

Restoration and reproduction study for antique documents

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Introduction

Recently, restoration of antique documents has been considered as very important area in libraries and other cultural institutions. Reproductions of antique document may provide to the public for sharing of contents and their original aspect, in a real condition of perfect readability of both textual and artistic message. Therefore, reproduction purpose is to produce more close to the original targets. In this work, it was performed to investigate restoration and reproduction study for reproduction of antique documents. Many researchers and scientists study this kind of work to pursue the aim mentioned above. But basic study of restoration and reproduction antique documents has been not carried out sufficiently. In this study, we analyzed components and properties of monochrome-inks.

Experimental

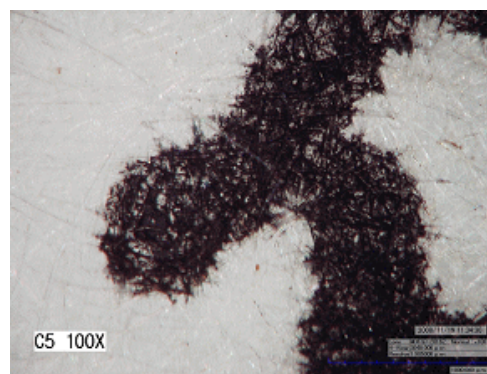
Preparation of carbon black and lamp black inks was carried out. Carbon black and lamp black materials were mixed with alkyd resin and oil. Synthesis of alkyd resin was conducted using Glycerine with Pbo in Linseed oil and refluxed 1.5h under a nitrogen atmosphere. The reaction mixture was cooled to 170 °C and phthalic anhydride and trimethylolpropan triacrylate were added to the reaction mixture. After 3h reflux was underwent. When pH value reaches to 10, the reaction is over. Alkyd resin was then added at high boiling point petroleum and surfactant was stirred in oil. After stirring, the uniformed solution was obtained. To the reaction mixture solution, prepared carbon black was added. Using these ink components, application is subjected to screen printing method.

Results and discussions

The prepared inks using carbon black and lamp black was tested and its printed properties were compared each other. Through this approach, appropriate inks and manufactures, which are more suitable for restoration documents were considered. In this context, we prepared different components of inks, namely several types of carbon black and lamp black inks. Fig 1. and Fig 2. Show the electro microscope images of printed letter using carbon black and lamp black inks



(a) Carbon black



(b) Carbon black(x 100)

Fig. 1. Electro microscope images of carbon black.

Conclusions

The aim of this work is to restoration of antique document and to find a best way for reproduction of antique documents. In this reason, we have made and tested a appropriate inks for restoration and reproduction antique documents.

Acknowledgement

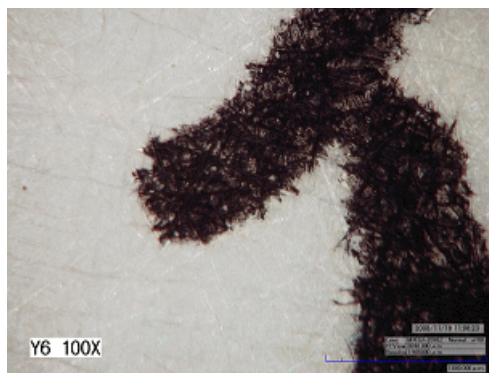
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Reference

- [1] H. L. Lee, *Journal of TAPPIK* 24(4), 26-35 (1992).
- [2] N. S. Kim, K. N. Han, *The Korean Society Of Machine Tool Engineers* 10, 511-515 (2007)



(a) Lamp black



(b) Lamp black(x 100)

Fig. 2. Electro microscope images of lamp black.