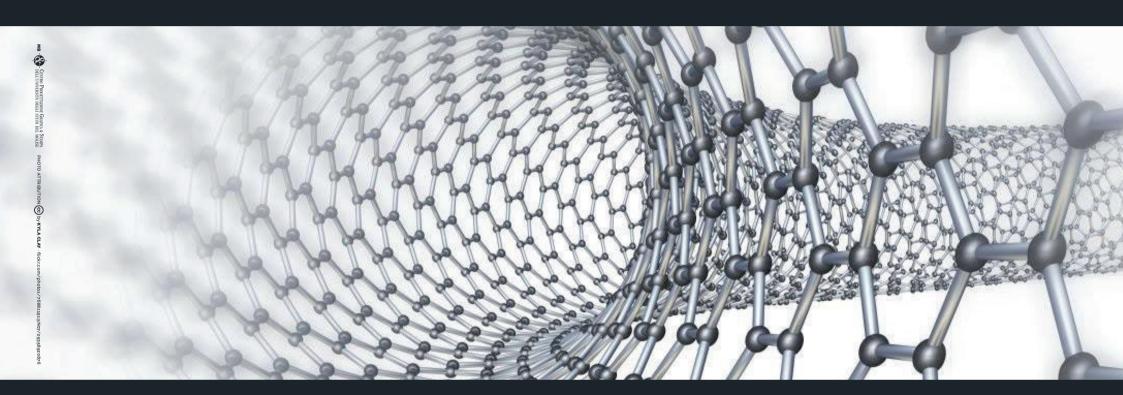


UNIVERSITY OF MOLISE PhD PROGRAMS. COURSE ON:

HIGH-PERFORMANCE MATERIALS AND DEVICES WITH TAILORED MORPHOLOGY AND STRUCTURAL/FUNCTIONAL PROPERTIES: FUNDAMENTALS AND DESIGN METHODS



TUESDAY 14TH MARCH WELCOME ADDRESS

Prof. Vincenzo DI NUOSCIO
Unimol Delegate for PhD programs
Prof. Salvatore GERBINO

Chair

INTRODUCTION

Prof. Luigi AMBROSONE Unimol

Classification of Materials
Advanced Materials and needs
Processing-Structure-Properties-Performance Correlations
Materials characterization methods
Basic mechanical concepts
and simple relationships
Metals, Ceramics, Polymers and Composites:
differences in terms of structures and properties

Prof. Antonio GLORIA

CNR

14.00 · 17.00

From little molecules to big molecules

Molecular weight and molecular weight distributions
Polymer transitions and methods of measuring transitions
Polymer synthesis and structure

Classification of polymers

Rubber elasticity

Rubber elasticity
Mechanical behavior of polymers

OPEN DISCUSSION 17.00 · 18.00

WEDNESDAY 15TH MARCH VISCOELASTICITY AND FLOW

Prof. Luigi AMBROSONE

Unimol

9.30 · 12.30

Rheology: basic principles

Newtonian and non-Newtonian fluids

Steady shear tests

Viscoelasticity: theory and concepts

Stress relaxation, creep

Dynamic mechanical tests

Storage or elastic modulus, viscous or loss modulus, loss factor

Polymer Processing

Principles and design

composite materials Prof. Antonio GLORIA

CNR

 $13.30 \cdot 16.30$

Principles in designing fiber-reinforced, micro-, nano-composite materials
Reverse Engineering and Additive Manufacturing: concepts and applications
Conventional and non conventional technologies
Image capture and analysis techniques
An approach toward the design
of custom-made devices for different applications
Design of advanced scaffolds with
tailored morphology and properties for tissue engineering
Surface modification/Functionalization
of scaffolds for tissue engineering;
Analysis of cell-material interactions

DISCUSSION AND CONCLUSION 17.00 · 18.00