# EUROMAT 2019 / Area C: Processing

## SYMPOSIUM: C1

**Title: Coatings and Surface Modification Technologies**


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**Abstract**


The modification of Materials surface is an excellent, and sometimes unique, alternative to optimize the final performance of a component. Many of the external requirements for a component application are related to the surface (e.g. wear and corrosion resistance, color, reflectivity, etc...); therefore, surface modification is a cost efficient way to provide added-value to materials making them multifunctional.

This symposium addresses current scientific and technological progress in the field of Surface Engineering, bringing together recent advances and innovations in (i) coating and thin films, as well as surface modified materials, (ii) the methods and techniques for their processing / characterization and (iii) a myriad of cases for different industries like automotive, aeronautic, tools, health, electronics ,..


**Hot topics will include**

***S.1. Coatings and Thin Films for industrial applications***

- Relations between synthesis conditions, microstructure and functional properties
- Coatings with advanced properties (self-cleaning, self-healing, wettability, smart coatings, thermal barrier coatings, bioactivity, anti-fouling, anti-microbial, anti-sticking, optical applications, etc)
- New coating concepts and designs (materials for high temperature applications, energy production, conversion and storage, sensors, supercapacitors, self-adapted, self-lubricating surfaces, materials for food packaging, ...)
- Design and manufacturing of protective or decorative coatings (corrosion protection, oxidation and wear resistance, ...)
- New frontiers in biocompatible materials (biomaterials, healthcare, ...)

***S.2. Advanced methods of materials deposition and surface functionalization treatments***

- Plasma deposition and related technologies (diagnosis, modelling, deposition parameters, ....)
- Theoretical aspects of surface processing

- New coating technologies, pulsed plasmas, HiPIMS and industrial coating units
- Fabrication of nanoparticles and 3D nanostructures
- Non-plasma deposition of coatings and thin films (CVD, laser assisted, plating, electrodeposition, etc)
- Novel fabrication and surface functionalization routes
- Chemical methods for surface modification (electroless,, anodization, sol-gel, …)
- Materials nano-modification and lithography
- Additive manufacturing and 3D printing
- Laser nano-texturing and treatment

***S.3. In-situ and in-operando characterization techniques***

- Emerging technologies with focused beams
- Resolution enhancement of optical devices
- In-situ characterization of coatings during deposition
- High resolution characterization techniques of thin films
- In-situ characterization of materials for high temperature performance
- In-situ characterization of materials in harsh environments
- Scaling up concepts: from lab to market