

Study and investigation of synthetic fibers of 20th century royal clothing attributed to Farah Pahlavi collection
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Fig.1 The studied dress

INTRODUCTION

Garment and clothing as an expression of history and clothing is an important part of the cultural and artistic heritage of any society. The protection and care of these works, which adorn museums and collections, is very important. Investigating the chemical structure and environmental conditions of historical textiles plays an important role in conserving them from deterioration. The main factors that cause the degradation of textiles are light (visible and ultraviolet), temperature, humidity, microorganisms, and the exposure to acids and bases. The dress we studied was belonged to Farah Pahlavi, the queen of Iran between 1959 until 1978. This dress is from NAIMA'S brand with Caftan design (Naima Bennis was the designer who for the first time in her time used a combination of tradition and modernity in her designs, using kaftan and present modern Moroccan fashion). The items that were examined in this dress include the lining of the dress, the upper part of the dress and metal threads.



Fig.2 Discoloration and wrinkle of the lining fabric , a) armpits . b) front of the dress



Fig.3 Threading Clothing brand with a little hole



Fig.4 Metal thread & passementeries casting

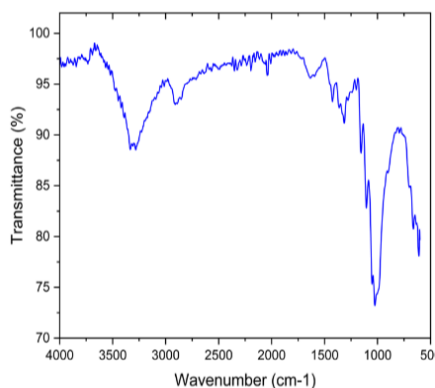


Fig.5 FTIR of garment lining fabric

SURVEYS AND EVIDENCE

The studies on Farah Pahlavi's dress indicate that the most damage of this dress is in its lining. Under both armpits and in the front part of the dress, changes in coloration can be seen, but no damage has been observed to the main fabric of the dress except for dust (Fig.2). We conducted some examination such as: a) Solvent test experiments on fabric lining. b) microscopic observations of the longitudinal section of fibers. c) SEM. d) FTIR on the fibers of the main fabric and the fibers used in passementeries.

The Fig.5 is the FTIR diagram of the lining fabric, and according to the result of the FTIR test, it can be concluded that the polymer that forms the lining fabric is based on cellulose. And we performed fiber solubility test in acetone and based on this test, we concluded that the fiber is acetate type.

Fig.6 is the FTIR diagram of the upper main fabric showed that this fabric is based on aromatic polyamide (PA6T), the DSC test showed that the polymer used in the main fabric is Nomex, which has a melting point of about 330°C.

CONCLUSION

there are several factors that cause the degradation and destruction of textiles, most historical textiles are composed of several types of materials, because of that the preservation conditions of them are difficult.

Although the degradation process is ongoing, it can be slowed, retarded, or even arrested depending upon physical and environmental conditions and by applying compounds designed to stabilize it.

In the studied garment, considering that acetate fabric is more vulnerable than Nomex fabric, the conditions should be provided based on more care of Acetate fabric, which is also suitable for Nomex fabric. This dress should preferably be placed in an environment with humidity of 55% and temperature of 18°C and free from any dust, and clothes should preferably not be hung for a long time. For this dress, the box is designed with acid-free cardboard and it should be kept completely wide (without folding) in the box.

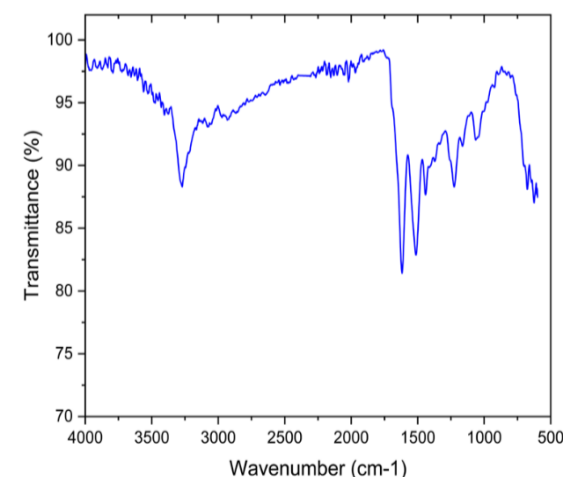


Fig.6 FTIR of garment main fabric

Acknowledgements and references

1. <https://silverbobbin.com/what-is-acetate-Fabric/>
2. Yang, H.H. Aromatic High Strength Fibers; John Wiley & Sons: New York, 1989.
3. Cook, G. Handbook of textile encyclopedia. New York: Textile Book Publishers Inc; 1959
4. Tatiana Koussoulou, Photodegradation and photostabilization of historic silks in the museum environment-evaluation of a new conservation treatment, Papers Inst. Archaeol. 1999, 10, 75-88. <https://doi.org/10.5334/pia.135>