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Graphic Documents Working Group Newsletter 4 2023

ICOM-CC Graphic Documents Interim Meeting Postprints
PART 2
Virtual Event, 10-11 February 2022
Abstracts and Extended Abstracts.

Foreword

The postprints reproduced here are abstracts or extended abstracts of oral presentations given at the ICOM-CC Graphic Documents Interim Meeting 10-11 February 2022. We are grateful to all speakers and participants, who joined from across the globe, for sharing their work and for engaging during lively discussions.

The silver lining of having held a virtual meeting because of the uncertainties brought upon us by the COVID-19 pandemic - and despite our disappointment at not being able to exchange in person – was that we had more countries represented and participants who may not have otherwise travelled. This was a positive turn on sombre circumstances, as we want our working group to be global and to learn from colleagues far and wide.

We released Newsletter 3 in 2022 with the presentations given by speakers in the first group (1-6), see table below. In Newsletter 4 from 2023 we include the presentations from the second group (7-12). Presentations 7-12 derived from a special project. Therefore, we have placed an introduction from Davidson MacLaren, M.A. and Marlen Börngen, M.A. Please have a look!

Chair: Andrea Renate Pataki-Hundt
Assistant Coordinators: Marlen Börngen, Emilie Cloos, Valentine Dubard, Julio M. del Hoyo-Meléndez, Yuhui Liu (in alphabetical order).

Number	Title abstract	Authors
Newsletter 3, 2022		
1	Bio-renewable Fungal Chitosan – Characterisation, Properties and Applications in Paper Heritage Conservation	M. A. Ingoglia
2	10 Years of *East Meets West* in Munich – an inspiring encounter	K. Eckstein, K. Sugiyama, R. Schuster-Ishii
3	Sustainability in Conservation: How Inclusive is it?	L. Finch
4	Quick-and-Dirty: Cyclomethicones and an application for soluble inks	S. M. Peckham
5	Reflections on Girl by Roy Lichtenstein: Reattachment of a PET-foil on a print	L. Rök, M. Noehles, U. Henniges, I. Brückle
6	Conservation and handling of library collections containing arsenic - Consolidation of underbound pigment on book edges	J. Wetten, M. Börngen, A. Pataki-Hundt
Newsletter 4, 2023		
7	**Durability of permanent paper under storage conditions**	**C. Vibert, B. Fayolle, A.-L. Dupont, D. Ricard**
8	**“Ne-zha´s fight against the Dragon King” - Investigation, treatment and concept discussion of a Chinese painting on bamboo paper**	**W. Zeng**
9	**Salvaging Iron Gall Ink Based Collections from Ink Corrosion, Fungal Attack and Climate Change: Considering the Past and the Future**	**V. Orlandini, H. Neevel, G. de Bruin, L. Cortella, S. Borrego Alonso, L.S. Villalba Corredor and A. Aguirre Vilchis**
10	**Parchment Manuscripts between Conservation and Restoration in the National Laboratory for the Preservation and Conservation of Parchment and Manuscripts (NLPCPM) in Raqqada, Kairouan, Tunisia**	**K. Zemzemi**
11	**The Scientific and Practical Methods of Manuscript and Book Restoration in the National Laboratory for the Preservation and Conservation of Parchment and Manuscripts in Raqqada, Kairouan, Tunisia**	**N. Bechria**
12	**Manuscript Damage Factors**	**K. Massaoudi**

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Durability of permanent paper under storage conditions (Original Abstract)

C. Vibert[1,2*], B. Fayolle[1], A.-L. Dupont[2], D. Ricard[3]

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Many printed documents from the 19th and 20th centuries are in a catastrophic degradation state, which is a major issue for libraries and archives. It is mainly due to the process that transforms wood into paper, which introduces acids that catalyze the hydrolysis of cellulose.[1] The standard for permanent paper (ISO 9706), which dates from the 1990s, addresses this major problem. It requires that an alkaline reserve such as calcium carbonate is used in the fabrication process, that aims at neutralizing the acidic compounds. Similarly, alkaline reserve deposition is required in deacidification treatments.[2] Another issue is the long-term preservation of data. Data conservation is particularly important in nuclear waste disposal, where archives have to be preserved for several centuries. Estimating permanent paper lifetime would allow its use for such applications.

To estimate the kinetics of degradation, one needs first to identify the chemical mechanisms occurring during the ageing. In the case of paper, acid-catalyzed hydrolysis and oxidation are the two major causes. How these mechanisms interplay in the case of permanent paper is still not well understood. Accelerated ageing at 90°C in 4 different conditions was used to discriminate the parameters that influence the degradation of permanent paper: storage (in air at 50% relative humidity), humidity (under nitrogen, 50% RH), oxygen (air, 0% RH) and a negative control condition (nitrogen, 0% RH).

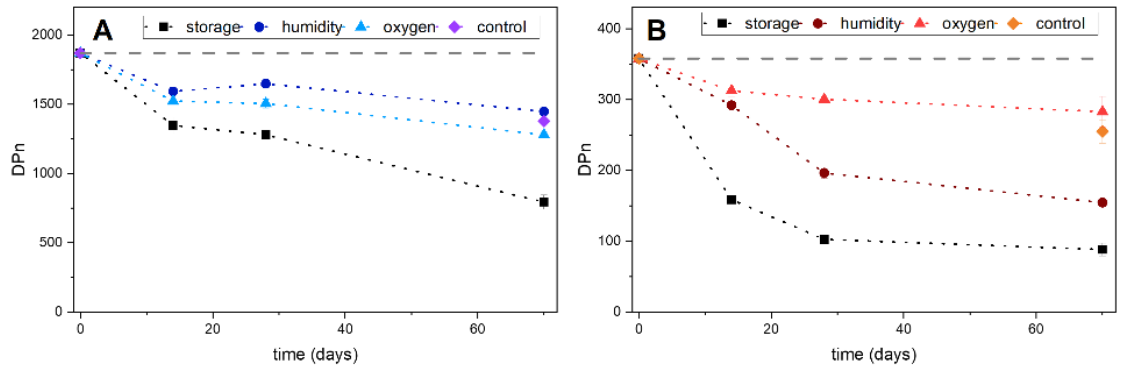

Fig. 1: Evolution of DPn for permanent paper (a) and reference paper (b) over time under different ageing conditions

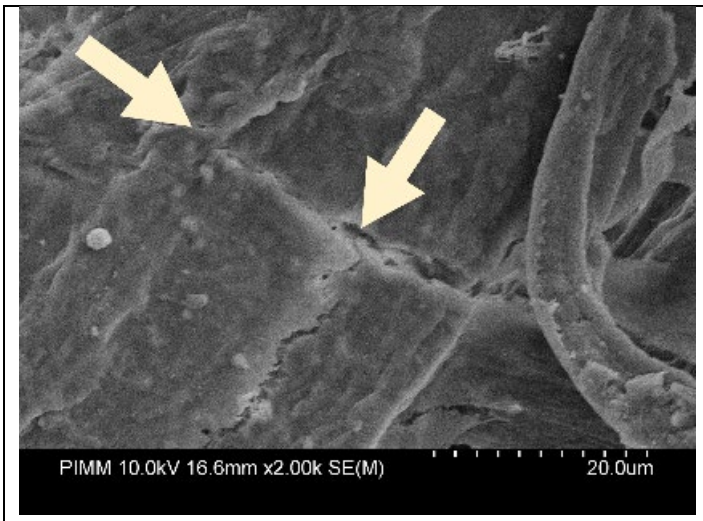

Fig. 2: Permanent paper aged for 10 weeks under storage-like conditions after tensile stress test (SEM)

Size exclusion chromatography was used to determine the degree of polymerisation (DP) of the cellulose (Figure 1). The decrease of DP over time is slowed down for permanent paper compared to a reference paper (cotton paper Whatman n°40, acidic pH). We also show a synergistic effect between oxygen and water that we investigated measuring pH, alkaline reserve, and carrying out infrared spectroscopy of the paper. For permanent paper, no acidification is determined. This is consistent with the fact that alkaline reserve remains constant. However, a decrease of the DP was recorded. One hypothesis is that the permanent paper is more sensitive to oxidation from the oxygen in the air. Some mechanical properties such as strength

and strain at break for tensile stress tests also decrease with ageing and can be correlated with the loss of DP. This can be explained by a decrease of the internal strength of the fibres and by the breakage of interfibre bonds as observed by SEM (Figure 2). Chemical causes of degradation can be related to microstructural modifications of the fibres and its macroscopic consequences. Longer degradation times will be needed to make further conclusions about the mechanisms associated with the presence of alkaline reserve.

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[2]J. Baty, C. Maitland, W. Minter, M. Hubbe, S. Jordan-Mowery BioResources **2010**, 5, 3.

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“Ne-zha´s fight against the Dragon King” - Investigation, treatment and concept discussion of a Chinese painting on bamboo paper

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This presentation introduces the work done between 2015 and 2016 on a Chinese painting on bamboo paper. It will discuss the construction and materials of the painting, the conservation treatments and display solutions. The painting was traded from China to Gotha at the beginning of the 19th century and shows a very well-known myth in China called 哪吒闹海 (Nezha´s fight against the dragon king). The painting was drawn on bamboo paper, which has received growing interest in its aging behaviour recently. This project offers a practical example of treatment of strongly degraded bamboo paper. An interesting discussion point is the removal of original paper layer, which could have had different results in Chinese and in European contexts.

Construction of the painting

The painting was mounted as a hanging scroll in the 19th century. The painting support was a very thin bamboo paper. Directly under the painting support was a thin “life paper”, which was attached to increase the strength of painting support. It is called “life paper” in traditional Chinese mounting, because it is “vital” for the painting. Then a thick blue backing paper was mounted to the “life paper”. There were two rollers, on the top and bottom of the painting, with a ring attached on top for hanging.

Condition

The painting was in a very fragile condition. The painting support was very brittle with numerous water stains and flakes, folds and creases, small cracks and splits with edges raised by a few millimetres. In some places, all paper layers had broken through. The bottom roller was lost. Three factors are responsible for the brittleness of the painting support:

1. The bamboo paper was produced with higher lignin content and had a relatively low pH value (6.0 - 7.0).

2. The blue backing paper was acidic (tested with Merck pH indicator strips) and has accelerated the aging of the bamboo paper.

3. the painting was kept rolled inwards, which also put a mechanical strain on the painting support.

Treatment

- The treatment was challenging because the painting had been tightly rolled for a long time. It had to be unrolled piece by piece in an air-conditioned room. The process took 6 weeks.

- Dry cleaning was barely possible due to the bad condition of the painting support.

- The loose flakes were firstly humidified with an ultrasonic nebulizer and then glued back with wheat starch paste. In some fragile areas, tears were joined locally with very thin Japanese paper (Kozo, 3.6 g/m^2) and methyl cellulose.

- The painting was then faced in order to protect the painting from loss during further treatment. The facing consisted of many small square pieces of Japanese paper (Kozo, 5 g/m^2). The Japanese paper was applied to the painting with methyl cellulose piece by piece. As the bamboo paper is sensitive to moisture, the tension in the paper was firstly eased by the ultrasonic nebulizer. Fluid and systematic movements were key to avoid new folds and creases.

- Then the upper roller was taken apart and the blue backing paper was removed for three reasons:

1. The acidic pH of 5.5.

2. The blue paper was mechanically too strong for the thin painting support. It tended to expand and shrink with changes in climate, which increased tension on the fragile painting support.

3. The East Asian collection Gotha wished a new mounting system for the painting, which could allow various displays as well as storage. The blue backing paper and the upper roller were kept in a box with photo documentation showing the original mounting and stored together with the painting at the museum.

- The facing, the painting support and the “life paper” were cleaned with capillary washing for three hours. This method was relatively time-consuming, but other methods could wash out the original paper sizing and components. Besides, the surface texture of the painting support could have been changed. With this method degradation products, acidity and water stains could have been reduced. Tylose® as new filler substance was introduced into the fibres and promote the re-connection and reweaving of the fibres. The washing does not add any chemical substance, which could lead to unpredictable long-term reactions. with the pollutants and components in the paper. Before washing, a solubility test was made on the red media to prove it won’t bleed.

- Before drying, the painting support and the “life” paper were lined with Japanese paper (Kozo, 40 g/m^2) and wheat starch paste. The wheat starch paste was aged for three weeks to lower its mechanical stress and let to seep through the thin, degraded “life“ paper and adhere the Japanese paper to the painting support.

- After drying, the facing was removed mechanically, as the methyl cellulose had lost most of its adhesive power during the washing.

Discussion about the removal of the "life" paper

During treatment, an ethical question was raised about the removal of the "life paper". Different decisions have been made in Chinese or in German contexts. In Chinese conservation, old "life papers" will often be replaced even if they are not aged very badly. Since the purpose of the "life paper" is to support the painting, a new one can keep the painting more stable. In this project, however, the "life paper" was kept because it was considered to carry historical and material information. It would, furthermore, be much more difficult to handle the brittle painting without the "life paper".

Discussion about the mounting solution

Around 1800, Duke August von Sachsen-Gotha-Altenburg (1772 - 1822) set up one of the largest Chinese cabinets in Europe with over 2000 treasures and objects of daily culture in China, Japan and India. From the beginning of the 19th century to the early 20th century, the East Asian collection was extensively expanded over generations. The Second World War caused immense losses of the Gotha´s East Asian collection, which comprised today only around 1.800 objects, including about 400 graphic documents.

The mounting of the painting with two rollers and blue backing paper was probably standard for Gotha's East Asian collection in the 19th century. This certainly had its meaning for the collection, but we no longer have access to this information due to the loss of the collection during the war.

Nowadays the graphic documents in the collection are no longer a harmonised whole and there is no uniform guideline regards to mounting. In consultation with the curator of the collection, it became clear that the painting required a mounting solution which not only would be sympathetic with traditional Chinese mounting philosophy, but also allow different mounting styles for exhibition at the same time. A new mounting system with passe-partout was chosen. The painting was mounted in a passe-partout with strips along its edges, pasted on the overhanging backing paper.

Pál Miklós has written that according to the Chinese view of art, the framing (mounting) around the painting should not be a window or a restriction but an extension[1]. At the very top of the painting, an area is left empty to serve as a blank space for the viewer's imagination. This is however missing in the lower area. The painting is visually heavier near the bottom and ends abruptly. To compensate for this, the passepartout has a wider bottom border than upper border. This was one of eight possible formats of the mounting with passepartout system.

[1] Pál Miklós, *Das Drachenauge – Einführung in die Ikonographie der chinesischen Bild, S 202-203, 1. Auflage,* Leipzig 1981

Conclusion

This study set out to offer a practical example of conservation and address two key points:

1. The treatment of severely degraded bamboo paper.

2. The treatment and display considerations for a Chinese painting in a multicultural context. We hope our experience will be of interest to European collections containing Chinese paintings.

The original purpose of the painting remains however open for discussion. Was the painting made for decoration, illustration, or for a specific occasion?

Fig. 1: the full-surface facing consisting of many small pieces of Japanese paper.

Fig. 2: The investigated object before and after treatment.

Fig. 3: The new mounting for the painting.

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Salvaging Iron Gall Ink Based Collections from Ink Corrosion, Fungal Attack and Climate Change: Considering the Past and the Future

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Iron gall ink corrosion is second only to acid paper in posing a serious threat to cultural heritage on paper. This study incorporates innovative international research into the chemistry, degradation and stabilization of iron gall inks applied to documents and master drawings on paper. Its aim was to establish the best ways of caring for ink-corroded archival materials and artworks containing fungal infections, while at the same time protecting the environment and humans against health hazards, as well as the objects.

Methodology

The goal of the collaboration between all the participants of the survey described below was to create a free online seminar series, containing high quality resources for cultural heritage institutions, freelance preservation specialists, and for colleagues in different areas of the world especially those who do not have much access to current conservation literature and/or open discussions between conservators and scientists. The resulting open access resource using internet (emails) was very convenient because participants are now able to retrieve the information. Various topics were discussed and publications are stored in their email accounts, these messages are now in the cloud (with free access), the emails can be sent to others (students, co-workers, researchers, etc.) and furthermore created a very useful and direct dialogue by helping collect, organize, cite and share current and scientific research on ink corrosion, mould, and disasters. The information exchanged was intended for educational and training purposes and should not be used in lieu of consulting with a conservator/ specialist and other subject matter experts, as all disasters involve different and unique circumstances.

This research has greatly enhanced the conservator's understanding of ink corrosion and provided new ways of addressing preservation problems, which are recurrently found in various countries. The components of ink corrosion have been investigated and addressed in many publications; safe treatments have been developed for unstable inks on historical ink-inscribed paper. The effects of different aqueous treatments on metal-tannic ink are continuously being studied with the aim of finding the right reagents to block ink corrosion mechanisms and further degradation.

Nevertheless, conservators still struggle to choose appropriate treatments for mass stabilization and preservation of iron gall ink on paper. Several material and technical issues, as well as the specific use of the object within a library, archive or museum, make these treatment choices difficult: namely because of the complexity and variety of metal-tannic inks. There are still no clear guidelines and methodologies linking the examination for proper identification and history of preparing iron gall inks through the centuries, including industrially made 20th century iron gall ink, and prognosis with the various available treatment options.

Results and Discussions

An e-questionnaire was completed by more than 250 colleagues from 45 different countries. This ascertained what types of aqueous treatments had been or were currently being carried out by conservators worldwide. The survey respondents were asked what particular bathing solutions, products and/or adhesives had been abandoned over the years and why they were discontinued. The responses revealed a decrease in the use of calcium phytate/ calcium bicarbonate and magnesium phytate/ calcium bicarbonate with and without ethanol, while also providing answers as to why this was the case. Treatment with undiluted phytate (100%) with and without alkaline washing offered the best protection. While the Ca phy/ Ca bicarb treatment has proven to be effective in delaying iron gall ink corrosion on paper, this aqueous treatment cannot be used safely on documents with water soluble iron gall ink (Orlandini, 2019). The fact that research into non-aqueous treatments is mainly conducted in Europe was also addressed.

There are no standardized protocols for solubility tests on original documents and master drawings on paper and conservators use various methods and procedures worldwide. If the ink is not soluble in water and/or ethanol, then washing in alkaline water followed by immersion in calcium phytate and calcium bicarbonate is an option. If the ink is slightly soluble in water but not ethanol, then ethanol and alkaline water solutions may be used to wash the object, followed by immersion in ethanol modified calcium phytate and ethanol modified calcium bicarbonate(Tse et al., 2012) The effectiveness of finding optimal ratios or “cocktails” of the ethanol-modified calcium phytate treatments in protecting paper with ink corrosion has been evaluated both in America at the Library of Congress’ research as well as in Canada at the Canadian Conservation Institute. Dilution of the aqueous phytate solutions with ethanol reduced its ability to remove acids, discoloration and yellowing, hence reducing its ability to protect paper from strength loss.

Water followed by ethanol, ethanol/ water solutions (with various concentrations) and finally solutions of calcium phytate and calcium bicarbonate shall be tested further in the future. This investigation has addressed the following questions:

1) Why are we treating the ink-corroded object?

2) Why is it important to preserve it?

3) Why is mould present in the object?

4) What is the composition of its materials?

The issues that we are trying to address in this study are the application of high concentrations of ethanol on materials corroded by iron gall ink, and its negative effects on health and the objects treated. The use in local form or / and with total humidification (without an aqueous treatment), in an aqueous bath without a chelator and deacidification that do not protect the paper nor inks in the long term. Many conservators around the world currently use the combination of ethanol solutions: water, and to treat water-sensitive, wet, semi-wet, ink corroded and materials with fungal attacks.

In their comparative study of aqueous baths versus a modified calcium phytate ethanol solution for the treatment of handwritten papers with iron gall inks, Tse et al (2012) mentioned that the repeated application of modified ethanol solutions resulted in more accumulation of phytate in paper and ink, and in slowing the recurrence of iron (II) ions. It is understandable that most conservators will be reluctant to treat a manuscript document with slightly water-soluble ink with multiple immersion treatments due to the risk of ink migration and stress on the paper support from handling and subsequent drying between such applications. There may be exceptional circumstances in which repeated applications of calcium phytate diluted with ethanol – possibly on a suction table – could be considered. It appears the results of repeated applications is to facilitate the accumulation of more phytate, and thus to offer more protection against the recurrence of iron (II) ions.

Tse et al (2012) do not address the repeated wetting and drying cycles which successive applications of alcohol would subject the paper support to. Both the hydration and dehydration cycles can have an impact on the paper support and the reason to justify such repetitive applications of alcohol is not well understood nor discussed by these authors. Neither does it address the finding that there is dilation and changes in the intramolecular bonds between the amorphous and crystalline areas of the fibres, which can be weakened. Other details regarding the paper supports analysed were not detailed, such as: thickness (measured with a micrometre, in micromillimeters); opacity (translucent and opaque); textures of the surface – visual or tactile qualities of the support; the different types of fibres used in both old and modern papers, the presence of sizing agents; the appearance of the ink or visual qualifications of the condition of condition of the substrate (Orlandini (2019).

This paper also includes a summary of the results of treatment protocols to stabilize biodeterioration, as this phenomenon may be intensified by climate change and global warming. Some commonly used treatments include gamma irradiation or ethanol for disinfection. Treatments involving ethanol baths to improve water absorption and bleeding are problematic (Orlandini 2006, 2010) due to the vaporization of the solvent when applied onto objects during interventions. This may cause high concentrations of ethanol in the air, and if the concentration of this solvent at the workplace is higher than 260 mg/m^3 (TWA 8 hours) the risk for cancer can be considered as high. Other methods of sterilization of collections with mould infestations considered include ethylene oxide, freezing, sunlight and artificial light bleaching, Calcium propionate, nanoparticles and localized gels amongst others.

Conclusions

This project strived to promote awareness, an understanding of the complexity of preparing for and managing disasters, and to increase conservators' knowledge in the areas of emergency preparedness, response, and recovery for cultural heritage. The participants were mainly paper and book conservators, scientists and collection managers who carry out research or aqueous interventions on ink corrosion and fungal attacks. Other responders had other specializations (e.g. textiles, paintings, photographs, objects, digital repositories and others) and/or scientists or engineers with interest in gamma radiation or transition metals in paper versus parchment and their corrosive mechanisms. The participants had various levels of experience with various levels of collections disaster training and response for various cellulosic and proteinaceous materials within cultural institutions, in government and private sector organizations (inter)nationally. The main aim was to have as many responders from different countries in order to assess the level of expertise and/or needs. There were also participants who were specialists in security and protection of cultural heritage and who were able to provide resources on the topic of health and safety in disaster response and recovery. The methods of dissemination and discussions were coordinated by the author but each contributor was acknowledged for the information gathered and provided. This approach allowed an open forum as well as many conversations offline, still to this date.

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Tse, Season, Sherry Guild and Amanda Gould, "A comparison of aqueous versus ethanol modified calcium phytate solutions for the treatment of iron-gall ink inscribed paper," Journal of the Canadian Association for Conservation, vol. 37, 2012, pp. 3-16.

Fig.1: Claudia Maria Ordoñez Montoya, Guatemala - Detail of bound document with ink corrosion and mould damage

Fig. 2: Mª Dolores Díaz-Miranda Macías, Spain - Detail of bound document with ink corrosion and mould damage

Fig. 3: Gemma María Contreras Zamorano, Spain - Bound manuscript with ink corrosion and mould damages.

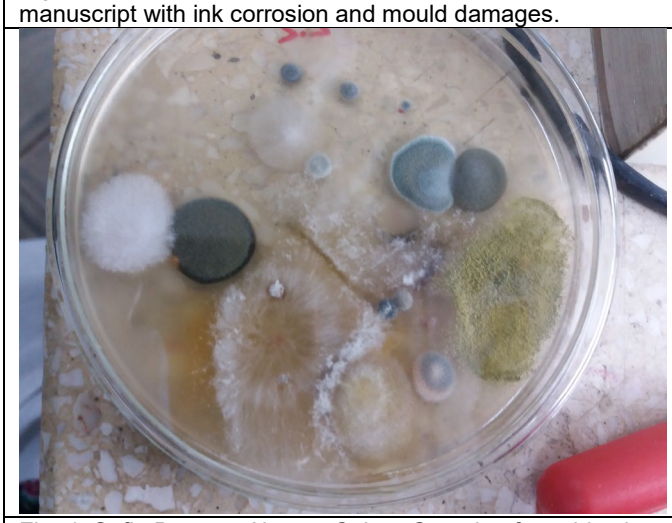
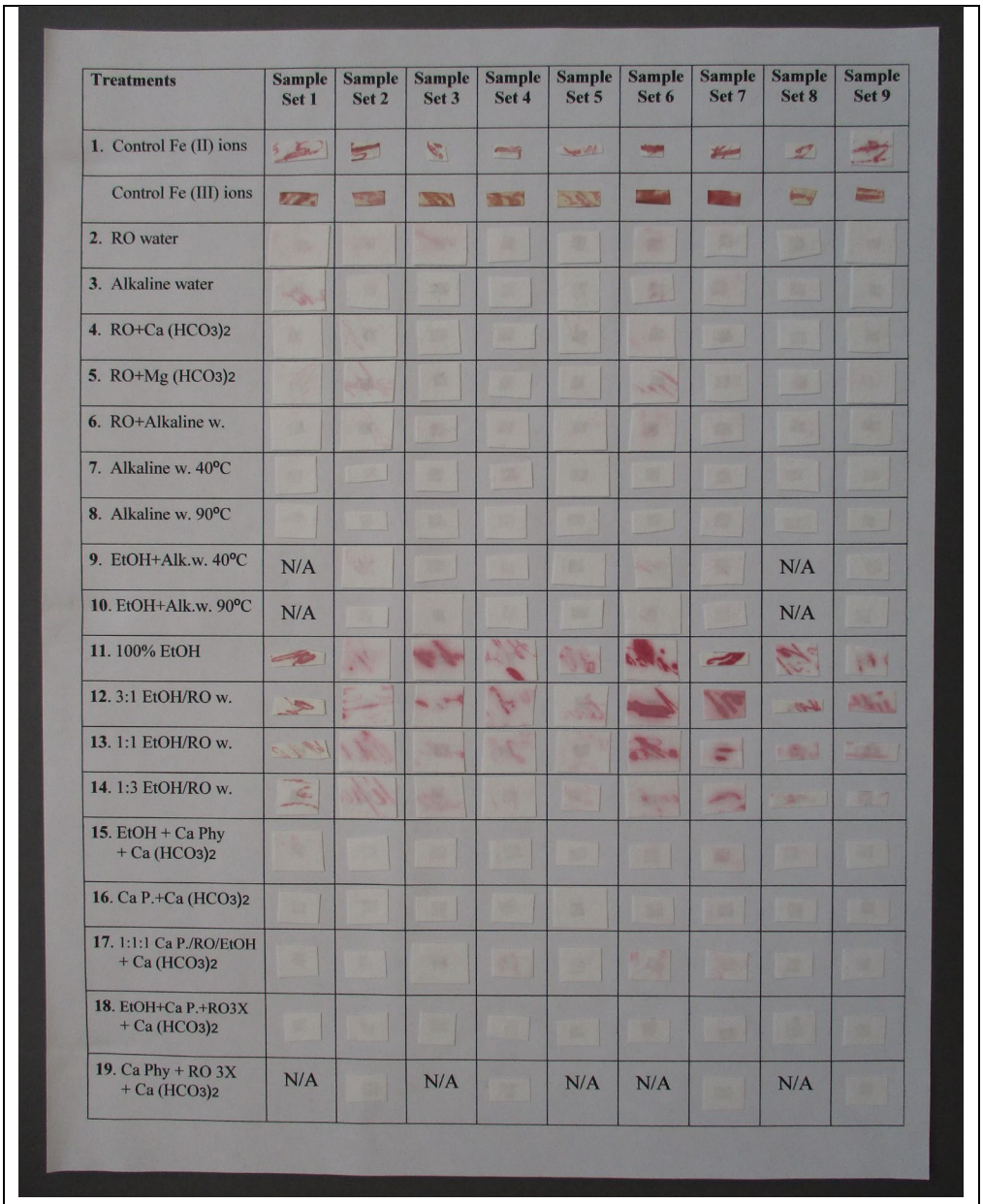


Fig. 4: Sofia Borrego Alonso, Cuba - Sample of mould colony growing in a petri dish



Treatments	Sample Set 1	Sample Set 2	Sample Set 3	Sample Set 4	Sample Set 5	Sample Set 6	Sample Set 7	Sample Set 8	Sample Set 9
1. Control Fe (II) ions									
Control Fe (III) ions									
2. RO water									
3. Alkaline water									
4. RO+Ca (HCO3)2									
5. RO+Mg (HCO3)2									
6. RO+Alkaline w.									
7. Alkaline w. 40°C									
8. Alkaline w. 90°C									
9. EtOH+Alk.w. 40°C	N/A							N/A	
10. EtOH+Alk.w. 90°C	N/A							N/A	
11. 100% EtOH									
12. 3:1 EtOH/RO w.									
13. 1:1 EtOH/RO w.									
14. 1:3 EtOH/RO w.									
15. EtOH + Ca Phy + Ca (HCO3)2									
16. Ca P.+Ca (HCO3)2									
17. 1:1:1 Ca P./RO/EtOH + Ca (HCO3)2									
18. EtOH+Ca P.+RO3X + Ca (HCO3)2									
19. Ca Phy + RO 3X + Ca (HCO3)2	N/A		N/A		N/A	N/A		N/A	

Fig. 5: Valeria Orlandini, USA - Canadian Iron Gall Ink Project, Part 1 (2002-2015) Ottawa, Canada

Introduction to the Kairouan Manuscript Project at the Centre for the Study of Manuscript Cultures, Universität Hamburg

Davidson MacLaren, M.A., Marlen Börngen, M.A.

The National Laboratory for the Preservation and Conservation of Parchment and Manuscripts (NLPCPM) in Raqqada, Kairouan, Tunisia—a division of Tunisia's National Heritage Institute (NHI)—holds one of the largest Islamic manuscript collections in North Africa and of the most historically and intellectually important collections of Islamic religious and literary manuscripts worldwide, especially of early manuscripts.

Since 2018, the Kairouan Manuscript Project (KMP), an international network of academics and heritage management professionals based at Universität Hamburg's Centre for the Study of Manuscript Cultures (CSMC), has cooperated with the NHI and NLPCPM to advance the care, management, study, and promotion of this collection. As part of its work, in 2021, the KMP enabled the creation of four one-year early-career conservator internships at the NLPCPM with a generous grant from the Barakat Trust and additional backing from the CSMC. A second grant from the Barakat Trust and further support from the CSMC made possible the continuation of the internship programme until mid-2023; and from mid-2023 through 2024, it will be funded by the Old Books, New Science Lab at the University of Toronto Mississauga and the CSMC.

The goals of the internship programme are to ensure that the NLPCPM's soon-to-retire manuscript conservators, including its sole parchment conservator, are able to transfer their specialist skills and knowledge to the next generation of Tunisian manuscript conservators; to empower the interns to develop and implement sustainable and resilient strategies to preserve their country's written heritage; and to provide opportunities for them to network internationally through membership in international professional organizations and participation in international conferences. Potentially, the interns will secure permanent employment at the NLPCPM; and their expertise will remain in their home country. The interns' training comprises one-to-one mentoring by the NLPCPM's experts in assessing objects' conditions, preparing treatment proposals, and executing treatment techniques, as well as occasional week-long courses delivered onsite or online to the NLPCPM's entire staff by the KMP and its partners. To date, the latter are Managing the Archive, Library, and Museum Environment, taught by Jane Henderson, secretary general of the International Institute of Conservation and professor of conservation at Cardiff University, and Phil Parkes, reader in conservation at Cardiff University; an Introduction to the Archaeometric Analysis of Written Artefacts, taught by Dr Claudia Colini, principal investigator at the CSMC and junior professor of archaeometry at the Institute for the Archaeology and Cultural History of the Mediterranean Region at Universität Hamburg, and Dr Marina Creydt, research associate at the CSMC and

Faculty of Chemistry at Universität Hamburg; and an introduction to Integrated Pest Management, taught by Amy Crossman, founder and director of Collections Care Consultancy. The KMP is currently seeking funding to organize additional courses in preventive and interventive conservation, especially risk assessment, emergency preparedness and response, and parchment conservation; cataloguing; heritage imaging; and codicology.

On 11 February 2022, the four interns—Kaouther Massoudi, Kawther Zamzami, Nada Ben Bechria, and Mohammed Hedi Abidi—presented their first international conference papers during the emerging conservators panel of the virtual meeting of the Graphic Documents Working Group of the International Council of Museums Committee for Conservation (ICOM-CC), which was organised by the Cologne Institute of Conservation Sciences (CICS) at the Cologne University of Applied Sciences. Three of their abstracts, the first they have ever written, and their first efforts at academic writing in English, appear in this newsletter.

As a result of the interns' excellent performance and growth, they will begin to take ownership of key collection care and management responsibilities at the NLPCPM in the near future. The KMP and its partners are hoping that they will continue engaging with the international community of conservators and other heritage management professionals so that their networks and their impact are not only local, but also global.

For more information about the Kairouan Manuscript Project, please visit the website of the CSMC— www.csmc.uni-hamburg.de —or email kmp.csmc@uni-hamburg.de

The address from the lab is the following:
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Parchment Manuscripts between Conservation and Restoration in the National Laboratory for the Preservation and Conservation of Parchment and Manuscripts (NLPCPM) in Raqqada, Kairouan, Tunisia

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Ancient manuscripts and documents represent an important part of the heritage produced by ancient Arab civilizations. Due to its significance for the Arab world, structures are emerging in Tunisia to preserve its cultural heritage, such as the Laboratory for the Preservation and Conservation of Parchment and Manuscripts (NLPCPM) in Raqqada Kairouan. It houses an important collection of manuscripts on paper and parchment, for example the Blue Qur'an, one of the most famous Islamic parchment manuscripts. The laboratory uses natural materials to repair the damage in the parchment manuscripts and the professionals also seek to use modern scientific, practical, and artistic methods. In this presentation, I talked about these and tried to explain how parchment manuscripts differ from other materials in the collection. In addition, I discussed the damage exposed to the parchment, the techniques and materials used to repair and the preserve the parchment in the NLPCPM. Finally, I compared the restoration process to the paper restoration.

The Scientific and Practical Methods of Manuscript and Book Restoration in the National Laboratory for the Preservation and Conservation of Parchment and Manuscripts in Raqqada, Kairouan, Tunisia

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The restoration and conservation of documents and books does not mean to bring back the document like new, it means to repair and stabilize the document and remove the damage in the papers using 100 % natural and special materials. The restoration should create a perfect condition that will minimize future deterioration while maintaining the historical and artistic value and keeping the objects original form. In addition, the restoration should be reversible, which means we can remove it when needed. The manual restoration contains special techniques and clear steps the conservator should follow to save the documents and extend their life span as much as possible. The most important job for the conservator is the preparation for the restoration of different types of damage after the initial screening and the diagnostic of the document. In this talk, I got into the restoration ways special to the National Laboratory for the Preservation and Conservation of Parchment and Manuscripts in Raqqada, Kairouan. I talked about the different types of restoration, the mechanicals and the manual restoration, the technique and the steps taken by the conservator, the preparation and the used materials.

Manuscript Damage Factors

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The Arabic Islamic civilization is considered one of the main civilizations that paid attention to manuscripts, with regard to its importance in preserving written cultural heritage and in detection what the civilization have achieved in progress and prosperity in various aspects of knowledge. In this presentation, I indicated the risks that may threaten the safety of manuscript, which could be summarized in natural factors represented by the effect of temperature, humidity and light exposure; chemical dangers which were represented in particular by chemical gases and pollution that spread and interacted with gases in the atmosphere; and the biological factors especially insects, microorganisms, and bacteria. Human-involved actions such as mishandling or storing and restoring in unsuitable conditions or by non-technical methods could result in damaging the manuscripts. It can be said that awareness of these risks enables us to develop the scientific methods of preserving and conserving manuscripts.