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ROMANIAN EXPERIENCE ON NANOMATERIALS FOR CULTURAL HERITAGE

Rodica-Mariana ION

ICECHIM, Bucharest, Romania

Due to mankind activity, the historical artifacts from world patrimony have been affected by several weathering factors¹. Some deterioration and weathering factors such as soling, pollution, oxidation, air temperature and relative humidity especially in industrial environment, affect irreversible their quality and stability². The weathering processes induces different alteration processes for all the materials, as chemical weathering, which contain the support solubility or its reactivity with other deterioration factors (air pollutants), and physical weathering, which involves the salt crystallization within the pore or channels structure³.

Modern chemicals, as inorganic nanocompounds, are essential to preserve the world's artistic and cultural heritage. Tasks belonging to nanoparticles chemistry (type of nanoparticles, structure, and analysis) are discussed in this paper for the conservation and restoration of different mobile and immobile patrimony pieces (old books and manuscripts, wax seals, stone buildings, stucco pieces, pictures, so on). Some nanomaterial suspensions based on hydroxyapatite, strontium hydroxyapatite, $\text{Ca}(\text{OH})_2$, $\text{Mg}(\text{OH})_2$, $\text{Ba}(\text{OH})_2$ nanoparticles, have been presented and discussed in this paper, testing them on different supports: paper books^{4, 5, 6}, stone^{7, 8}, ceramics⁹, polymers¹⁰, so on. In order to obtain good results in restoration, some physico-chemical investigations (obeying the artefact integrity), could be used: infrared spectroscopy Fourier-transformed, infrared spectroscopy Fourier-transformed microscopy, Raman spectroscopy, Scanning Electron Microscopy, atomic force microscopy, thermal analysis, in order to complete the sample composition. Some exemplifications on: Basarabi Churches Ensemble, Romanian Gospel 1740, stucco from Vacaresti Church, will be offered, and with the relevant results obtained up to now.

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