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# MONITORING THE BEHAVIOR OF THE RESTORATION INTERVENTIONS OF THE PROBOTA MONASTERY'S INDOOR FRESCOES UNDER THE INFLUENCE OF THE ENVIRONMENTAL FACTORS

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## Abstract

The paper is concerning on the behavior of the XVI$^{th}$ century indoor frescoes in the new crypto-climate, set up by the introduction of a new heating system into the floor, after the restoration interventions of the Probota Monastery's Church (Romania). Correlations between the data concerning the hydrous and thermal parameters variation (obtained during a six month monitoring) with those concerning the analysis of the salts efflorescence and the determination of the hydrous equilibrium of the old layers of „intonaco" and „arriccio", that were subjected to consolidation, stabilization and structural and chromatic reintegration were presented. The efflorescence was studied through chemical analysis, visible reflectography and IR spectroscopy and the hydrous equilibrium variation domain has been evaluated based on the curves of the dehydration processes of the humidified samples and those of hydration of the dried samples, through thermal desiccation in a static regime. The experimental results concerning the chemical nature and the evolution of the efflorescence salts and the variation domain of the hydrous equilibrium, correlated with the observation data of the crypto-climate factors for the indoor frescoes, explains the influence suffered by them because of the new microclimate. The conservation-restoration operations that were done on some areas of the indoor frescoes led to physico-structural and chemical characteristics that fit into the domains imposed by the criteria of compatibility between the ancient artistic techniques and the interventions. The paper also deals with the physical concepts that represents the basis of oil absorption via capillary action and sets up a theoretical framework for description and modeling of capillary phenomena in oil recovery using absorbents.

*Keywords:* monitoring, indoor microclimate, efflorescence, hydrous equilibrium, consolidation, stabilization, reintegration, arriccio and intonaco.

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