

**Prof. Dr. Alberto CARPINTERI**  
**Chair of Structural Mechanics**  
**Politecnico di Torino**  
**10129 - Torino – Italy**

**Born in Bologna (Italy), on December 23, 1952**

**Doctoral Degree in Nuclear Engineering cum Laude, University of Bologna, Bologna-Italy, 1976**  
**Doctoral Degree in Mathematics cum Laude, University of Bologna, Bologna-Italy, 1981**

**Career and Academic Positions:**

Professor and Chair of Structural Mechanics, Politecnico di Torino, Torino-Italy, 1986-  
President of the National Research Institute of Metrology (INRIM), Torino-Italy, 2011-2015  
Head Dept. Structural Engineering, Politecnico di Torino, Torino-Italy, 1989-1995  
Founding Member and Director – Post-graduate School in Structural Engineering, Politecnico di Torino, Torino-Italy, 1990-  
President of the International Congress on Fracture (ICF), 2009-2013  
President of the European Structural Integrity Society (ESIS), 2002-2006  
President of the International Association of Fracture Mechanics for Concrete and Concrete Structures (IA-FraMCoS), 2004-2007  
President of the Italian Group of Fracture (IGF), 1998-2005  
Member of the Congress Committee of the International Union of Theoretical and Applied Mechanics (IUTAM), 2004-2012  
Visiting Professor, Lehigh University, Bethlehem-Pennsylvania, USA, 1982-1983  
Fellow of the European Academy of Sciences, Liege-Belgium, 2009-  
Fellow of the International Academy of Engineering, 2010-  
Foreign Member of the Russian Academy of Engineering, Moscow-Russia, 2009-  
Fellow of the Turin Academy of Sciences (founded by G.L. Lagrange in 1783), Torino-Italy, 2005-; Member, 1995-2005  
Member of the Istituto Lombardo – Accademia di Scienze e Lettere (founded by A. Volta in 1804), Milano-Italy, 2006-  
Member of the Accademia Teatina per le Scienze, Chieti-Italy, 2006-  
Fellow of: ASCE, ICF, ESIS, IA-FraMCoS

**Scientific Activity and Achievements:**

The academic activities have been developed in the years towards different, although correlated, directions:

- (i) Teaching undergraduate and graduate courses on Basic Structural Mechanics, Advanced Structural Mechanics, Strength of Materials, and Fracture Mechanics
- (ii) Organizing Workshops and Conferences at the national and international levels, in particular on topics regarding Strength of Materials and Fracture Mechanics
- (iii) Participating, initially as a member and later with higher responsibilities, to the life of different national and international Scientific Societies, in the fields of Theoretical and Applied Mechanics, Structural Mechanics, Fracture Mechanics, Civil Engineering
- (iv) Writing or editing volumes on different topics, reflecting various scientific interests or teaching activities
- (v) Publishing the major results of his studies in Refereed International Journals

More in particular, the following achievements have been accomplished:

Editor-in-Chief of the International Journal “Meccanica”, 2012-; Member of the Editorial Board of thirteen international journals

Author of over 650 papers (more than 300 published in Refereed International Journals) on: fracture mechanics, material fatigue, thermoelasticity, seismic structures, reinforced concrete, structural

monitoring, contact mechanics, fragmentation and comminution, drilling and wear, multi-layered and functionally graded materials, nano-structured and hierarchical materials, acoustic and electromagnetic emissions, piezonuclear reactions

h-index = 29

Total Citations = 2724

Author or Editor of 42 volumes

Two single authored books published by International Publishers:

A. Carpinteri: *Mechanical Damage and Crack Growth in Concrete: Plastic Collapse to Brittle Fracture*, Martinus Nijhoff Publishers, Dordrecht (1986), XIII + 234

A. Carpinteri: *Structural Mechanics: A Unified Approach*, Chapman & Hall, London (1997), XV + 761

### **Research Topics and Cutting-edge Results:**

Different specific topics have been considered, always giving them a personal and original contribution. In some cases such a contribution resulted to be also innovative, anticipating even by years the trends in cutting-edge research. Among these peculiar aspects, it is significant to recall the following ones:

- (1) Application of Dimensional Analysis (Buckingham's Theorem for physical similitude and scale modelling) to the scaling competition between plastic collapse and brittle fracture, which are failure mechanisms governed by generalized forces with different physical dimensions
- (2) Interpretation of brittle crack propagation in the framework of Catastrophe Theory by René Thom
- (3) Application of Fractional Calculus to field and boundary equations of an elastic body deformable only over a fractal sub-set
- (4) Solution to the problem of propagation stability of cracks bridged by reinforcements and/or fibres based on rigorous conditions of equilibrium and compatibility
- (5) Some very recent papers deal with fundamental aspects, like the size effects on the friction coefficient and the criticality of rock slopes, the nonlinear and chaotic behaviour in cracked or damaged solids, the fatigue limit and threshold with related scaling laws, the energy emissions from fracture phenomena

### **Honours and Awards:**

Robert l'Hermite Medal, RILEM, 1982

Japan Society of Mechanical Engineers Medal, JSME, 1993

Honorary Professor, Nanjing Architectural & Civil Engineering Institute, Nanjing-China, 1996

Honorary Professor, Albert Schweitzer University, Geneva-Switzerland, 2000

Wessex Institute of Technology Eminent Scientist Medal, WIT, Southampton-UK, 2000

Griffith Medal for Fracture Mechanics, ESIS, 2008

International Congress on Fracture Honorary Fellowship Award, ICF, 2009

Inclusion in the "Top 100 Scientists" list, International Biographical Centre, Cambridge-UK, 2009

Man of the Year in Science, American Biographical Institute, USA, 2009

Jerold L. Swedlow Memorial Lecture Award, American Society for Testing and Materials (ASTM), 2011

Torino, Italy

September 25, 2011