Leopoldina
Nationale Akademie
der Wissenschaften

Curriculum Vitae Prof. Dr. Peter Gumbsch

Name: **Peter Gumbsch**

Research priorities: Mechanics of materials, multiscale materials modelling, deformation and fracture, tribology, materials and energy efficiency

Peter Gumbsch is a German materials scientist working in the field of mechanics of materials on questions concerning materials behavior under load on microscopic and macroscopic scales. The focus is on a better understanding of materials, components and systems at their limits. His aim is safety and reliability in the use of materials and components, and to improve material and energy efficiency in technical systems.

Academic and professional career

since 2016	Visiting Distinguished Professor at the University of California, Santa Barbara UCSB
since 2015	Research Unit Chair at the Institute of Nanotechnology INT, Karlsruhe Institute of Technology KIT
since 2001	Head of the Fraunhofer Institute for Mechanics of Materials IWM Freiburg, Germany
since 2001	Full professor for Mechanics of Materials and Head of the Institute for Applied Materials IAM, Karlsruhe Institute of Technology KIT, Germany
2012	Researcher in Residence, International Center for Materials Research, University of California, Santa Barbara
2006	Visiting Professor, School of Engineering, University of California, Santa Barbara
1997 - 2001	Head (C3) of the Research Group “Modelling and Simulation of Thin Film Phenomena”, Max-Planck-Institute for Metal Research, Stuttgart, Germany

1992 - 1996	Research Associate (Wissenschaftlicher Mitarbeiter), Max-Planck-Institute for Metal Research, Stuttgart, Germany
1992	Visiting Scientist at the Department of Materials University of Oxford, UK
1991 - 1992	Research Associate, Imperial College for Science, Technology and Medicine, Department of Mathematics, London, UK
1991	Dr. rer. nat. (with distinction), University of Stuttgart, Germany for thesis entitled (in English) Atomistic Study of two dimensional Defects in Metals: Cracks and Interfaces
1988	Diploma in Physics, »Structure of hetero phase interfaces in the Ag/Ni system«
1982 - 1990	Student of Economics, University (Gesamthochschule) Hagen, Germany
1981 - 1988	Student of Physics, University of Stuttgart, Germany

Functions in scientific societies and Committees

since 2019	Member of the National Academy of Science and Engineering acatech
since 2016	Member of the Senate of the Fraunhofer Society
since 2016	Member in the National Academy of Engineering (NAE), USA
since 2015	Member of the German Council of Science and Humanities (Wissenschaftsrat), since 2017 Chairman of the Scientific Commission
since 2011	Advisory Professor of Shanghai Jiao Tong University, China
since 2008	Elected Member of the German National Academy of Sciences Leopoldina (2011 - 2016 Chairman of the Section Technical Sciences and member of the Senate)
since 2002	Member of the Scientific and Technical Council (WTR) of the Fraunhofer Society, since 2013 Member of the Main Commission
since 2001	Member of the Board of Directors of the Fraunhofer Group MATERIALS, since 2019 Chairman
2004 - 2013	Member of the Expert Committee (Projektkomitee) »Component Behaviour« of the German Society for Reactor Safety (GRS)
2008 - 2012	Elected member of the Expert Committee (Fachkollegium) “405 materials technology” of the German Research Foundation DFG
1999 - 2001	Elected Member of the Scientific Council (Wissenschaftlicher Rat) and the CPT-Section of the Max Planck Society

Honours and awarded Memberships

since 2019	Member of the National Academy of Science and Engineering acatech

2019	Zhou Huijiu Forum Achievement Award of Xi´an Jiaotong University, China
since 2016	Member in the National Academy of Engineering (NAE), USA
2013	DGM-Award, Deutsche Gesellschaft für Materialkunde DGM
2009	Hector Fellow, Hector Foundation II
since 2008	Member of the German National Academy of Sciences Leopoldina
2007	Gottfried Wilhelm Leibniz Prize, Deutschen Forschungsgemeinschaft
1998	FEMS Lecturer, Federation of European Materials Societies
1998	Masing Memorial Prize, Deutsche Gesellschaft für Materialkunde DGM
1997	Peter Haasen Prize, Institut für Metallphysik, Universität Göttingen in association with Peter-Haasen-Stiftung
1992	Otto Hahn Medal, Max-Planck-Gesellschaft

Research priorities

Peter Gumbsch is a German materials scientist working in the field of mechanics of materials on questions concerning materials behavior under load on microscopic and macroscopic scales. The focus is on a better understanding of materials, components and systems at their limits. His aim is safety and reliability in the use of materials and components, and to improve material and energy efficiency in technical systems.

Peter Gumbsch investigates materials, their internal structure and their properties. His research is directed towards the understanding and the mathematical modeling of deformation and fracture processes with the aim of making materials and components safer, more reliable and durable. His concepts of multiscale materials modeling, which link mechanisms at the nano-, micro-and macro-scale, are internationally recognized.

He and his team are pioneering the integration of materials data and materials modeling into the product development process. His current interests are directed towards the investigation of friction and wear processes, where complex interactions of mechanics, physics and chemistry are important.