

Nanomaterials
2020
WEBINARS

Advanced Mechanical Modeling of Nanomaterials and Nanostructures

16 OCTOBER 2020, 11:00 AM (CEST)

MDPI
WEBINARS

Chair: **FRANCESCO TORNABENE**
Speakers: **ROSSANA DIMITRI AND SALVATORE BRISCHETTO**



nanomaterials



Webinar Information

1st Webinar of *Nanomaterials* - an Open Access Journal

Advanced Mechanical Modeling of Nanomaterials and Nanostructures

In line with the interests of the Special issue (SI) "Advanced mechanical Modeling of Nanomaterials and Nanostructures", the present webinars will focus on the theoretical modeling of heterogeneous materials and enhanced structures, whose response could be affected by stacking sequences, ply orientations, agglomeration of nanoparticles, of the constituents and porosity levels.

The series of talks will show different results from large numerical campaigns, focusing on fiber-reinforced composites and laminates, functionally graded materials, carbon graphene nanoplatelets, auxetic materials, latticed and cellular (honeycomb) materials, SMART constituents, together with innovative and advanced classes of composites Angle-Tow laminates. Among many possible structural applications (e.g. SMART actuators, piezoelectric sensors, shape memory alloys, magnetostrictive and electrostrictive auxetic components), composite beams and shells with different geometries will be discussed, due to their unique shapes and outstanding mechanical behavior, accounting size-dependence.

In a context where an increased computational demand is required to solve such complicated solid mechanics problems (including large deformation, crack propagation, damage, vibration, or buckling problems), the webinar discusses about different high-performing computational strategies and advanced theoretical formulations, which systematically against the available literature in their reliability and accuracy.

This Webinar relates to the Special Issue [Advanced mechanical Modeling of Nanomaterials and Nanostructures](#).

Chair: Dr. Francesco Tornabene

Date: 16 October 2020

Time: 11:00 am (CEST) | 5:00 am (EDT) | 17:00 pm (CST ASIA)

Webinar ID: 899 2278 0922

Webinar Secretariat: nanomaterials.webinar@mdpi.com

This webinar will include the following experts:



Dr. Francesco Tornabene

Dr. Francesco Tornabene is a researcher at the School of Engineering, Department of Innovation University of Salento. He was born on 13 January 1978 in Bologna, where he received the high school c Classico *San Luigi*, in 1997. In 2001 he achieved a National Patent Bologna (Italy) for the Industrial Inv *Clutch for High Performance Vehicles* Question BO2001A00442. He received from the University of E Mater Studiorum, a M.Sc. degree in *Mechanical Engineering* (Curriculum in *Structural Mechanics*), c discussing a thesis entitled: "*Dynamic Behavior of Cylindrical Shells: Formulation and Solution*". In Dece was admitted at the PhD course in *Structural Mechanics*, at the University of Bologna, reaching the first competitive admission. In 2004, he received from the University of Bologna a Thesis price in memory *Jodi*; in 2007 he received the Ph.D. degree in *Structural Mechanics* at the University of Bologna, discuss entitled "*Modeling and Solution of Shell Structures Made of Anisotropic Materials*". From 2007 to 2009 research fellowship by the University of Bologna, working on the "*Unified Formulation of Shell Struc Anisotropic Materials. Numerical Analysis Using the Generalized Differential Quadrature Method and the Method*". From 2011 to 2012 he became a Junior researcher within the research program entitled "*Advar Schemes for Anisotropic Materials*"; from 2012 to 2018 he was an Assistant Professor and Lecturer at t Studiorum - University of Bologna; from 2018 up to date he is an Assistant Professor in Structural f Lecturer at the University of Salento, Department of Innovation Engineering (Lecce). For a long tim interests include the Structural Mechanics, Solid Mechanics, Innovative and Smart Materials, Computac and Numerical Techniques, Damage and Fracture Mechanics. He is author of more than 260 scientific pu collaborates with many national or international researchers and professors all over the world, as v scientific production. He is author of 11 books, see e.g. "*Meccanica delle Strutture a Guscio in Materiali metodo Generalizzato di Quadratura Differenziale*" (2012); "*Mechanics of Laminated Composite Doubl Structures. The Generalized Differential Quadrature Method and the Strong Formulation Finite Element M*" "*Laminated Composite Doubly-Curved Shell Structures I. Differential Geometry. Higher-Order Struci*" (2016); "*Laminated Composite Doubly-Curved Shell Structures II. Differential and Integral Quao Formulation Finite Element Method*" (2016), among many. He is member of the Editorial Board for 3 Journals (see, e.g. *Journal of Engineering*, *International Journal of Engineering & Applied Scienc Structures, Technologies*, *Journal of Applied and Computational Mechanics*, *Journal of Composites Scie Materials and Technologies*, *Heliyon*, *International Scholarly Research Notices*, *Mathematical Engineering*, *ISRN Mechanical Engineering*, *Journal of Computational Engineering*, *Advances in Aircraft Science*). He is also Editor-in-Chief for 2 International Journals: *Curved and Layered Structures*, *Journal Science*; from 2019 he is Associate Editor for the International Journal "*Mechanics Based Design of Machines*". In the last years he received different important awards, see e.g. "Highly Cited Research Analytics" (years 2018, 2019), "Ambassador of Bologna Award for the organization of 21st International Composite Structures ICCS21, 4-7 September 2018, Bologna, Italy" (2019), "Member of the Europee Sciences" (since 2018). He collaborates as reviewer with more than 200 prestigious international j structural mechanics field. From 2012, his teaching activity includes *Dynamics of Structures: Mechanics; Plates and Shells; Theory of Structures, Structural Mechanics*. He is habilitated as Associate Full Professor in the area 08/B2 (Structural Mechanics) and as Associate Professor in Area 09/A1 (Ae Aerospace Engineering and Naval Architecture).



Prof. Dr. Rossana Dimitri

Prof. Dr. Rossana Dimitri is an Associate Professor at the School of Engineering, Department Engineering, University of Salento, Lecce, Italy. She received from the University of Salento, a M. "Materials Engineering" in 2004, a Ph.D. degree in "Materials and Structural Engineering" in 2009, and a F "Industrial and Mechanical Engineering" in 2013. In 2005, she received from the University of Salento th Thesis Price 2003-2004" in memory of Eng. Gabriele De Angelis; in 2013 she was awarded by the Itc Computational Mechanics (GIMC) for the Italian selection of the 2013 ECCOMAS PhD Award. Her ct include Structural Mechanics, Solid Mechanics, Damage and Fracture Mechanics, Contact Mechanics Analysis, High-Performing Computational Methods, Consulting in Applied Technologies and Technology T 2010 and 2011 she received a research fellowship by ENEA Research Centre of Brindisi (UTTMATB- development and the characterization of some thermoplastic composites for thermal solar panels e bonded turbine blades under severe environmental conditions. During 2011 and 2012 she was a visiting fellowship at the Institut für Kontinuumsmechanik Gottfried Wilhelm Leibniz Universität Hannover to s problems with isogeometric approaches. From 2013 to 2016 she was a researcher at the University of the ERC starting research grant "INTERFACES" on "Computational mechanical modelling of structural on isogeometric approaches". From 2013 to 2019, she has collaborated, as researcher RTD-B with th Bologna and the Texas A&M University for a comparative assessment of some advanced numerical collo with lower computational cost for fracturing problems and structural modelling of composite plates and s isotropic, orthotropic and anisotropic materials. She is author of 112 scientific publications, and she c many national or international researchers and professors worldwide, as visible from her scientific produ collaborates with different prestigious international journals in the structural mechanics field, as reviewer, editorial board, and guest editor for different special issues.



Prof. Salvatore Brischetto

After earning his degree in Aerospace Engineering at the Politecnico di Torino in 2005, Brischetto received Aerospace Engineering (Politecnico di Torino) and in Mechanics (Université Paris Ouest–Nanterre La Défense). He won the excellence prize for PhD students in 2008 and the prize for young researchers in 2011 at the Politecnico di Torino. He worked as a Research Assistant at the Politecnico di Torino from 2006 to 2010, and as Assistant Professor from 2010 to 2018; currently he is Associate Professor since February 2018. His main research topics are composite structures, multifield problems, hygro-thermal stress analysis, CNTs, inflatable structures, shell structures, numerical and exact solutions, additive manufacturing and UAVs. He is the author of more than 150 articles, 10 patents, and 1 book. He has been published in international journals, and 1 patent. He serves as a reviewer for more than 100 journals. He has been Guest Editor for Mechanics of Advanced Materials and Structures and for Technological Committee member for several international journals and 1 book series, and member of the "Shell Buckling" web-site. He has been Teaching Assistant at the Politecnico di Torino for courses on "Computational Mechanics of Structures for aerospace vehicles", "Nonlinear analysis of aerospace structures", "Principles of structural analysis", "Aeronautic constructions", "Aeronautic structures", and "Numerical modelling and simulation techniques for aerospace structures". He was chair at the Politecnico di Torino for the courses "Aeronautic law and human factors in aerospace", "Design and Additive Manufacturing for Aerospace Applications", and currently for "Aeronautic structures", "Numerical modelling and simulation techniques for aerospace structures" and "3D shell models for aerospace structures". He is co-founder and co-chair of the group "ASTRA: Additive manufacturing for Systems and Aerospace", and also founder and chair of the project "PoliDrone, A multipurpose modular drone printing".

Programme

The webinar will start at 11:00 am (CEST) and will last 2 hours.

Speaker & Presentation	Time
Introduction: Dr. Francesco Tornabene	11:00 – 11:10
Prof. Dr. Rossana Dimitri <i>High-performing numerical methods for the mechanical study of nanocomposite materials and structures</i>	11:10 – 11:45
Prof. Salvatore Brischetto <i>3D and advanced shell models for the analysis of single- and double-walled carbon nanotubes and nano-reinforced structures.</i>	11:45 – 12:20
Q&A moderated by Dr. Francesco Tornabene (Chair) <i>Attendees are welcome to type in their questions in the Zoom Q&A section.</i>	12:20 – 12:50
Discussion and concluding remarks	12:50 – 13:00
