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PHYSICAL-CHIMICAL INVESTIGATIONS OF THE ROMANIAN HISTORICAL PARCHMENT FROM THE XVI-XIX CENTURIES

Miu Lucreția[1], Giurginca Maria[2], Budrugeac Petru[3]
[1]National Research and Development Institute for Textile and Leather,
str Ion Minulescu 93, 031215 Bucharest, Romania,
lucretia.miu@icpi.ro, fax: +4021 323 52 80
[2]University "POLITEHNICA" of Bucharest,
str. Polizu 1, 011061, Bucharest, Romania,
m_giurginca@yahoo.com, fax: +4021 315 41 93
[3]National Institute for Research and Development ICPE-CA,
Splaiul Unirii 313, 030138 Bucharest, Romania,
bp@icpe-ca.ro, fax: +4021 346 72 99

A comprehensive investigation has been made of a set of XVI to XIX century parchments from the Romanian museums.

Advanced physical-chemical methods such as FT-IR and UV-VIS spectroscopy, differential scanning calorimetry (DSC) and thermogravimetry (TG), and micro hot table (MHT) technique were employed to asses deterioration processes occurring in the structure of parchment.

FT-IR analysis (mid-IR) permit identification and quantification of alteration at the secondary structure of collagen by the positions and intensity of the characteristic bands for amide I, amide II, hydroxyl and carbonyl groups. These bands are a measure of hydrolysis and oxidation degrees.

In the NIR domain, region 1450-1520 nm (6580-7000 cm^{-1}) is very specific for absorption of water content of old parchment.

Thermal analysis gives detailed information about the degradation processes, by loss, crosslink formation and gelatinization of the collagen structure and Micro Hot Table technique shows parchment hydrothermal stability.

This information is of great importance in order to establish the mechanisms of deterioration of the parchment and the influence of the external factors in the historical time.