

# Ph.D. Scholarship in "Nanostructured materials, Graphene and 2D materials in the restoration of mosaics"

18/04/2023



The PhD research will focus on the development of **innovative approaches for the restoration and conservation of mosaics of archaeological origin**, based on recent discoveries in the field of nanotechnology and 2D materials.

Mosaics are complex substrates, composed of different materials with a range of petrographic and mineralogical characteristics, making their conservation a challenging task. Therefore, the project will focus on the potential of new nanostructured and graphene-based materials to overcome the limitations of current technologies.

The PhD student will complement the ongoing research at the Center for Cultural Heritage Technology, initially working on the design and implementation of new formulations composed of inorganic nanoparticles with advanced chemical functions, powered by 2D materials such as graphene-based materials. Subsequently, the candidate will incorporate these new preparations into injection mortars or other cementitious materials, with the aim of overcoming the limitations of the mortars currently in use, thanks to the advanced features and engineering of nanomaterials, as well as the use of materials based on graphene.

The properties of the new formulations will be tested on mosaic samples, and based on the results, they will be evaluated for conservation purposes on real archaeological materials.

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Students interested in this position are required to contact the CCHT personnel to define in advance of application the scientific project they will submit: [ccht@iit.it](mailto:ccht@iit.it).