Advanced materials Laboratory
ADMALAB

Principal Investigator:
Prof. Raffaella AVERSA

Responsible for teaching and research activities in the laboratory (R.a.d.o.r.):
Prof. Raffaella AVERSA (proposal approved by the Department Council n. 16 of 10/26/2022).

Location:
The Advanced Materials Laboratory is in the Abbey of S. Lorenzo ad Septimum, home of the Department of Architecture and Industrial Design, in Aversa (on the ground floor in the Cloister).

Main Laboratory Activities:
The working group that operates in the laboratory is made up of professors, contract staff, research fellows and PhD students who are interested in the development and characterization of advanced materials (biomaterials, nanomaterials, glass metals, surface treatments, shape memory alloys), technology transfer from advanced biomedical and aerospace sectors to products of Industrial Design and Sustainable Product Design and Production.

The laboratory is currently involved in research activities on:

- Biomechanics and biomimetics;
- development of new low-invasiveness prosthetic trabecular structure systems in sintered metal;
- application of additive technologies (3D printing) of metal components;
- design of biomimetic metal trabecular structures;
- scaffolds for tissue engineering;
- mechanical and calorimetric characterization of polymeric and composite materials;
- processing techniques of polymeric and composite materials;
- smart materials based on Shape Memory Alloy;
- geopolymers.

Main Equipment:

- DMA, Dynamic Mechanical Analyser;
- ADSC, Alternated Differential Scanning Calorimetry;
- ADSC and DMA data control and elaboration station;
- Two-stage refrigeration system (-80Â°C);
- Counter-top differential calorimeter (DSC 25);
- Differential calorimeter (DSC 30);
- Scanning electron microscope (SEM, JEOL 4200);
- AFM, Atomic Force Microscopy;
- Nano-indenter for tribological and surface hardness measurements;
- Counter-top sonication unit;
- 4-digit precision scales;
- 2-digit precision scales;

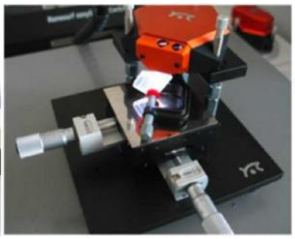
Dipartimento di Architettura
e Disegno Industriale

Via San Lorenzo
Abazia di San Lorenzo
ad Septimum
81031 Aversa (CE)

T.: +39 081 5010700
F.: +39 081 5010704

dip.architettura@unicampania.it
dip.architettura@pec.unina2.it
www.architettura.unicampania.it

- Spectrophotometer UV-Vis (Agilent Cary 60);
- Spectrophotometer FT-IR Agilent
- 3D Printer (WASP 4200 Clay);
- Vacuum heater with heating cycle control software;
- Drivers for piezoelectric and flexscan actuators for the measurement and recording of deformations (strain gauges);
- Digital multimeter;
- Thermostatic magnetic stirrer;
- Laboratory glassware;
- Steel chemical bench;
- Laminate work-benches;
- Mechanical rod stirrer with LCD display;
- Digital PH TDS EC Meter Tester.



Associated Research Groups:
ADMALAB - Advanced materials Laboratory

Reference Scientific Subject Areas:
IMAT 01/A

ISI WEB categories:

- Engineering, Aerospace;
- Engineering, Biomedical;
- Materials Science, Biomaterials;
- Materials Science, Multidisciplinary;
- Nanoscience & Nanotechnology;
- Materials Science, Composites;
- Materials Science, Characterization & Testing.

ERC categories :

- PE5-1 Structural properties of materials;
- PE5-8 Intelligent materials – self assembled materials;
- PE5-10 Colloid chemistry;
- PE8-9; Materials engineering (biomaterials, metals, ceramics, polymers, composites...);
- PE8-10 Production technology, process engineering;
- PE8-12 Sustainable design (for recycling, for environment, eco-design);
- PE11 Materials Engineering.

Key words:
Biomaterials, hybrid materials, geopolymers, composites, additive technologies, technology transfer, metamaterials, characterization ofmaterials, sustainable transition.

Dipartimento di Architettura
e Disegno Industriale

Via San Lorenzo
Abazia di San Lorenzo
ad Septimum
81031 Aversa (CE)

T.: +39 081 5010700
F.: +39 081 5010704

dip.architettura@unicampania.it
dip.architettura@pec.unina2.it
www.architettura.unicampania.it