USING THE NON-AQUEOUS CA(OH)2 SOLUTION IN STOPPING THE DEGRADATION OF PAPER EXISTING IN RARE BOOKS FOUND IN THE N-W OF ROMANIA

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Abstract

The nanotechnologies allow us to approach new directions in fields where the result of applying classic technologies are inconclusive. Such a field is the one of restoring and preserving the cultural and architectural patrimony. The paper aims to present results in the field of old books restoration and preservation, books found in churches and monasteries from the North-West of Romania, by utilizing non-aqueous solutions of Ca(OH)2 having a composition of the constituting particles between 60 and 200 nm. There were used cellulose pages artificially “aged” by photographic and thermocaloric methods as well a pieces of pages over 200 years old.

The evaluation of the effects that the applying of Ca(OH)2 solution through thin film pulverizing was conducted through X ray diffraction. At the same time, electrical resistivity measurement were taken, to detect the changes that appear in this parameter by using the nanoscopic and the microscopic substance, respectively. In the nanoscopic case, we are dealing with a zone of relative homogeneity of the laid down film, while in the microscopic case, insular zones of multilayer type can be noticed, alternating with totally uncovered zones. A significant reduction in the acidity of the cellulose was noticed in the case of the nanoscopic treatment, along with a stopping on its physic-chemical deterioration.

Keywords: non-aqueous solutions, X ray diffraction, thin films, electrical resistivity, cultural heritage conservation

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