

Participants in the 2023 Characterization of Materials Summer School

Group	First name	Last name	Email	Affiliation	Fields of study
1	Mukhtar	Ali	mukhtiar.ali@unito.it	University of Turin	I work with PFAS degradation samples. I want to learn more about materials characterization techniques like TEM, Analytical SEM, EXD, XRD, STM and Raman Spectroscopy
3	Matteo	Darra	matteo.darra@epfl.ch	EPFL	I work with solid samples, looking for qualitative compositional information and surface morphology/topology
2	Diksha	Diksha	d.diksha@maastrichtuniversity.nl	Maastricht University	Our research aims to develop new coatings for cryogenic gravitational wave detectors, specifically for detectors like the Einstein telescope. These coatings comprise alternating stacks of high and low index dielectric layers. Our primary objective is to investigate the effects of various doping and passivation processes on the absorption and mechanical loss properties of the coated samples. Additionally, we explore the potential benefits of incorporating a crystalline layer on top of the coating to reduce absorption loss. We have developed single amorphous silicon layers as high index layer samples with different treatments. Silicon nitride may be used as the other alternating low index layer. We seek to identify suitable analytical methods in this course for characterizing the coatings and determine their applicability in optimizing the combination of heat treatment, hydrogenation, and doping processes for different materials. The ultimate goal is to achieve the lowest possible absorption and mechanical loss, which has direct implications for the efficient utilization of multiple layer stacks in cryogenic gravitational wave detectors. By combining these methods, we can gain a comprehensive understanding of the coatings' optical, structural, and mechanical properties.
2	Leonardo	Facchini	leonardo.facchini@dlr.de	German Aerospace Center (DLR)	Lunar and Martian regolith simulants, materials engineered to resemble the soil on the Moon and Mars. The lunar simulant is predominantly basaltic volcanic rocks and the Martian simulant incorporates a mix of iron-rich clay, silicate dust, and crushed rocks. I aim to comprehend the mechanical and thermal properties of these sintered regolith simulants. Using techniques such as Scanning Electron Microscopy (SEM), X-ray diffraction, and thermal analysis, I hope to understand how these materials behave under various conditions, contributing to their potential use in construction/use on Moon and Mars.
2	Mohammad	Jafarpour	mohammad.jafarpour@epfl.ch	EPFL/EMPA	From particle size to rheology, all the information which any method provides is essential for me.

3	Laurine	Kolly	laurine.kolly@epfl.ch	EPFL	I work with micro-patterned multi-layers of thin films of metals, thermoplastics and elastomers that form stretchable interconnects for implantable neural interfaces. I am interested in methods that can help me characterize the structure of each of the layers in my film stack, to better understand the failure mechanisms.
1	Anna	Koptelova	anna.koptelova@epfl.ch	EPFL	I'm working with protein-based materials (films for packaging); I would like to learn basic understanding of how these techniques work (X-ray, AFM, Raman, Rheology, SEM+TEM) and to see these methods in action, as most of them I'm going to use in my research for materials' characterization
1	Madara	Leimane	madaral@cfi.lu.lv	University of Latvia	My main focus (connected with my PhD Thesis) is glassy SiO2 glass. I work also with different kind of nanoparticle and nanostructured samples - silicon dioxide nanoparticles doped with alkali metal ions, SiO2 core-shell structures with Au or Ag. I have experience with SiO2 monolith samples, complex oxide (SrAl2O4:Eu,Dy,B@SiO2), and glass-ceramic systems (YAG:0.5@SiO2; YLuAG:0.5@SiO2; LuAG:0.5@SiO2). During this summer school I would like to get more information about the sample (glass, powders, ceramics etc.) preparation tips for analysis. I would like to get information about how each of these characterization method can be useful for my particular samples. Also, I would like to get information about data visualization and processing.
3	Sandor	Lipcsei	sandor.lipcsei@epfl.ch	EPFL	I'm working with pure metals and metals with non-metallic inclusions. I'm interested in the study of the surface, structural and mechanical properties of non-metallic inclusions in iron.
3	Kedar	Mehta	kedar_sudhirkumar.mehta@tu-dresden.de	Technische Universität Dresden	Titanium, Anodized titanium, Titanium alloys, The information we can extract from different techniques, How to use these methods for variety of specimens? Sample preparation for different methods!
3	Federica	Moretti	federica.moretti@phd.units.it	University of Trieste	I work with polymers filled with metallic nanoflakes. The methods presented in this summer school may enrich my knowledge about the techniques I can use to find a correlation between the flakes' distribution inside the matrix and some other properties of the final product.
1	Santhanu Panikar	Ramanandan	santhanu.ramanandan@epfl.ch	EPFL	My phd is on the crystal growth of nanowires, I am interested in material characterization technique for crystalline materials.
3	Olivier	Simon	olivier.simon@iut-velizy.uvsq.fr	Université de Versailles Saint-Quentin	I work with sintered Ag joints on gold plated copper and hope to investigate their physical and mechanical properties (particularly via nano indentation).
1	Siyuan	Tao	siyuan.tao@empa.ch	Empa	Hydrogel, SEM TEM

1	Gonalo	Valente	goncalovalente@ua.pt	University of Aveiro	Electroactive Metal Organic-Frameworks and electroactive organic building blocks. Understanding chemical and physical properties in frameworks.
2	Berlind	Vosberg	berlind.vosberg@epfl.ch	EPFL	Characterization of polymerbrushes on silicon wafers
2	Isabell	Wachta	isabell.wachta.1@hu-berlin.de	HU Berlin	Microelectrodes, SECM
2	Okan	Yetik	okan.yetik@psi.ch	Paul Scherrer Institute	Zirconium alloys, zirconium hydride characterisation in the microstructure