MATERIALS SCIENCE AND TECHNOLOGY

DISAT - Paint consolidation: switching from conservation current practice to greener and more user friendly polymers and solvents

Funded By	Dipartimento DISAT
Supervisor	CIMINO DAFNE - dafne.cimino@polito.it
Contact	
Context of the research activity	The doctoral project is part of the FISA 2022 'COME-IN!' project concerning the consolidation of paintings on canvas and wood with polymeric materials of various chemical nature. Progetto FISA 2022 'COME-IN! codice FISA-2022-00965 CUP E13C24001370001.
Objectives	The PhD student will develop new consolidating products for applications in the field of heritage conservation, in particular traditional paintings on canvas and wooden panel. The first phase of the study will be the characterisation of formulations currently used by conservators, identifying the criticalities and advantages of the application of each according to the context of degradation in which they are applied. It is indeed necessary to identify the main properties that a consolidating adhesive must have, analysing the products as they are and in the pictorial/material context of application. In many industrial sectors, there is a transition towards more sustainable and user and environmental-friendly materials. The conservation sector, on the other hand, is very much tied to tradition, the specificities of restoration and the small niche in which it is placed do not allow for such rapid transitions as in other fields. The aim of the project is therefore to push towards greener polymers soluble in non-toxic solvents that are also safe to use in uncontrolled environments when it is not possible to work in the laboratory (e.g. museum halls or historical buildings). The experimental formulations will be tested on ad hoc specimens and on real artworks to verify their compatibility with the materials used by the artist and with any restoration products applied that might be found on paintings due to previous conservation treatments. This exercise will make it possible to refine what has been obtained and functionalise the molecules used in order to increase affinity and compatibility.
Skills and competencies	Basic knowledge of organic chemistry and polymeric materials. Degree in materials science and engineering (LM-53), chemical engineering

for the development of the activity	(LM-22), chemical sciences (LM-54), science and technology for the cultural heritage (LM-11) and similar according to Italian academic curricula. Equivalence of foreign degrees based on academic courses.