxial $\text{Si}_{1-x}\text{Ge}_x$ Films via Surface Roughening Processes," 1996, *Materials Research Symposium Proceedings*, Vol. **399**, pp. 407-412.
- 6) C.S. Ozkan, W.D. Nix and **H.J. Gao**, "Anisotropic Behavior of Surface Roughening in Lattice Mismatched Heteroepitaxial Thin Films," 1996, *Materials Research Symposium Proceedings*, Vol. **436**, pp. 487-492.
- 7) C.S. Ozkan, W.D. Nix and **H.J. Gao**, "Effect of Stresses on Defect Nucleation in $\text{Si}_{1-x}\text{Ge}_x$ /Si Heteroepitaxial Systems," 1997, *Materials Research Symposium Proceedings*, Vol. **442**, 373-378.
- 8) C.S. Ozkan, W.D. Nix and **H.J. Gao**, "Studies of morphological instability and dislocation formation in heteroepitaxial $\text{Si}_{1-x}\text{Ge}_x$ /Si thin films via controlled annealing experiments," 1997, *Materials Research Symposium Proceedings*, Vol. **440**, 323-328.

- 9) **H.J. Gao**, C.C. Fulton, T.Y. Zhang, P. Tong and D.M. Barnett, "Multiscale Energy Release Rates in Fracture of Piezoelectric Ceramics," 1997, in *Smart Materials and Structures*, Proceedings SPIE (eds. V. V. Varadan and J. Chandra), Vol. **3039**, 228-233.
- 10) **H.J. Gao**, "Nonlinear continuum and atomistic modeling of dynamic fracture instabilities," *Advances In Fracture Research* (eds. Editors: Karihaloo B.L., Mai Y.W., Ripley M.I., Ritchie R.O.), Vol. 1-6 , 1981-1981, 1997
- 11) **H.J. Gao**, "Hyperelastic Modeling of Dynamic Crack Tip Instabilities," 1998, Proceedings of the Third International Conference on Fracture and Strength of Solids, *Key Engineering Materials*, Vol. 145-149, Part I, pp. 291-300.
- 12) C.C. Fulton and **H.J. Gao**, "Nonlinear Fracture Mechanics of Piezoelectric Ceramics," 1998, in *Smart Materials and Structures*, Proceedings SPIE (eds. V. V. Varadan and J. Chandra), Vol. **3323**, pp. 119-127.
- 13) C.S. Ozkan, W.D. Nix and **H.J. Gao**, "In-situ TEM observations of surface roughening and defect formation in lattice mismatched heteroepitaxial thin films," 1998, *Materials Research Symposium Proceedings*, Vol. **646**, pp. 291-298.
- 14) C.C. Fulton and **H.J. Gao**, "Effects of Microstructure on Piezoelectric Fracture," 1999, *Applied Mechanics in the Americas*, eds. D. Pamplona, C. Steele, H.I. Weber, P.B. Gonsalves, I. Jasiuk, L. Bevilacqua, Vol. 7, pp. 635-638.
- 15) **H.J. Gao**, Y.G. Huang, W.D. Nix and J.W. Hutchinson, "A Multiscale Framework for the Mechanism-based Strain Gradient Plasticity," 1999, *Applied Mechanics in the Americas*, eds. D. Pamplona, C. Steele, H.I. Weber, P.B. Gonsalves, I. Jasiuk, L. Bevilacqua, Vol. 7, pp. 855-858.
- 16) Y.G. Huang, **H.J. Gao**, W.D. Nix and J.W. Hutchinson, "Dislocation Models for the Strain Gradient Plasticity," 1999, *Applied Mechanics in the Americas*, eds. D. Pamplona, C. Steele, H.I. Weber, P.B. Gonsalves, I. Jasiuk, L. Bevilacqua, Vol. 7, pp. 959-962.
- 17) K. Langer and **H.J. Gao**, "Scale Effects in Dynamic Brittle Fracture," 1999, *Applied Mechanics in the Americas*, eds. D. Pamplona, C. Steele, H.I. Weber, P.B. Gonsalves, I. Jasiuk, L. Bevilacqua, Vol. 7, pp. 1055-1058.
- 18) Y.G. Huang, **H.J. Gao** and K.C. Hwang, "Strain Gradient Plasticity at the Micron Scale," 1999, in *Progress in Mechanical Behavior of Materials*, Proceedings of ICM'8, eds. F. Ellyin and J.W. Provan, Victorial, British Columbia, Canada, May 16-21, 1999, Fleming Printing Ltd., Vol. III, pp. 1051-1056.
- 19) C.C. Fulton and **H.J. Gao**, "Microstructural Effects on Piezoelectric Cracking," *Materials Research Symposium Proceedings*, 1998, Vol. **604**, pp. 33-38.

- 20) **H.J. Gao**, A. Vainchtein, P.A. Klein and E.P. Chen, "Introducing a Length Scale into Modeling of Fracture via a Strain-Gradient Elasticity Theory," 2000, *Advances in Computational Engineering and Sciences* (S. N. Atluri and F.W. Brust, eds.), International Conference on Computational Engineering and Sciences, pp. 1766-1771.
- 21) **H.J. Gao** and A. Vainchtein, "Higher-Order Gradient Elasticity Theories of Fracture," 2000, *Mechanics 2000* (Yilong Bai and Wei Yang, eds.), Beijing, pp. 64-69.
- 22) P.A. Klein, **H.J. Gao**, A. Vainchtein, H. Fujimoto, J. Lee and Q. Ma, "Micromechanics-Based Modeling of Interfacial Debonding in Multiplayer Structures," 2000, *Materials Research Symposium Proceedings*, Vol. **594**, pp. 371-376.
- 23) J.A. Zimmerman, F.F. Abraham and **H.J. Gao**, "Atomistic simulation of transonic dislocations," 2000, *Materials Research Symposium Proceedings*, Vol. **578**, pp. 229-234.
- 24) **H.J. Gao**, L. Zhang and S. P. Baker, "Dislocation Core Spreading at Interfaces Between Crystalline and Amorphous Substrates," 2001, *Materials Research Symposium Proceedings*, Vol. **673**, pp. P2.6.1-6.
- 25) C.S. Ozkan and **H.J. Gao**, "Electric Field Induced Self Assembly and Template Patterning of Polymer Microstructures", 2001, *Materials Research Society Proceedings*, Electronic, Optical and Optoelectronic Polymers and Oligomers, Vol. **665**, pp. C8.46.1-6.
- 26) D.X. Cui, L. Zhang, L.X. Zhang, C.Z. Su, G.Q. Jin, J.R. Xu, X.J. Yan, T.B. Su, D.M. Fan and **H.J. Gao**, "A microarray based prewarning system of gastric cancer", 2002, *Proceedings IFMBE*, Vol. **3**(1), pp. 770-772.
- 27) V. M. Levin, T. M. Michelitsch and **H.J. Gao**, "Modeling of the Effective Dynamic Characteristics of Fiber Reinforced Transversely Isotropic Piezoelectric Materials", 2003, in *Smart Materials and Structures*, Proceedings SPIE (ed. C. Lynch), Vol. **3069**, pp. 4699-4714.
- 28) M. Buehler, A. Hartmaier and **H.J. Gao**, "Atomistic and Continuum Studies of Diffusional Creep and Associated Dislocation Mechanisms in Thin Films on Substrates," 2003, *Materials Research Symposium Proceedings*, Vol. **779**, pp. W4.7.1-6.
- 29) D.X. Cui, F.R. Tian, Y. Kong, C.S. Ozkan, I. Titushikin and **H.J. Gao**, "Effects of Single-Walled Carbon Nanotube on Polymerase Chain Reaction," 2003, *Materials Research Symposium Proceedings*, Vol. **773**, pp. N2.3.1- 5.

- 30) Y. Kong, D.X. Cui, C.S. Ozkan and **H.J. Gao**, "Modeling Carbon Nanotube Based Bio-Nano Systems: A Molecular Dynamics Study," 2003, *Materials Research Symposium Proceedings*, Vol. **773** , pp. N8.5.1-6.
- 31) D.X. Cui, C.S. Ozkan, Y. Kong and **H.J. Gao**, "Experimental Study of Filling Carbon Nanotubes With Nucleic Acids," 2004, *Materials Research Symposium Proceedings*, Vol. **820** , pp. O4.6.1-6.
- 32) M.J. Buehler, A. Hartmaier and **H.J. Gao**, "Constrained Grain Boundary Diffusion in Thin Copper Films," 2004, *Materials Research Symposium Proceedings*, Vol. **821**, pp. P1.2.1-6.
- 33) **H.J. Gao**, B.H. Ji, M.J. Buehler and H.M. Yao, "Flaw Tolerant Bulk and Surface Nanostructures of Biological Systems," 2004, Proceedings of the 2004 International Conference on Computational & Experimental Engineering & Sciences, Tech Science Press, Chapter 3, pp. 146-151.
- 34) A. Hartmaier, X. Ma and **H.J. Gao**, "Grain-Structure Evolution after Surface Plastic Deformation of Nanocrystals," 2004, Proceedings of the 25th Riso International Symposium on Materials Science: Evolution of Deformation Microstructures in 3D, (C. Gundlach, K. Haldrup, N. Hansen, X. Huang, D. Juul Jensen, T. Leffers, Z.J. Li, S.F. Nielsen, W. Pantleon, J.A. Wert, G. Winther, eds.), Publisher: Riso National Laboratory, Roskilde, Denmark, pp. 323-328.
- 35) M.J. Buehler, F.F. Abraham and **H.J. Gao**, "Hyoerelastic Effects in Brittle Materials Failure," 2004, *Materials Research Symposium Proceedings*, Vol. **821**, pp. P6.3.1-6.3.6.
- 36) W.D. Shi, **H.J. Gao** and L.B. Freund, "Modeling receptor-mediated endocytosis via mechanics of cell adhesion," 2005, in *Assembly at the Nanoscale -- Toward Functional Nanostructured Materials*, edited by Cengiz S. Ozkan, Federico Rosei, Gregory P. Lopinski, Zhong L. Wang (*Mater. Res. Soc. Symp. Proc. 910E*, Warrendale, PA, 2006), Ra02-01-Rb02-01.
- 37) X. Guo and **H.J. Gao**, "Bio-Inspired Material Design and Optimization," 2006, in *Solid Mechanics and Its Applications*, Vol. **137**, IUTAM Symposium on Topological Design Optimization of Structures, Machines and Materials (Bendsøe et al., eds.), Part 12, Pages 439-453. DOI: 10.1007/1-4020-4752-5
- 38) **H.J. Gao**, "Bio-inspired Mechanics of Bone-Like Hierarchical Materials," 2007, in *Solid Mechanics and Its Applications*, Vol. **144**, IUTAM Symposium on Mechanical Behavior and Micro-Mechanics of Nanostructured Materials (Yilong Bai et al, eds.), Springer, pp. 87-94.
- 39) **H.J. Gao**, "Mechanical Principles of a Self-Similar Hierarchical Structure," 2009, *Materials Research Symposium Proceedings*, Vol. **1188**, pp. 3-14.

- 40) J. Qian, J.Z. Wang and **H.J. Gao**, "Tension-Induced Growth of Focal Adhesions at Cell-Substrate Interface," 2010, *Proceedings of the IUTAM Symposium on Cellular, Molecular and Tissue Mechanics, Woodshole, Massachusetts, June 18-21, 2008*, 193-202.

E. Non-Refereed Conference Proceedings

- 1) N.Y. Chien and **H.J. Gao**, "Stress-Induced Roughening Instabilities Along Surfaces of Piezoelectric Materials," 1993, *Proceedings of the Eleventh Symposium on Energy Engineering Sciences*, 16-23.
- 2) **H.J. Gao** and C.H. Chiu, "A Few General Remarks on the Initiation of Diffusive Cusp Cracks in Stressed Solids," 1995, Symposium on Micromechanical Modeling and Damage Characterization of Advanced Solids, Ed. S. A. Meguid, AMD-Vol. 199, MD-Vol. 55, pp. 67-72.
- 3) **H.J. Gao** and D.M. Barnett, "Surface and Defect Morphologies in Anisotropic Elastic and Piezoelectric Solids," 1996, *Proceedings of the Fourteenth Symposium on Energy Engineering Sciences*, 35-42.
- 4) **H.J. Gao** and D.M. Barnett, "Electromechanical Fracture in Piezoelectric Ceramics," 1999, Proceedings of the Seventeenth Symposium on Energy Engineering Sciences, pp. 34-41.

F. Unpublished Papers

- 1) **H.J. Gao**, "Alternative Derivations of Some Integral Representations of Three Dimensional Planar Crack Stress Field," 1987, Harvard University Report, Division of Applied Sciences, MECH-102.
- 2) **H.J. Gao**, L.B. Freund and W.D. Nix, "Mechanisms of Dislocation Formation at Crystal Surface Ledges due to Compressive Strain," 1995, Division of Applied Mechanics, Stanford University.

G. Book Reviews

- 1) **H.J. Gao**, "The Theory of Materials Failure by Richard M. Christensen", 2014, *Materials Today*, Vol. 17(2), pp. 94-95.
- 2) **H.J. Gao**, "Review of the Book Probabilistic Mechanics of Quasibrittle Structures," 2017, *Theoretical and Applied Mechanics Letters*, Vol. 7, pp. 179–180. DOI: 10.1016/j.taml.2017.09.004