UNIVERSITY OF PADUA

Resume

FULL NAME: Bernhard A. Schrefler **TITLE: Professor Emeritus**

DEPARTMENT: Civil, Environmental and Architectural Engineering

EDUCATION:

University of Padua, Dott. Ing. (BS+MS), Civil Engineering (110/110 summa cum laude), 1967
University of Wales, Swansea Ph.D. 1984
University of Wales, Swansea D.Sc. 1992

PROFESSIONAL REGISTRATION:

Chartered Engineer, Engineering Chamber Bolzano, Italy 1968

CURRENT AND PREVIOUS ACADEMIC POSITONS:

Assistant Professor, University of Padua, Faculty of Engineering, 1969-1980
Lecturer, University of Padua, Faculty of Engineering, 1973-1980
Professor, University of Padua, Faculty of Engineering, 1980-2013
Head of Institute, University of Padua, Institute for Constructions, Bridges and Roads, 1984-1986
Head of Institute, University of Padua, Institute for Structural Engineering and Structural Mechanics, 1988-1996
Head of Department, University of Padua, Department of Constructions and Transportation, 1996-2000
Professor Emeritus, University of Padua, 2014-present

OTHER PROFESSIONAL EXPERIENCE:

Deputy Director, Management Committee of the European Centre for Pollution Research, Queen Mary and Westfield College, University of London, 1990-1994;
Secretary General, International Centre for Mechanical Sciences, Udine, 2001-present
Affiliated Scientist, Houston Methodist Hospital Research Institute, 2012-present

CONSULTING

Palasport Milan, Studio Romaro, Padova
Reversed Field Pinch RFX, Consortium CNR-Istituto Gas Ionizzati, Padova
Historical Bridge Conservation (1900), Municipality of Bolzano
NET Next European Torus, EURATOM, Bussels and Garching
ColumbusTeleskope, Istituto di Astronomia, University of Padua
Giotto Mission to Halley, Mirror, Istituto di Astronomia, University of Padua
ITER International Thermonuclear Experimental Reactor, Euratom
ITER International Thermonuclear Experimental Reactor, Fusion for Energy F4E, Barcelona
Subsidence of the Upper Adriatic Sea, Court of Justice, Rovigo
Heavy Ion Facility, Fusion for Energy F4E, Barcelona
Brenner Motorway, Trento
Brenner Base Tunnel, Bolzano
GSA Firehydroshock , Udine

MEMBERSHIPS IN PROFESSIONAL AND HONORARY SOCIETIES:

National (Italian) Academy of Sciences (dei XL)
Galileian Academy of Sciences, Humanities and Arts
Istituto Veneto di Scienze, Lettere ed Arti
Corresponding Member Istituto Lombardo
Fellow, International Association of Computational Mechanics (IACM)

Member Réunion Internationale des Laboratoires d'Essais et de Recherches sur les Matériaux et les Constructions (RILEM)
Member, Italian Association of Theoretical and Applied Mechanics (AIMETA)
Member International Society for Rock Mechanics (ISRM)
Member Italian Geotechnical Association (AGI)
Member Gesellschaft fuer angewandte Mathematik und Mechanik (GAMM)
Member American Society of Mechanical Engineers (ASME)
Member American Association for the Advancement of Science(AAAS)
Member of Interpore

PRESENT AND PAST PROFESSIONAL SOCIETY AND MAJOR GOVERNMENTAL COMMITTEES, EDITORIAL BOARDS, AND CONFERENCES ORGANIZED/CHAIRED:

Societies/Committees
Member, Scientific Council, International Network of Centres for Computer Applications, (INCCA) UNESCO
Member, Scientific Council, Institut Méditerranéen de Technologie (Marseille)
Member, Managing Council, European Community of Computational Methods in Applied Sciences (ECCOMAS)
Member, Bureau, European Community of Computational Methods in Applied Sciences (ECCOMAS)
Member, Scientific Council, International Center for Numerical Methods in Engineering, (CIMNE) Barcelona
Coordinator, Italian Group for Computational Mechanics (GIMC)
Member, General Council International Association of Computational Mechanics (IACM)
Member, Executive Council International Association of Computational Mechanics (IACM)
Member, EUROMECH Solid Mechanics Congress Committee
Chairman, EUROMECH Solid Mechanics Congress Committee
Secretary General, EUROMECH
Member, EUROMECH Solid Mechanics Prize Committee
Member, Hill Prize Committee, International Union for Theoretical and Applied Mechanics (IUTAM)
Member, IUTAM Congress Committee
Member, IUTAM Executive Committee of Congress Committee
Member, IUTAM Bureau
Member, Panel PE8 Process and Products Engineering, Advanced Grants, European Research Council (2009, 2011, 2013)
Chairman, Panel PE8 Advanced Grants, European Research Council (2014, 2016)
Chairman, Evaluation Committee, Faculty of Mechanical Engineering University of Technology of Eindhoven (2014)
Chairman, Evaluation Committee, Faculty of Mechanical Engineering University of Twente (2014)
Expert, Scientific Committee, Commissariat de l'Energie Atomique (CEA) France
Member, Executive Council, Network for Mathematics, Computing and Simulation for Industry (MACSI-net)
Member, Conseil d'Enseignement et de Recherche, Ecole Polytechnique, Paris
Member, Scientific Council, Coordination Committee for Studies of Structural Engineering, Italian research Council (CNR)
Member, Consulting Committee for Structural Engineering, Italian Research Council (CNR)

Editorial Boards
Associate Editor *International Journal of Environment and Pollution* 1991-1994
Associate Editor *European Journal of Mechanics A/Solids* 1995-2001

Associate Editor *Computer Methods in Applied Mechanics & Engineering* 2001-2005
Regional Editor *Mechanics Research Communications*, 2003-present
Corresponding Editor *Computer Modeling in Engineering & Sciences*, 2008-2011
Co-editor *Asia-Pacific Journal of Computational Engineering*, 2014-2017.
Associate Editor *Biomedical Microdevices*, 2016-

Editorial Boards:

Int. Journal of Communications in Applied Numerical Methods; Meccanica, (1987-1994) Int. Journal of Computer Applications in Technology; Int. Journal of Numerical Methods in Engineering; Int. Journal Métodos Numéricos para Càlculo y Diseno en Ingenieria; Journal of Marine Systems (1990-2002); International Journal for Engineering Modelling; Mechanics of Advanced Materials and Structures; Engineering Analysis and Design; Computers and Structures, Int. Journal for Computational Civil and Structural Engineering, Archives of Computational Methods in Engineering; Journal of Applied Mathematics and Mechanics ZAMM, Engineering Computation, Transport in Porous Media, European Journal of Mechanics A/Solids, Computers in Concrete, Structural Engineering and Mechanics, Computational Methods in Engineering Science and Mechanics, Interaction and Multiscale Mechanics: an International Journal, Computers, Materials and Continua; Int. Journal of Medical Nano Research; Advanced Modeling and Simulation in Engineering Sciences, Computer Modeling in Engineering & Sciences.

Conferences organized/chaired

Co-organizer, 2nd Int. Conference on Numerical Methods in Thermal Problems, Island of San Giorgio Maggiore, Venice, 1981
Co-organizer, 2nd Int. Conference on Numerical Methods in Laminar and Turbulent Flow, Island of San Giorgio Maggiore, Venice, 1981
Co-organizer, Int. Conference on Engineering Software for Microcomputers, Island of San Giorgio Maggiore, Venice, 1984
Co-organizer, 2nd Int. Conference on Numerical Methods in Transient and Coupled Problems, Island of San Giorgio Maggiore, Venice, 1984
Co-organizer, Int. Conference on Microcomputers in Engineering: Development and Application of Software, Swansea, 1986
Co-organizer, Int. Conference on Computer Modelling in Ocean Engineering, Venice, Island of San Servolo, 1988
Co-organizer, Int. Conference on Computer Aided Training in Science and Technology, CIMNE, Barcelona, 1990
Co-organizer, Int. Conference on Computer Modelling in Ocean Engineering, CIMNE, Barcelona, 1991
Co-organizer, Ninth Int. Conference on Finite Elements in Fluids, Venice, Auditotium Santa Margherita,1995
Co-Organizer, Conference on Computational Mechanics and the Use of Computers in Engineering, University of Padua, 1998
Co-organizer, Workshop on Environmental Geomechanics, Monte Verità, Ascona, Switzerland, 2002
Co-organizer, Int. Conference on Computational Methods for Coupled Problems in Science and Engineering, Ibiza, 2005
Co-organizer, Conference on Computational Methods for Coupled Problems in Science and Engineering II, Santorini, Greece, 2007
Co-organizer and co-chairman, 8th World Congress for Computational Mechanics WCCM8/ ECCOMAS, Venice, 2008

Co-organizer and Chairman, Conference on Computational Methods for Coupled Problems in Science and Engineering III, Ischia, 2009
Co-organizer, Conference on Computational Methods for Coupled Problems in Science and Engineering. Proceedings IV, Kos, Greece, 2011
Co-organizer, The first NEMB Venice workshop on Cancer Nanotechnology, Istituto Veneto, Venice, 2012
Co-organizer, Conference on Computational Methods in Science and Engineering V, Ibiza, 2013
Co-organizer and Chair, Conference on Coupled Problems in Science and Engineering. VI, Venice, Island of San Servolo, 2015
Local Co-organizer, IUTAM Symposium on Helicity, Structures and Singularity in Fluid and Plasma Dynamics, Istituto Veneto, Venice April 11-15, 2016
Co-organizer, Conference on Coupled Problems in Science and Engineering. VII, Island of Rhodes, Greece, 2017.

OTHER PROFESSIONAL HIGHLIGHTS
Member, Evaluation Committee, Deutsche Exzellenz Initiative
Member, Evaluation Committee, Ecole Centrale, Paris
Member, Evaluation Committee, Laboratory LMT, Ecole Normal Superieure, Cachan
Member, Evaluation Committee, CIMNE, UPC Barcellona
Member, Committee of Hydrogen Simulation Research, Fukuoka, Japan
Visiting Professor, CIMNE, Barcelona
Visiting Professor, University of Technology of Lodz (Poland)
Visiting Professor, Gdansk University of Technolgy
Visiting Professor, Conservatoire National des Arts et des Metiers (CNAM), Paris
Visiting Professor, Ecole Normale Superieure (ENS), Cachan
Visiting Professor, Univesity of Marne la Vallée, France
Visiting Professor, Universiti Teknologi (UTM) Malesia
Visiting Professor, Birla Center, Hyderabad, India
Visiting Professor, Dalian University of Technology, Cina
Visiting Professor, Chuo University, Tokyo
Visiting Professor, Ecole Polytechnique Federale Lausanne (EPFL)
Visiting Professor, ACES, University of Texas, Austin
Visiting Professor, Health Science Center, University of Texas, Houston
Visiting Professor, University of New South Wales, Sydney
Visiting Professor, Univesité Cergy Pontoise, France
Visiting Professor, Ecole Centrale, Nantes, France
Visiting Professor, Ecole Nationale Superieure Travaux Publics ENTPE, Yaounde, Cameroon

UNIVERSITY COMMITTEES/ADMINISTRATIVE ASSIGNMENTS:
Member, Budget Committee for Teaching staff, University of Padua
Member, Award Committee “Progetto Giovani”, University of Padua

HONORS AND AWARDS:
1996 Elected Corresponding Member of the Galileian Academy
1998 Fellow, International Association for Computational Mechanics (IACM)
1999 Doctorate honoris causa, St. Petersburg State Technical University
2000 Elected Member of the Galileian Academy

2001 Honorary Visiting Professor, Dalian University of Technology, China
2002 Doctorate honoris causa, University of Technology of Lodz
2002 Computational Mechanics Award, (IACM)
2002 Elected Corresponding Member of the Istituto Veneto
2002 Highly Commended Paper Award, Emerald Press, Engineering Computations (Co-authors H.W. Zhang, R. de Borst, O.M. Heeres).
2005 Honorary Fellow, University of Wales, Swansea
2005 Elected Corresponding Member of Istituto Lombardo di Scienze, Lettere ed Arti.
2006 Honorary Doctorate in Engineering, Leibniz University Hanover
2006 Chevalier de l'ordre des Palmes Académiques, France
2006 IACM O.C. Zienkiewicz Award, International Association for Computational Mechanics
2007 Honorary Professor, Dalian University of Technology, China
2007 Elected Member of the National (Italian) Academy of Sciences ("dei XL")
2008 Doctorate honoris causa, Russian Academy of Sciences
2009 Maurice A. Biot Medal, American Society of Civil Engineers ASCE
2010 Doctorate honoris causa, Ecole Normale Superieure, Cachan
2010 Euler Medal, European Community for Computational Methods in Applied Sciences
2011 Olgierd A.Zienkiewicz Medal, Polish Association of Computational Mechanics
2012 Lifetime Achievements Award, International Conference on Computational & Experimental Engineering and Sciences (ICCES)
2012 Elected Member of the Istituto Veneto di Scienze, Lettere ed Arti
2012 Elected Bureau Member, International Union for Theoretical and Applied Mechanics
2012 *Bytes and Science*, A book celebrating the 70th birthday of Bernhard A. Schrefler, (eds., G. Zavarise and D. P. Boso), CIMNE, Barcelona, Spain
2016 Hans-Fischer-Senior Fellowship, Institute for Advanced Study, Technical University of Munich
2016 Gauss-Newton Medal (IACM Congress Medal)
2017 Interpore Lifetime Honorary Membership Award, Interpore - The International Society for Porous Media
2017 "75 Jahre Prof. Bernhard Schrefler" Meeting celebrating the 75th birthday of Bernhard A. Schrefler, UNIBZ, Freie Universität Bozen – Libera Università di Bolzano, October 4th, 2017.
2019 Special Minisymposium for Prof. Bernhard A. Schrefler at the InterPore 2019 11th Annual Meeting
2019 Schrefler International Symposium on Geomechanics and Applications for Sustainable Development, at SIPS 2019, Cyprus.
2019 Fry International Sustainability Award, Sustainable Industrial Processing Summit SIPS, Cyprus
2020 Elected member at large to the General Assembly of IUTAM

RESEARCH ACTIVITY:

Dr. Schrefler has addressed fundamental aspects of applied and computational mechanics, and diverse applications to problems of practical interest. His contributions to structural and materials mechanics include the pseudo three-dimensional analysis of tall buildings, variable thickness plates, cable structures and related stability problems, membranes and wrinkling, asymptotic theory of homogenization with second order and boundary layer correctors, hierarchical and concurrent multi scale methods, thermo-electro-mechanical contact, use of Artificial Neural Networks (ANN) as constitutive models and for parameter identification for symbolic constitutive models.

In the field of technology for thermonuclear controlled fusion he contributed to the design of the reversed field pinch fusion device RFX (coils, vacuum vessel, shell, support structure, radiation in a torus, graphite first wall), and to the analysis of superconducting coils for ITER (International Thermonuclear Experimental Fusion Reactor).

In porous media mechanics he was the first to apply Biot's theory to surface subsidence due to withdrawal of water (Venice) and gas (Ravenna), to extend Biot's theory to two- and three phase flow, and to introduce the generalized Bishop's stress, today the most used stress tensor in partially saturated soils mechanics. He also addressed non isothermal elastic plastic consolidation, infinite elements in isothermal and non-isothermal consolidation, large strain quasi-static and dynamic partially saturated soil behaviour, strain localization in fully and partially saturated soils, cavitation modelling, constitutive modelling for partially saturated soils, partitioned solution procedures and their numerical properties, CBS stabilizing algorithm and discontinuous Galerkin method for porous media, thermo-hydro-mechanical analysis of partially saturated porous media, inclusion of air-water interfaces, carbonation of concrete, three-fluids model for concrete with application to concrete under very high temperatures, concrete at early ages and non-isothermal leaching. The concrete model has been incorporated into several general purpose computer programs. His current research focuses on tumor growth modeling and transport of nanoparticles in diseased microvasculature and on hydraulic fracturing.