



Università
Ca'Foscari
Venezia

PROJECT ACRONYM AND TITLE: PHOTOELECTROART – The photo-reactivity of artistic pigments: from the preservation of historical paintings to new opportunities as singlet oxygen generators

FUNDING PROGRAMME: Horizon Europe

CALL: Marie Skłodowska-Curie Postdoctoral Fellowships

DESCRIPTORS: Spectroscopic and spectrometric techniques, electrochemistry, electro dialysis, microfluidics, sensors, museums and exhibitions, analytical chemistry, photochemistry

HOST DEPARTMENT: Department of Molecular Sciences and Nanosystems

SCIENTIFIC RESPONSIBLE: Ligia Moretto

FELLOW: Victoria Beltran

FINANCIAL DATA:

Project total costs	Overall funding assigned to UNIVE
€ 188.590,08	€ 188.590,08

ABSTRACT:

Singlet oxygen (SO) is one of the reactive oxygen species known for being a strong oxidant. There are materials, called SO generators, that produce SO under light exposure and in presence of oxygen. SO generators can be found even among the pigments used in historical paintings. SO has a huge impact in the preservation of these historical paintings since it reacts with the binding media and other artistic pigments causing degradation processes that compromises their integrity. The main goal of the PHOTOELECTROART project is to understand I) the photo-reactivity of artistic pigments that generate SO, II) the impact of the environment and microenvironment in the amount of SO emitted by these substances and III) how this can be applied to improve the preservation of historical paintings containing SO generator pigments. To achieve this, PHOTOELECTROART will exploit a highly interdisciplinary methodological process based on photo-electrochemistry and infrared spectroscopy, including IR nanospectroscopy. Results will have a major impact in the understanding of the role of the SO emitted by the pigments in the alterations of the historical paintings where these are found, providing a detailed knowledge of the degradation reactions throughout the painting's history and helping to find suitable mitigation actions to preserve the cultural heritage. Additionally, the results will provide new information on the conditions that boost the generation of SO from those pigments: this new knowledge will contribute to the development of innovative applications in fields where a high production of SO is needed, such as treatment of wastewaters and medical therapie.

Planned Start date	Planned End date
01 st June 2022	31 st May 2024

PARTNERSHIP:

1 Università Ca' Foscari Venezia

Venice (IT)

Coordinator