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Analysis and structural characterization of pigments and materials used in Nicolae Grigorescu heritage paintings

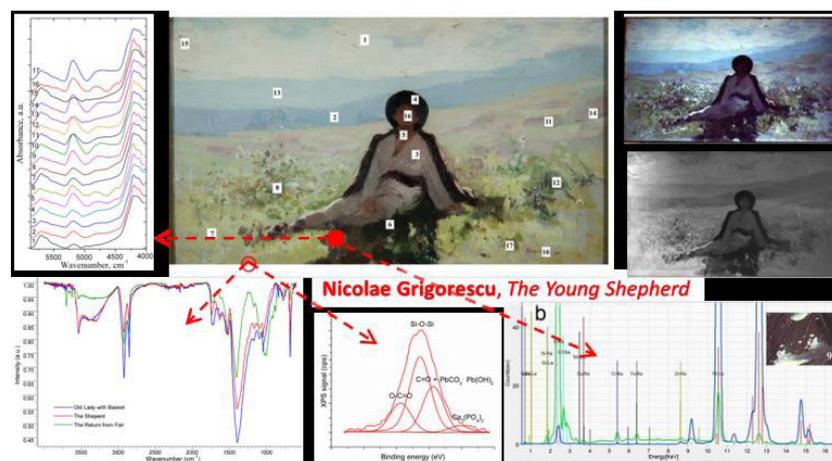
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Knowledge about pigments applied in all types of paintings, especially in the case of ancient ones, is of great importance from both art history and conservation perspectives. Usually paint surfaces consist of several complex multilayers that can be altered due to aging or various degradation factors. The deterioration depends either on the paintings surrounding conditions or on the nature of the interactions between the constituting components. Identification of pigments and other materials employed in the creation of the paintings is necessary in order to acquire information regarding their provenance, author's painting style and methods or date of production. All these information is of major importance in selecting the most appropriate materials and methods for the artwork's future restoration. Nicolae Grigorescu is the most representative Romanian painter, being considered the founder of modern Romanian painting and the most important Romanian impressionist. He generated a comprehensive, original and unitary creation, spanning over almost 4000 paintings and drawings. Although his paintings rank first place in top 100 bestselling Romanian painters, there is no comprehensive work dealing with the identification and structural characterization of the pigments and materials used by him. The combination of various mobile, non-invasive techniques (IR reflectography technique, optical microscopy, XRF, Raman and NIR spectroscopies) and lab-based devices (FTIR and XPS spectroscopies, and SEM-EDX microscopy) lead to the first exhaustive investigation of pigments and materials used by the famous Romanian painter Nicolae Grigorescu in three cultural heritage paintings. The study of a large number of spots and samples allowed a rigorous analysis and a far-reaching insight into his work. The present work is the first scientific paper which proves the use of natural ultramarine by a painter belonging to the impressionist school.



Biography

Mihaela Olaru has a PhD in the field of synthesis of polyurethanes with different functional groups at Gheorghe Asachi Technical University of Iasi, Romania. She has 35 papers published in reputed international/national scientific journals, 1 book and 4 book chapters. Her work focuses on photochemistry, polyurethanes, hybrid nanocomposites, cultural heritage, antimicrobial coatings and she has experience in synthesis and experimental data analysis.

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