3rd International Conference on Innovation in Art Research and Technology – INART 2018

Parma, Italy

http://www.inart2018.unipr.it/

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WELCOME REMARKS

The 3rd International Conference on Innovation in Art Research and Technology takes place in Parma, on March 26-29, 2018.
The Conference scope is to create a bridge of communication between interdisciplinary units in the field of archaeometry. It took several years for the scientific and art historical knowledge to be brought together and establish a new era on approaching preservation of cultural heritage. Nowadays, the contribution of natural sciences to characterize and document artistic materials is well known. Generally, these applied sciences, especially physics and chemistry, contribute to a deeper understanding of cultural heritage artefacts and shed light on different aspects related to the origin of the work of art or its chronology.

The topics to be addressed within the conference sessions are (amongst others):
New technological developments
In vitro experimental set-ups and degradation mechanisms
In situ experiments and mobile instrumentation
The need on non-invasive and non-destructive analysis
Imaging techniques
Environmental issues on the preservation of art and archaeological objects
Special Focus on Contemporary Art

Danilo Bersani

Chair, Local Organizing Committee INART 2018

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ABSTRACT O.7.2

UV-VIS-NIR REFLECTANCE SPECTROSCOPY: A REVIEW OF ITS APPLICATION TO THE STUDY OF CONTEMPORARY ART MATERIALS

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Keywords: Contemporary art, FORS, Colored plastic objects, Non-invasive analysis, UV-Vis-NIR spectroscopy

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In the analysis of artworks, reflectance spectroscopy has already been accepted as a common technique by the conservation community due to its non-destructive nature and in situ application. When used as a preliminary investigation tool and complementary method to other micro-invasive/non-destructive techniques, reflectance spectroscopy can support the comprehensive understanding of chemical composition and physical properties of artists' materials. To this end, the use of ultraviolet–visible–near infrared (UV-Vis-NIR) spectrometers coupled with optical fibers for working in the reflectance mode (technique known as Fiber optic reflectance spectroscopy, FORS) is widely reported in the conservation science literature.

Based on the interaction between UV-Vis-NIR radiation and the matter/materials, FORS makes it possible to obtain compositional information on the analyzed materials. Whereas UV-Vis-NIR FORS is a well-established technique in the study of traditional artworks on parchment, paper, textiles, stained glass/windows, wall, canvas and panel paintings, its application to the study of contemporary artists' materials resulted to be more difficult due to the inherent complexity of the contemporary artworks themselves as well as to the availability of a great amount of new synthetic paint products.

The plethora of constituents obtainable by mixing traditional artists' materials with new synthetic and unconventional materials lead to the creation of innovative works of art that are particularly challenging to be studied. The heterogeneity and, in some cases, the incompatibility of the materials used underline the importance of applying analytical techniques on those contemporary artworks with the aim of characterizing their composition. Several works have been already published regarding the use of in situ FORS technique for both studying contemporary art objects and defining their state of conservation. Thus, FORS has already revealed how this technique can support the characterization of the materials used by the artists in order to define the most suitable treatments and conservation strategies. The increasing interests in the application of FORS in this context is testified by some EU, such as POPART [1], or national research projects, such as the Italian COPAC [2]. The number of FORS applications has also increased resulting into the assessment of early degradation stages [3] and efficacy of conservation treatments (e.g. cleaning and consolidation) by also monitoring the color changes [4].

However, a new interesting field of application of FORS is related with the study of colored plastic objects. The identification of the colorants, dyes and pigments, in the UV-Vis visible range has been also extended to plastic-based objects which have become part of our cultural heritage in the form of artworks, design, historical and everyday objects. Although the concentration of the colorants in the polymer matrix is small (0.5%–5%), the use of FORS combined with elemental analysis can provide preliminary information about the organic and/or inorganic nature of the colorants used.

In this work a critical review of some case-studies in contemporary art conservation are presented

highlighting the potentialities and limits of FORS in the non-invasive diagnostics of 20th – 21st centuries artworks. In detail, FORS as a preliminary step in a multianalytical protocol for the identification and degradation assessment of contemporary artists' materials is underlined and investigated together with its efficacy.

[1] http://popart-highlights.mnhn.fr/identification/fiber-optics-reflectance-spectroscopy/index.html (last access 19 November 2017)
[2] Colombini M.P. et al. "Preventive Conservation of Contemporary Art (COPAC): a new Italian research project." Proceedings of Future Talks 011, 26-28 October 2011 Munich, Bechthold, T. (Ed.), Die Neue Sammlung, The International Design Museum Munich, Germany (2013) 195-199.
[3] Cucci C. et al. "Fibre optic reflectance spectroscopy as a non-invasive tool for investigating plastics degradation in contemporary art collections: a methodological study on an expanded polystyrene artwork." J. Cult. Herit. 14(4), (2013) 290-296. (doi: 10.1016/j.culher.2012.08.003)
[4] Marchiafava V. et al. "Colour measurements for monitoring the conservation of contemporary artworks." JAIC 13, (2014) 36-42.

ABSTRACT O.7.3

NON-INVASIVE ANALYSES FOR THE IDENTIFICATION OF FLUORESCENT, PHOSPHORESCENT AND CONVENTIONAL PIGMENTS IN "BLACK LIGHT ART" PAINTINGS

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Keywords: non-invasive analyses, Contemporary art, Black light art, Fluorescent pigments, Phosphorescent pigments

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UV- and daylight-fluorescent pigments, as well as phosphorescent ones, belong to the wide group of the so-called "special effect" colorants and pigments [1]. Fluorescent pigments are complex colouring materials, containing one or more organic fluorescent dyes dissolved in transparent solid carriers such as synthetic resins (e.g. formaldehyde-based ones) [2]. After being used during the Second World War for visual signalling, such pigments began to be employed sporadically by artists around 1944. In Italy the first painter known to exploit the properties of fluorescent pigments was Lucio Fontana in his black light installation Ambiente spaziale a luce nera, exhibited in Milan in 1949. American painters such as Frank Stella in the 1960s and 1970s as well as Peter Halley and Ryan McGinness in more recent years also produced works containing fluorescent colours, to be displayed depending on the circumstances in the daylight or in the dark under UV light. Differently from fluorescent pigments, phosphorescent pigments were developed in the last three decades of the 20th and beginning of the 21st century and are typically inorganic compounds. A real artistic current has recently developed under the name "Black Light Art", receiving a great contribution from Italian artists like Mario Agrifoglio. In their paintings the so-called "metameric defect" is exploited, giving rise to different colours under visible light and UV light, and fluorescent and phosphorescent pigments are used together with conventional ones. Given the complex choice of materials, the direct identification of pigments in "Black Light Art" paintings requires the combined use of