

Accepted Manuscript

Characterization of natural degradation of historical Moroccan Jewish parchments by complementary spectroscopic techniques

Latifa Hajji, Ghizlane Idrissi Seghrouchni, Abdelhadi Lhassani, Mohammed Talbi, M'hammed El Kouali, Mona Latifa Bouamrani, Yousfi Samia, Chafia Hajji, Maria Luisa Carvalho



PII: S0026-265X(17)31042-1
DOI: doi:[10.1016/j.microc.2018.03.006](https://doi.org/10.1016/j.microc.2018.03.006)
Reference: MICROC 3079
To appear in: *Microchemical Journal*
Received date: 30 September 2017
Revised date: 19 February 2018
Accepted date: 2 March 2018

Please cite this article as: Latifa Hajji, Ghizlane Idrissi Seghrouchni, Abdelhadi Lhassani, Mohammed Talbi, M'hammed El Kouali, Mona Latifa Bouamrani, Yousfi Samia, Chafia Hajji, Maria Luisa Carvalho , Characterization of natural degradation of historical Moroccan Jewish parchments by complementary spectroscopic techniques. The address for the corresponding author was captured as affiliation for all authors. Please check if appropriate. *Microc*(2017), doi:[10.1016/j.microc.2018.03.006](https://doi.org/10.1016/j.microc.2018.03.006)

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Characterization of natural degradation of historical Moroccan Jewish parchments by complementary spectroscopic techniques

Latifa. Hajji^{(1),(2)}, Ghizlane Idrissi Seghrouchni⁽¹⁾, Abdelhadi Lhassani⁽²⁾, Mohammed Talbi⁽¹⁾, M'hammed El Kouali⁽¹⁾, Mona Latifa Bouamrani⁽¹⁾, Yousfi Samia⁽¹⁾, Chafia Hajji⁽³⁾, Maria Luisa Carvalho⁽⁴⁾

*Corresponding author. E-mail address: lat.hajji@gmail.com

1 Laboratory of analytical chemistry and physico-chemistry of materials, Faculty of sciences Ben M'Sik, Hassan II university of Casablanca, Morocco

2 Laboratory of Applied Chemistry, Faculty of Sciences and Techniques, Sidi Mohamed Ben Abdellah University, Fez, Morocco

3 Laboratory of Mechanics, Processes, Energy and Environment, National School of Applied Sciences, Ibn Zohr University, Agadir, Morocco.

4 LIBPhys-UNL, Faculdade de Ciências e Tecnologia, Universidade Nova de Lisboa, Portugal

Abstract

In this work, we have explored the potentiality of energy dispersive X-ray fluorescence spectrometry (EDXRF), X-ray diffraction (XRD), the vibrational attenuated total reflection - Fourier transform infrared spectroscopy (ATR-FTIR), and scanning electron microscopy coupled to energy dispersive X-ray spectrometry (SEM-EDS) for the characterization of the natural degradation of old parchment. The samples used in this work comprise four Moroccan Jewish historical parchments belonging to private libraries. The results have been correlated with those obtained by a selected modern parchment. The results obtained allowed for the first time an accurate insight into the chemical composition of these parchments. EDXRF Analysis of the samples allowed us to study some of the undertaken process along the preparation of parchments, such as the liming treatment using CaCO_3 . XRD was used to elucidate the collagen main features, to identify the inorganic composition of the parchments, and to evaluate the crystallinity changes upon natural weathering. FTIR spectroscopy enabled us to determine the changes of collagen material in response to natural ageing, overall oxidation (detection of bands at 1716 cm^{-1}) and collagen gelatinization. SEM-EDS results disclosed the morphological surface changes occurring at different levels in the fibrous network of collagen, and have proved a poor conservation state in some parchments.

Download English Version:

<https://daneshyari.com/en/article/7640784>

Download Persian Version:

<https://daneshyari.com/article/7640784>

[Daneshyari.com](https://daneshyari.com)