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Original Paper

Characterization of a Leather Quran Housed at the Tabriz Quran and Scribing Museum

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Abstract

Frist Quran manuscripts remained from early centuries of Islam, have been written on skin in Quran script, and are considered as the most important works of that times. Due to the very small amount of organic matter left over the past years, the study of these works has been very limited, so the information about these works is based only on library studies, including the information contained in the old books and comparative-historical studies. One of these works is a folio of a Quran manuscript with the size of 14.5 × 9.5 cm (Property no.: 1315) which is preserved in the Quran and Redaction Museum of Tabriz. According to the materials contained in the birth certificate, this manuscript has been transferred from Golestan Palace of Tehran to this museum during the past years. Experts have identified the material and information on this skin according to the type of textbook and eventually, its adaptation to similar works. Despite its historical and cultural values, it has not been yet investigated scientifically, neither from historical nor artistic point of view. Structural study not only can be useful in assessing the authenticity of the manuscript, but also provides a detailed account of the treatment of skin in the early stages of Islamic era. It should be noted that the results of the processing method can be cited if the authenticity of the manuscript could be proved. During this research, the processing technique and constituent elements, including bedding, type of bedding, and black and red inks on it were identified and studied. The objectives of this study include examining the authenticity of the work and, in the case of authenticity, obtaining documented results in the basin of the method of dermatology in the early years of Islam. Due to the historical, cultural and religious importance and, ultimately, the sampling constraints, non-destructive methods that require less sample were used. The strategies of this research are based on ancient metamorphic and laboratory studies, including spot tests as well as instrumental techniques. In this research, this artifact has been studied using UV photography to evaluate the authenticity, FTIR investigation to recognize the support material and make distinguish between the paper and skin, electron microscopy studies to identify the type of the animal whose skin has been used, SEM imaging to explore the morphology of cross section of the skin sample, and finally, SEM-EDX analysis to study the ink which has been used to write the manuscript. The spectra of the Fourier transform infrared spectrometry indicate the proteinaceous structure of the artwork, so the support of this manuscript is of skin and not paper, thus it can be called "skin" or "parchment". The results obtained indicate that the support material of this folio is the skin of a type of sheep. The results of the analysis of the images obtained from the SEM are such that in some places there are microcircuits and gaps in the surface of the fiber that can

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be caused by the pressures introduced in the production process as well as by the effects of different factors over the time (such as atmospheric and environmental factors). It is worth noting, however, that these cracks and cracks do not have a serious effect on appearance, and the skin just has somewhat lost its softness. Regarding the dark ink, the result is not certain due to the presence of too many elements, however, according to the presence of copper, Motavvas (peacock) ink is suggested. Regarding the red ink, cinnabar is suggested as mercury and sulfur elements were identified. Authenticity investigation confirms that there is no evidence of erased or added line in this folio and it can be concluded that there is no evidence of forgery in the text and signature.

Keywords: Leather Manuscript, Archaeometry, Ink Identification, SEM-EDX, FT-IR, UV Photography.