



Curriculum Vitae Professor Dr Huajian Gao



Image: Markus Scholz | Leopoldina

Name: Huajian Gao
Born: 7 December 1963

Research Priorities: Solid mechanics, micro und nano mechanics, biomechanics, nanomaterials

Huajian Gao is a Chinese-American engineering scientist. He is a world-leading pioneer in the nanomechanics of engineering and biological systems, a new research field at the interface between solid mechanics, materials science and biophysics.

Academic and Professional Career

- since 2019 Walter H. Annenberg Professor Emeritus, Brown University, Providence, USA
- since 2019 Distinguished University Professor, Nanyang Technological University (NTU), Singapore, Singapore
- since 2019 Scientific Director, Institute of High Performance Computing, Agency for Science, Technology and Research (A*Star), Singapore, Singapore
- 2006 - 2019 Walter H. Annenberg Professor of Engineering, Brown University, Providence, USA
- 2002 - 2006 Honorary Professor, Faculty of Chemistry, University of Stuttgart, Stuttgart, Germany
- 2002 - 2004 Visiting Professor, Stanford University, Stanford, USA
- 2001 - 2006 Director, Max-Planck Institute for Material Sciences, Stuttgart, Germany
- 2000 - 2002 Full Professor, Stanford University, Stanford, USA
- 1995 - 2000 Associate Professor, Stanford University, Stanford, USA
- 1988 - 1994 Assistant Professor, Stanford University, Stanford, USA
- 1988 Ph.D. in Engineering Sciences, Harvard University, Cambridge, USA
- 1984 MS in Engineering Sciences, Harvard University, Cambridge, USA

1982 - 1983 BS in Solid Mechanics, Xi'an Jiaotong University, Xi'an, China

Functions in Scientific Societies and Committees (Selection)

2020 - 2022 Member, NTU 2025 Steering Committee, NTU, Singapore, Singapore

since 2020 Member, Engineering Panel, Research Grants Council (RGC), Hongkong, China

2020 Member, NTU 2025 Task Force, NTU, Singapore, Singapore

2020 Member, NTU Research Council (NTURC), NTU, Singapore, Singapore

2019 - 2020 Member, Mechanics Engineering Advisory Committee, Curriculum Development and Industrial Liaison, University of Hong Kong, Hongkong, China

2018 - 2021 Chair, Section 10, National Research Council (NRC) Liaison Committee, National Academy of Engineering, USA

2017 Member, Scientific Evaluation Committee, Research Field "Materials Systems Engineering", Helmholtz-Gemeinschaft Deutscher Forschungszentren, Bonn, Germany

2016 Co-Chair, Advisory Committee, Tsien Elite Class Program, Tsinghua University, Peking, China

2015 - 2019 Member, Engineering Executive Committee, Brown University, Providence, USA

since 2014 Member, Editorial Board, Acta Mechanica

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

since 2013 Member, Editorial Board, National Science Review, Chinese Academy of Sciences (CAS), China

2013 Founding Co-Director, Center for Advanced Mechanics and Materials, Tsinghua University, Peking, China

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

since 2012 Member, Advisory Board, Computational Materials Science and Engineering

since 2011 Member, Advisory Board, Acta Mechanica Sinica

since 2009 Editor, International Journal of Applied Mechanics

2008 - 2013 Member, Board of Associate Editors, Cellular and Molecular Bioengineering, Biomedical Engineering Society (BMES), Landover, USA

since 2006 Editor-in-Chief, Journal of the Mechanics and Physics of Solids

2006 - 2007 Associate Editor, Communications in Computational Physics

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

since 2004 Member, Editorial Board, Molecular & Cellular Biomechanics

since 2004 Member, Regional Editor, International Journal of Fracture

since 2004 Member, Editorial Board, Journal of Computational & Theoretical Nanoscience

since 2004 Member, Editorial Board, Journal of Nanoengineering and Nanosystems

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

2004 - 2006 Chief Editor, Continuum Mechanics and Thermodynamics

since 2003 Member, Editorial Board, Acta Metallurgica Sinica

2003 - 2005 Overseas Director, Shenyang Center for Interfacial Materials, Chinese Academy of Sciences (CAS), China

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

2000 - 2006 Member, Associate Editor, Journal of Applied Mechanics

since 1998 Member, Editorial Board, Modelling and Simulation in Materials Science and Engineering

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

Honours and Awarded Memberships (Selection)

since 2023 Elected Fellow, The Royal Society, UK

2023 ASME Medal, American Society of Mechanical Engineers (ASME), USA

2023 George Irwin Gold Medal, The International Congress on Fracture, USA

2022 Michael P. Païdoussis Medal, The Royal Society of Canada, 2022

2022 Zdenek P. Bazant Medal, Engineering Mechanics Institute, American Society of Civil Engineers, 2022

2022 William D. Nix Award, The Mineral, Metals and Materials Society, Pittsburgh, USA

2021 Timoshenko Medal, American Society of Mechanical Engineers, USA

2019 Outstanding Reviewer Award, Scripta Materialia

since 2019 Elected Fellow, American Academy of Arts and Sciences, USA

since 2018 Elected Member, Academia Europae

since 2018 Elected Member, National Academy of Sciences, USA

2018 Senior Distinguished Research Achievement Award, Brown University, Providence, USA

- 2018 Honorary Professorship, Nanjing University of Aeronautics and Astronautics, Nanjing, China
- 2017 Honorary Fellow, International Congress on Fracture (ICF)
- since 2017 Member, German National Academy of Sciences Leopoldina, Germany
- 2017 Theodore von Karman Medal, Engineering Mechanics Institute, American Society of Civil Engineers (ASCE), USA
- 2016 - 2017 Distinguished Visiting Chair Professorship, Department of Mechanical Engineering, Hong Kong Polytechnic University, Hongkong, China
- since 2015 Elected Foreign Member, Chinese Academy of Sciences, China
- 2015 Nadai Medal, American Society of Mechanical Engineers, USA
- 2015 William Prager Medal, Society of Engineering Science, USA
- since 2012 Elected Member, National Academy of Engineering, USA
- 2012 Rodney Hill Prize in Solid Mechanics, International Union of Theoretical and Applied Mechanics
- 2012 Humboldt Research Award, Alexander von Humboldt Foundation, Bonn, Germany
- 2011 Honorary Professorship, Shanghai University, Shanghai, China
- 2011 Charles Russ Richards Memorial Award, American Society of Mechanical Engineers, USA
- 2011 Honorary Professorship, Xi'an Jiaotong University, Xi'an, China
- 2009 Robert Henry Thurston Lecture Award, American Society of Mechanical Engineers, USA
- 2007 - 2012 Visiting Investigator Programme (VIP) Award, A*STAR (Agency for Science, Technology and Research), Singapore, Singapore
- 2005 Stifterverbandspreis, Stifterverband für die Deutsche Wissenschaft and Max-Planck Society, Munich, Germany
- 2005 Young Investigator Award, Society of Engineering Science, USA
- 2004 Elected Fellow, Institute of Physics, London, UK
- 2004 Melville Medal, American Society of Mechanical Engineers, USA
- 2003 Fellow, American Society of Mechanical Engineers, USA
- 2000 Outstanding Oversea Young Investigator Award, National Science Foundation of China, China
- 2000 - 2005 Chang Jiang Chair Visiting Professor, Tsinghua University, Beijing, China

- 1999 Young Investigator Award, Applied Mechanics Division, American Society of Mechanical Engineers, USA
- 1997 Research Fellowship, Alexander von Humboldt Foundation, Bonn, Germany
- 1996 Alcoa Science Award, Alcoa Corporation, Pittsburgh, USA
- 1993 - 1998 NSF Young Investigator Award, National Science Foundation (NSF), USA
- 1995 Guggenheim Fellowship, John Simon Guggenheim Memorial Foundation, New York City, USA
- 1992 - 1993 IBM Faculty Development Award, International Business Machines Corporation (IBM), Armonk, USA
- 1988 Schlumberger Research Fellowship, Schlumberger Inc., Willemstad, Curaçao

Research Priorities

Huajian Gao is a Chinese-American engineering scientist. He is a world-leading pioneer in the nanomechanics of engineering and biological systems, a new research field at the interface between solid mechanics, materials science and biophysics.

In his research, Huajian Gao integrates analytical and computational approaches in continuum mechanics and molecular dynamics simulations in atomistic mechanics with state-of-the-art experiments to reveal how the deformation and failure characteristics of materials depend on their internal microstructures and associated length- and time-scales. He has applied fundamental concepts of plasticity and diffusion theory, self-assembly and hierarchical materials design to understand and predict the properties of engineering and biological structures, from nanomechanical devices to reversible adhesion in biology.

The results of his research are applied, for example, in microelectronics, nano technologies, and optoelectronics.