

# NANORESTART

## NANORESTART

Nanomaterials for the Restoration of Works of Art

The concept underpinning the project is that long-term conservation of contemporary cultural heritage can only be based on an in-depth comprehension of the degradation mechanisms that affect art materials, in line with the call topic scope. Our experience shows that the physico-chemical compatibility of restoration materials with the original art materials, is a fundamental requirement to minimize the risks of unpredictable side effects.



Consortium Map

# HORIZON 2020

**Conservation challenge 1**

**Cleaning of contemporary painted and plastic surfaces (CC1)**

Dust and grime can be incorporated into surface layers of contemporary paintings and plastics making them exceptionally difficult to clean.

**Conservation challenge 2**

**Stabilization of canvases and painted layers in contemporary art (CC2)**

The mechanical properties of painted canvases, paint layers, and polymeric surfaces may be lost upon natural aging, endangering artworks conservation.

**Conservation challenge 3**

**Removal of unwanted modern materials (CC3)**

The selective removal of the unwanted modern materials, such as adhesive, overpaints due to vanda actions, is particularly demanding.

**Conservation challenge 4**

**Enhanced protection of artworks in museums and outdoors (CC4)**

The preservation of metal artifacts and rapid prototyping materials is an emerging need of many important collections and museums.

**WP 2**

**New tools for cleaning**

The aim of this WP is the formulation of nanostructured residue-free cleaning fluids, through the use of self-degrading surfactants. A new class of gels for the confinement of these systems will be developed. The use of new enzyme solutions in highly retentive gels for artworks cleaning will be also tested in this WP.

**WP 3**

**Surface strengthening and consolidation**

The aim of this WP is the restoration of the original mechanical properties of a work of art. Nanocellulose and cellulose derivatives in combination with nanoparticles will be used for the consolidation of fiber-based materials, i.e., painted canvases. Porous silica particles loaded with plasticizers will be tested to restore the original mechanical properties of plastic and paint layers.

**WP 4**

**Protection of surfaces**

The aim of this WP is to develop multifunctional protective systems, which go beyond the commonly used traditional protection systems. This will be achieved by combining "active" and "passive" protective systems. "Active" systems will be based on green polymeric matrices functionalized with nanomaterials.

**WP 5**

**Nanostructured substrates for highly sensitive detection**

The aim of this WP is to develop nanostructured substrates and sensors for the enhanced detection of degradation products from modern and contemporary cultural heritage works of art and for the identification of components present in very small quantities. Enhanced detection of molecules produced by the chemical degradation is crucial for understanding the early stages of irreversible deterioration processes.



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