



*2025 International Workshop on
Multiscale Innovative Materials and Structures (MIMS25)*
October 29th - November 1st, 2025
Cetus Hotel, Cetara (Amalfi Coast) - Salerno, Italy



Workshop Program

Wednesday October 29, 2025

Welcome Session:

h 14.30 Fernando Fraternali, Graeme Milton and Antony Rosato: Welcoming speeches, *Sala Roccia*

h 15.00 - 16.30 Mini-Session 1, Room 1: Sala Roccia - Chair: *Anthony Rosato*

15.00 – 15.45 James T. Jenkins (Cornell University): *“Recent Dense Steady Fully Developed Fluid-Particle Flows over Erodible Beds”*

15.45 – 16.30 Chris Lorenz (Kings College London): *“Molecular dynamics simulations of entanglement in granular mechanical metamaterials”*

h 16.30 - 17.00 *Coffee Break*

h 17.00 - 18.45 Mini-Session 2, Room 1: Sala Roccia - Chair: *Fernando Fraternali*

17.00 – 17.45 Michele Brun (University of Cagliari) et al.: *“Multiscale medium with large negative and positive coefficient of thermal expansion”*

17.45 – 18.05 Emilio Barchiesi (University of Sassari): *“Solitary wave propagation in monolayered pantographic waveguides”*

18.05 – 18.25 Rana Nazifi Charandabi (University of Salerno): *“Design and modeling of origami solar windows” (student presentation)*

18.25 – 18.45 Angela Lato (University of Salerno): *“Strut net models of masonry structures” (student presentation)*

18.45 – 19.05 Claudia Binetti (Polytechnic of Bari): *“Thermal fluctuations effect on crack propagation and decohesion phenomena” (student presentation)*

h 19.05 *Opening of the Poster Session , Sala Roccia*

Thursday October 30, 2025

Morning Sessions:

h 09.00 - 11.05 Mini-Session 3, Room 1: Sala Roccia - Chair: **Anthony Rosato**

09.00 – 09.45 **Davide Bigoni** (University of Trento): ***“The art of folding structures and solids”***

09.45 – 10.05 **Nicholas Fantuzzi** (University of Bologna) et al.: ***“Optimized anisotropic 3D-printed composites for patient-specific GBR meshes via multi-constraint topology optimization”***

10.05 – 10.25 **Andrea Francesco Russillo** (University of Reggio Calabria) et al.: ***“A novel concept of locally resonant periodic foundation for seismic isolation of masonry structures”***

10.25 – 10.45 **Giuseppe Failla** (University of Reggio Calabria) et al.: ***“On seismic Rayleigh wave attenuation via water-tank metabarriers”***

h 10.45 - 11.35 **Coffee Break**

h 11.35 - 13.00 Mini-Session 4, Room 1: Sala Roccia - Chair: **Fernando Fraternali**

11.35 – 12.20 **Alfredo Marzocchi** (Università Cattolica del Sacro Cuore, Brescia) et al.: ***“Three-scales asymptotic homogenisation for one-dimensional elastic composites”***

12.20 – 12.40 **Almudena Garcia** (Universidad Politécnica de Madrid): ***“A smart PV blind based on micro-optical architectures and integrated planar tracking for sustainable building envelopes”***

12.40 – 13.00 **Matteo Viscoti** (University of Lecce) et al.: ***“A Higher-order equivalent layer-wise modeling for multifield analysis of curved laminated structures”***

h 13.00 - 14.30 **Lunch**

Afternoon Sessions:

h 14.30 - 16.15 Mini-Session 5, Room 1: Sala Roccia - Chair: **Raffaele Barretta**

14.30 – 15.15 **Graeme Milton** (University of Utah): ***“Guiding stress and optimal pentamode”***

15.15 – 15.35 **Francesco Marotti de Sciarra** (University of Naples Federico II): ***“Bishop nanorods with stress-driven nonlocal elasticity and arbitrary boundary conditions”***

15.35 – 15.55 **Marzia Sara Vaccaro** (University of Naples Federico II) et al.: ***“Iterative method for nonlocal elastic plates”***

15.55 – 16.15 **Andrea Chiozzi** (University of Ferrara) et al.: ***“Multiscale structural optimization with embedded architected materials for large-scale additive manufacturing”***

h 16.15 - 16.45 **Coffee Break**

h 16.45 - 18.30 Mini-Session 6, Room 1: Sala Roccia - Chair: **Ada Amendola**

16.45 – 17.30 **Antonio de Simone** (Scuola Superiore Sant'Anna, Pisa): ***“Bio-inspired engineering from the mechanics of active matter”***

17.30 – 17.50 **Antonio Sellitto** (University of Salerno) et al.: ***“Electron and phonon temperatures: application to the thermal-shock propagation in a thin nanolayer”***

17.50 – 18.10 **Annavirginia Lambiase** (University of Salerno) et al.: ***“Experimental characterization and multiscale modeling of self-sensing CNT-based cementitious composites”***

18.10 – 18.30 **Mariano Modano** (University of Naples Federico II) et al.: ***“Metaheuristic inverse design of cable forces in suspended bridges: a FEM-free benchmark for structural optimization”***

18.30 – 18.50 **Sina Sarfazi** (University of Naples Federico II) et al.: ***“Artificial intelligence for dynamic characterization of composite panel structures: a structured review”***

h 20.00 **Banquet , Sala Roccia**

Friday October 31, 2025

Morning Sessions:

h 09.00 – 0.45 Mini-Session 7, Room 1: Sala Roccia - Chair: *Emilio Barchiesi*

09.00 – 09.45 **Patrizia Trovalusci (Sapienza University of Rome): *“Homogenisation of implicitly non-local continua with periodic and random microstructures”***

09.45 – 10.05 **Tero Mäkinen (Aalto University) et al.: *“Architected biofoams with tunable acoustic and mechanical performance via microstructure design”***

10.05 – 10.25 **Juha Koivisto (Aalto University) et al.: *“Exploiting the self-assembly of methylcellulose for environmentally responsive hierarchical structures”***

10.25 – 10.45 **Marco Miniaci (Polytechnic of Turin) et al.: *“Shear–normal coupling in meta-barriers: a path to efficient underwater acoustic shielding”***

h 10.45 - 11.35 Coffee Break

h 11.35 - 12.40 Mini-Session 8, Room 1: Sala Roccia - Chair: *Nicholas Fantuzzi*

11.35 – 12.20 **Anthony Rosato (New Jersey Institute of Technology): *“Discrete dynamical behavior of a tapped column of spheres”***

12.20 – 12.40 **Anna Al Sabouni-Zawadzka (Warsaw University of Technology) et al.: *“Experimental study of negative Poisson’s ratio in a tensegrity-like lattice”***

h 12.40 - 14.30 Lunch

Afternoon Sessions:

h 14.30 - 16.15 Mini-Session 9, Room 1: Sala Roccia - Chair: *Marco Miniaci*

14.30 – 15.15 **Fehmi Cirak (University of Cambridge) et al.: *“Quantum computational homogenisation”***

15.15 – 15.35 **Fernando Fraternali (University of Salerno) et al.: *“ILAM Project: Developments of innovative lattice structures”***

15.35 – 15.55 **Fabrizio Greco (University of Calabria) et al.: *“Nonlinear mechanical behavior and microstructural transformations in advanced metamaterials: Insights and results from the ILAM Project”***

15.55 – 16.15 **Antonella Petrillo (University of Naples Parthenope) et al.: *“STABSOIL Project: Innovative techniques in solidification and stabilization strategies for soil remediation”***

h 16.15 – 16.45 Coffee Break

h 16.45 - 18.50 Mini-Session 10, Room 1: Sala Roccia - Chair: *Anthony Rosato*

16.45 – 17.30 **Susmita Naskar (University of Southampton): *“Dual pathways to programmable mechanics: Active metamaterials and origami-inspired shape morphing”***

17.30 – 17.50 **Lorenzo Leonetti (University of Calabria) et al.: *“A multiscale failure analysis of bioinspired periodic composites by using a neural network-based homogenization approach”***

17.50 – 18.10 **Ada Amendola (University of Salerno) et al.: *“Tensegrity systems for energy-harvesting structures within the SUSTBUILD project”***

18.10 – 18.30 **Julia de Castro Motta (University of Salerno) et al.: *“Next-generation “green” structures for disaster-resilient buildings within the NEXTBUILDING project”***

18.30 – 18.50 **Baidehi Das (University of Naples Federico II) et al.: *“On the dynamics of nanobeams on nanofoundations”***

h 19.00 Workshop Award Ceremony, Sala Roccia

November 1st, 2025: Discussion Session, Closure of the Poster Session, Concluding Remarks