

Wet Organic Archaeological Materials Working Group

WOAM Newsletter No.60 April, 2021

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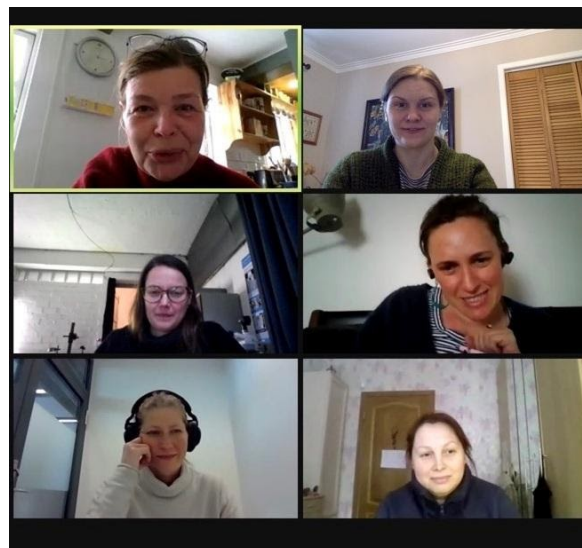
1. FROM THE COORDINATOR

Welcome to the first newsletter of the new ICOM Triennium. The transition between the end of one ICOM Triennium and the beginning of the next usually takes place during the ICOM Triennial Conference held in September, and the 2020 conference, with the theme “Transcending Boundaries”, should have taken place in Beijing, but this was not possible due to the Corona-virus pandemic. The conference will now be held virtually.

The election of Working Group Coordinators took place as usual, however, and I am happy and honoured to take over the post of WOAM Coordinator from Emily Williams, who will be a hard act to follow. Emily has been the Working Group Coordinator for two Triennials and done amazing work for our Group. She participated in organizing two conferences, edited two conference proceedings and she has done a great deal of the groundwork necessary for the post-prints from our previous interim meetings to be put online on the ICOM-CC website. Thank you so much, Emily.

Emily is continuing working hard on behalf of conservation as a vice-chair of ICOM-CC and an educator of future conservators and she is still editing the post-prints for the Portsmouth WOAM Conference.

The ICOM-CC board has now formally approved our working program, the Assistant Coordinators are in place, and we have already had our first meeting.



Coordinator meeting

We would like to take this opportunity to introduce ourselves.



Coordinator Ida Hovmand

I trained as an archaeological conservator in Cardiff, UK. Upon completion of my studies I undertook contract work in the UK and later taught practical conservation at the Durham masters conservation course.

In 1998 I relocated to Denmark and have since held the position of conservation manager at Bevaringscenter Fyn, (the conservation unit at Langelands Museum), where I am responsible for conserving archaeological finds; among them waterlogged organics from terrestrial and marine sites.

Bevaringscenter Fyn collaborates with several partners, including four museums that house archeological units and collections. Therefore, I work closely with archaeologists, collection managers, curators and exhibition designers, as I also advise on storage and display. For a number of years our conservation unit has been host to conservation students from the Durham

masters programme, who during their time with us treat waterlogged organics.

I think it is important to look to the future and help the next generation under way.

My research has primarily focused on various aspects of degradation and conservation of archaeological leather.

My goal for this Triennium is, together with the working group, to build on the existing foundation of openness and professional inquisitiveness.



Assistant Coordinator Elsa Sangouard

After completing a Master's in Archaeology at the University of Nantes, France, I pursued conservation studies with a specialization in Archaeology and Ethnography at the Heaa-Arc of Neuchâtel, Switzerland. I completed my conservation degree with a post-graduate position in conservation at The Mariners Museum and Park's USS *Monitor* project where I was subsequently employed from 2008 to 2012.

I then worked as a conservator for the Swiss National Museum in Affoltern am Albis, Switzerland, where I had the chance to treat many freshly excavated artifacts dating anywhere from the Neolithic to the Middle Age. I rejoined the USS *Monitor* Center team in January 2016. My expertise focuses on the conservation of waterlogged organics and composite artifacts. I was also an Assistant Coordinator in the last Triennium.



Assistant Coordinator Ingrid Stelzner

I have been a member of ICOM-CC since the beginning of my professional career as a conservator. I have always benefited greatly from the network and the exchange of knowledge and experience in the WOAM Working Group. I was Assistant Coordinator from 2017 to 2020 and I am looking forward to taking on this role again in the next Triennium.

I was trained as an object conservator at the State Academy of Art and Design in Stuttgart, Germany (ABK), and graduated with the thesis about waterlogged archaeological leather.

During my professional career I was employed in several museums and State Offices for Monument Preservation. Between 2012 and 2014 I worked in the research project “Investigation of new conservation materials and determination of process-relevant properties in the freeze-drying of wetland finds” and performed my PhD thesis in this topic at the ABK Stuttgart. In 2018 and 2019, I was employed in the joint research project [THEFBO](#) at the Curt-Engelhorn-Zentrum Archäometrie gGmbH in Mannheim, Germany (CEZA). Here I worked on research questions related to conservation of archaeological textiles. Since 2019, I am conservation scientist at the Römisch-Germanisches Zentralmuseum, Archaeological research institute (RGZM) in Mainz, Germany, where I am head of the binational project [CuTAWAY](#) – Conservation and Wood Analyses.



Assistant Coordinator Natalia Vasilyeva

I am Natalia (Anatolievna) Vasilyeva. I have been living in Saint Petersburg since 1999.

I graduated from the St Petersburg State University in 2005. My educational qualification is as an archaeologist, historian, and lecturer of history. From 2006 to 2012 I was a PhD student.

Since 2001, I have been working at the State Hermitage Museum.

My first job was as a lab assistant. I studied a lot with my colleagues, took courses and internships in other museums, and conducted experimental work. Now I am a restorer of the highest category in the Laboratory for Scientific Restoration of Works of Applied Art made from organic materials.

The main direction of my professional activity is the conservation and restoration of archaeological finds made from organic materials. Most of all, I work with archaeological wood, both wet and dry. In my work, there are also many finds made of bone, birch bark, sometimes plant fibers, amber, less often leather, lacquer objects.

For more than twenty years, I have participated in various archaeological expeditions both in Russia and in the neighboring countries of Central Asia. Among the archaeological sites where I worked as a restorer, there are such famous ones as the Arzhan-2 mound (Republic of Tuva), the Hisorak settlement (Tajikistan), the Serteya II pile-dwelling site (Smolensk region), the Pazyryk burial mound 5 (Republic of Altai). There were finds of the Stone Age, Neolithic, Scythian time, early Middle Ages, 18-19th Centuries in my practice.

Once or twice a year, I give a course on the conservation and restoration of archaeological wooden finds and the field conservation of organic materials at the Kazan (Volga) Federal University. I am the author and co-author of about thirty scientific articles devoted to the problems of conservation of archaeological finds.

People, who know me well, say that I am a hardworking, enthusiastic and warm-hearted person.



Assistant Coordinator Mags (Margrethe) Felter

I am Senior Conservator at York Archaeological Trust (YAT) in the UK.

I have worked in the conservation department at YAT since 2005 after completing an MA in Principles of Conservation and MSc in Conservation for Archaeology and Museums at the Institute of Archaeology, University College London.

I work on all archaeological materials both freshly excavated and those in museums but have a keen interest in bone and antler objects as well as metals and on-site conservation and lifting of fragile materials. I enjoy working abroad, and have attended excavations/heritage sites in Orkney, Turkey, Jordan, Azerbaijan and Turkmenistan, as well as sites closer to home. I am also an Accredited member of ICON (the Institute of Conservation, UK) and an Associate Member of the Chartered Institute for Archaeologists (UK).

I am currently on sabbatical from YAT, spending a year in Oslo working for the Museum of Cultural Heritage.



Assistant Coordinator Kate Sullivan

I am a conservator of archaeological materials at the Canadian Conservation Institute (CCI) in Ottawa, Canada. Prior to joining CCI in 2018 I worked as a conservator on the USS *Monitor* Conservation project at The Mariners' Museum in Newport News, Virginia, USA.

I hold an Honours Bachelor of Arts degree in archaeology from Wilfrid Laurier University in Waterloo, Ontario, Canada, and completed a Master of Art Conservation degree from Queen's University in Kingston, Ontario, Canada in 2011. As a part of my conservation studies, I completed internships at Parks Canada, the Athenian Agora and the American Museum of Natural History. I also completed a post-graduate internship at the Canadian Conservation Institute.

Working Group Triennial Programme 2020-2023

Specific themes for investigation

- The ethics and practicalities of treating waterlogged materials, especially large structures or large assemblages.
- In-situ preservation of waterlogged organics.
- New treatment techniques and continued review of older techniques, such as Kauramin, PEG, Sugars, Alum etc.
- The treatment of composite materials.
- The treatment of non-wood organics.
- The display and storage of waterlogged (and previously waterlogged) organics.
- The role of sulphur and other contaminants in the deterioration of wood and other organics and ways to mitigate these effects.
- The documentation and characterisation techniques for recording and assessing waterlogged organics.
- Exploration of different sustainable concepts and methods within our field: for example, comparison of different materials used for impregnation, regeneration/reuse of materials used during treatment, methods used to reduce microbial growth during storage and impregnation of waterlogged organics.
- The Working Group welcomes research especially from students and emerging professionals.

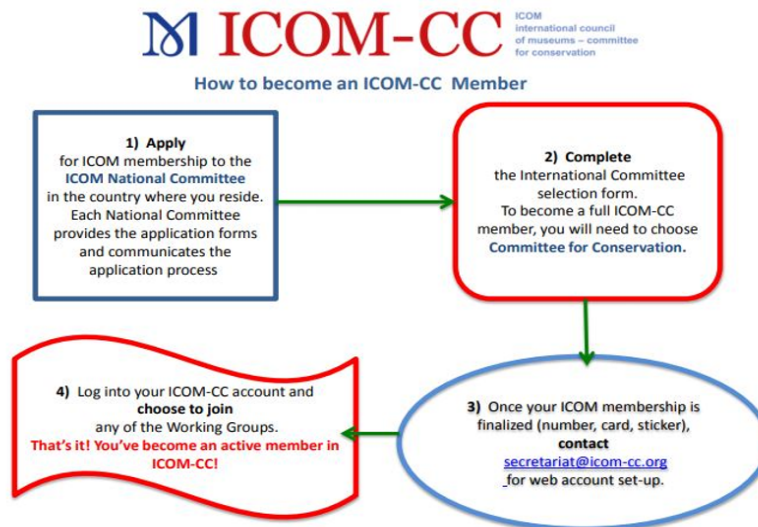
Projects

- Set up a Facebook page for the Working Group.
- Liaise with the previous coordinator about publication of the proceedings from the Interim Meeting held in Portsmouth 2019.
- Plan an Interim Meeting, preferably a physical meeting, if possible.
- Prepare the publication of the papers from the Interim Meeting.
- Communicate with members, when shorter updates are warranted in between the annual Newsletters, e.g., information about conferences, workshops, webinars hosted by other organisations or other sections within ICOM.
- Assist with gathering information for the Publications Online Platform Project related to the Working Groups' past publications, as well as any further work required to place publications generated in this triennium.

As you can see from the programme above, the pandemic has not eradicated our intention of organising an interim meeting in 2022, merely delayed the planning. We are working on it as you read this.

The benefits of being an ICOM-CC Member

There are a great number of benefits to being a member of ICOM and ICOM-CC. With your membership comes the ICOM card which allows free entrance into a large number of museums the world over and a reduced registration rate at conferences.



Not only do you have a voice through ICOM-CC but also through your National Committee. Getting involved with your National Committee is a great opportunity to champion conservation and emphasizing to your other museum colleagues that we conservators are an intrinsic part of the museum family.

One does not necessarily have to be employed in a museum to become a member. Many members are employed in universities, conservation labs or other heritage institutions.

2. COLLEAGUE'S CORNER

Warm belongings of a cold sea

Roman Prokhorov, archaeologist and restorer at the Underwater Research Center of the Russian Geographical Society, Saint Petersburg, Russia

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Last year was full of memorable events. Among them, several significant ones that open a new page in the history of shipwreck research and the development of methods of conservation of underwater cultural heritage in Russia.

The completion of the archaeological underwater excavations of the trade ship *Archangel Raphael* was one of these important events. The work was carried out for seven years by the Underwater Research Center of the Russian Geographical Society.

The trade ship *Archangel Raphael* is included in the international register of the 100 most valuable objects of underwater cultural heritage of the Baltic Sea. The ship was built in 1693 in Lübeck, Germany. It is most likely a three-masted galliot type. Its length was 22 m. The maximum width of the hull was 8 m. The owner of the ship was a Dutch merchant Herman Meyer. The galliot was caught in ice during a prolonged loading of contraband cargo and sank in November 1724. Since then, it has been staying at a depth of 15 meters in the Baltic Sea.



Fig.1 The general view of the trade ship *Archangel Raphael* staying at a depth of 15 meters in the Baltic Sea

The remains of the wooden hull of *Archangel Raphael* were discovered near the

south-eastern shore of *Bolshoy Berezovy (Bjerke)* Island in 2002. Systematic underwater archaeological research of the ship began in 2014 and was completed in November 2020.



Fig.2 The process of underwater archaeological research of the ship.

The first find of the last archaeological season was a fur hat with earflaps.



Fig.3 A fur hat with earflaps was the first find of the last archaeological season. After restoration.

Perhaps head-dresses of this design have common roots with Russian hats with ear-flaps (*ushanka*), traditionally worn by men in winter. The exterior part of the object is made of fragments of woolen cloth, sewn together. The inside of the hat is made from more than 20 fragments of various kinds of fur – mutton fur, as well as pieces of fur of wild animals (lynx). The parts that covered the owner's ears are additionally insulated on the inside with felt and paper. There are numerous signs of wear (tears, deformations, tar and tallow dirt) that can tell about the difficult “life” of this element of the eighteenth century sailor's clothing. Dirt was removed and the deformed parts were straightened during controlled slow drying. The most time-consuming task was cleaning and straightening the fur.

Another find, which once served as a sailor's protection from the chilly wind, was a felt broad-brim hat.



Fig.4 A felt broad-brim hat. After restoration.

On the inside, a linen lining with felt inserts was preserved. The edges of the headdress are intact, but there are tears on the brim. The object was heavily soaked in tar and silt.

A pair of pantaloons are caked in the same kind of dirt requiring long-term cleaning in the laboratory. They are wide trousers that remained almost intact.



Fig.5 The pantaloons. After restoration.

They do not have any external patches, and buttons, lining and other details are preserved.

The pantaloons belonged to an adult, while such objects as kaftans, warm hats and a leather mitten were worn by a child. According to archival data, two brothers worked on the ship as cabin boys. They were probably 8-10 years old. One of the kaftans, made of thin linen is for summer.



Fig.6 A child's kaftan, made of thin linen is for summer. Before restoration.



Fig.7 A child's kaftan, made of thin linen is for summer. After restoration.

The second kaftan is for winter. *Ill. 8.*



Fig.8 The second kid's kaftan is for winter. After restoration.

The upper part of it is made of linen fabric. Inside it is insulated with a lining of woolen cloth. All the wooden buttons braided with linen thread are preserved on the kaftan.

One of the hats is knitted of sheep's wool. The other is made of woolen cloth on the outside, and insulated with sheep skin on the inside.



Fig.9 The hat is made of woolen cloth on the outside, and insulated with sheep's skin on the inside. After restoration.

It still has a string for tying, which helped to understand how this headdress was worn.

In addition to these items, a lot of other artefacts (fragments of clothing, remains of food, printed books, reading glasses, a parcel with fur skins, a coasting lead depth sounding, fragments of rigging etc) were found during the last archaeological season.

It was not only clothes that kept the ship's crew warm. There was also a galley stove - the bricks from it were also raised to the surface in fall of 2020. According to the stamps they were made at the factory *St. Peter's* in Lübeck town at the end of the 17th Century. In addition to the stamp, one of the bricks has an imprint of a child's foot. Probably, the master's child left it. A child's prank became a true "footprint of history".



Fig.10 An imprint of a child's foot on the brick.

This symbolic find and many other things whose history will surprise and warm the hearts of more than one generation of amateurs and connoisseurs of navigation, were brought from *Archangel Raphael* during the last season of archaeological research.

Currently preliminary research and conservation treatment of all the finds are carried out in the restoration atelier of the Underwater Research Center of the Russian Geographical Society. When the conservation treatment is complete, the finds will be transferred to the Kronstadt History Museum.

As a result of the archaeological work carried out on the ship *Archangel Raphael*, researchers were able to study the design of the ship, learn more about the cargo being transported and about sailors' everyday life. In seven years, more than 300 artefacts were raised to the surface. Among them there are unique samples of clothing, rare books, ceramic and pewter dishes, and items made of metal, wood and leather that are necessary in maritime craft. An unusual category of finds consists of food supplies found in some barrels.

All these artifacts constitute a rare collection that can tell about the life of sailors in the late 17th - early 18th Centuries. It was the first time of conducting multidisciplinary work in the field of shipwreck research and the gathering of the first detailed collection on this topic in Russia. Further research and painstaking restoration work help the finds to become exhibits, most of which can be seen in the Museum of History of Kronstadt (www.visitkronshtadt.ru).

"Current issues of a study, preservation and in situ exhibition of archaeological objects made of wood" and the 2nd International scientific and practical conference in Brest Museum of Regional Studies

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On November 13, 2020, the seminar "Current issues of a study, preservation and in situ exhibition of archaeological objects made of wood" was held. It was a part of the 2nd International scientific and practical conference "Museum treasures", dedicated to the 70th anniversary of the Brest Museum of Regional Studies.

Sixty papers from scientists and museum workers from Belarus, Russia, Poland and Ukraine were presented. Seventy participants attended this conference.

The Archaeological Museum "Berestyie", a filial branch of Brest Museum of Regional Studies, is situated in the town of Brest, in the Republic of Belarus.



Fig.1 Brest Museum.

It is the only museum in an East Slavic city in Europe where an archaeological site with perfectly preserved 13th Century wooden buildings is exhibited. The discovery of the medieval city of Berestye was the result of large-scale excavations carried out in 1969 – 1981 and in 1988 under the guidance of Professor Piotr Lysenko, Doctor of Historical Sciences. The characteristics of the waterlogged cultural layer made it possible to preserve more than 220 wooden buildings and more than 43000 objects of organic and inorganic origin.

The long-term process of preserving wooden constructions was the first experience in the conservation and exhibition of such objects. Now 28 residential and farm buildings and two streets of the 13th – early 14th Centuries are exhibited in situ in the museum pavilion.

The conservation of the archaeological wood began in 1970 and it still goes on. The first two stages were aimed at strengthening the wood; the subsequent ones were aimed at preventing biological damage of the wood. In 1980 – 2003, it was fungus damage, since 2008 and especially since the 2010s – woodboring insects have been the main problem. Belarusian State

Technological University (Minsk, Republic of Belarus) is the main partner of the Brest Museum of Regional Studies in matters of wood conservation.

This seminar followed up on the scientific and organizational work (two international seminars and the international conference "Archaeological Wood") which the Brest Museum of Regional Studies held during 2019 together with colleagues from Kazan, the A.Kh. Khalikov Institute of Archaeology of the Academy of Sciences of the Republic of Tatarstan, and Minsk, the Institute of History of the National Academy of Sciences of Belarus.

During the seminar, it was proposed to discuss the issues of the study of archaeological wooden objects: field research and preventive conservation methods, the experience of Belarusian and other European and World museums and research institutes in the care of collections of wooden archaeological objects, the issues of preservation of archaeological objects made of wood and other organic materials, and the current state and prospects of the archaeological heritage in museums in Belarus and abroad.

Leading specialists from the Republic of Belarus and Russian Federation presented their latest developments in the field of conservation of archaeological wood. Senior researcher of the Laboratory of Chemical and Technological Research, State Research Institute for Restoration V. Gordyushina presented the conservation method used to preserve the barque from the 17th Century, stranded due to a storm at Lake Onega in 2018. N. Vasilyeva, the restorer of the Laboratory for the scientific restoration of applied art objects from organic materials at the State Hermitage Museum, summed up the results of the field conservation of waterlogged organic archaeological finds discovered during the supplementary examination of the pit of the barrow 5 of Pazyryk burial field (the Ulagan district of the Altai Republic).

The reports of the employees of the Belarusian State Technological University O. Leonovich, N. Mazalo, I. Fedosenko were devoted to the problems of modified archaeological wood and the studying of the durability of archaeological wood. The history of the creation of the open air Archaeological Museum on the territory of the Białowieża Forest (Kamenets district, Brest region, Republic of Belarus) was highlighted by V. Lakiza, Director of the Institute of History of the National Academy of Sciences of Belarus. Two reports (by N. Pochobut and N. Dubitskaya) were dedicated to the in situ exhibition of the archaeological sites in Belarus in an urban environment. All materials presented at the seminar were issued in 2020 in a conference compendium entitled “Muzejnyja zdabytki” (“Museum treasures”).

The seminar revealed the mutual interest of specialists from Belarus and Russia in the problems of conservation of archaeological wood and the exchange of the experience in this field. Willingness for further joint work was expressed and for such seminars to be held on a regular basis. The main aim of these activities is to draw attention to the specialists to the preservation of the unique

archaeological site – archaeological museum “Berestyė”.



Fig. 2. The wooden structures in Brest Museum.

Status of Current Research on the Trehalose Impregnation Treatment Method – Conservation Treatment of Mongolian vessels

Kouji Ito, scientist, restorer, Osaka City Cultural Properties Association, Osaka, Japan

Introduction

Takashima in Matsuura City, Nagasaki Prefecture is the location of the battlefield of the Mongol invasions. The two conflicts with the forces of the invading Yuan dynasty are called the Battle of Bun'ei (1274) and the Battle of Kōan (1281), and it is believed that during the Battle of Kōan, 4,400 of the Mongolian vessels gathered around Takashima were sunk during a severe storm.

Two such Mongolian vessels were discovered during a survey of the seafloor off the coast of Takashima and are stored in situ.

In addition to these, many objects related to the Mongolian vessels have been excavated due to port construction, or from being caught in fishing nets, and are presently being stored in water at the Matsuura City Buried Cultural Property Center.

I think that there are multiple hurdles to be overcome when excavating and conserving large wooden objects from underwater sites. The ones I consider to be particularly challenging are: the long-term use of electrical energy, device installation costs, storage and processing methods and utilization methods. As a way of solving these problems, I have been researching a trehalose impregnation method, and have designed and manufactured a solar thermal collectors impregnation device that is being used for the conservation treatment. Our research team reported at the 14th WOAM conference that the trehalose method is effective in the conservation of wood-iron composite objects lifted from underwater sites. In addition, the first use of the solar thermal collectors impregnation treatment device was reported at the 13th WOAM conference. In this paper, we will introduce the current status of the conservation of some of the recovered Mongolian vessels (bulkheads, etc.) as well as other information related to the trehalose method.

Status of the Conservation of Mongolian vessels

Target objects

Presently, the two items undergoing conservation are a piece of bulkhead plank (567 x 70 x 15 cm) and outer hull plank (317 x 47 x 12 cm) that were lifted from the seabed in 2002. Both pieces are made from camphor wood and feature the remains of iron nails. Impregnation with the trehalose method started in August 2019 and is scheduled to be completed in March 2021.

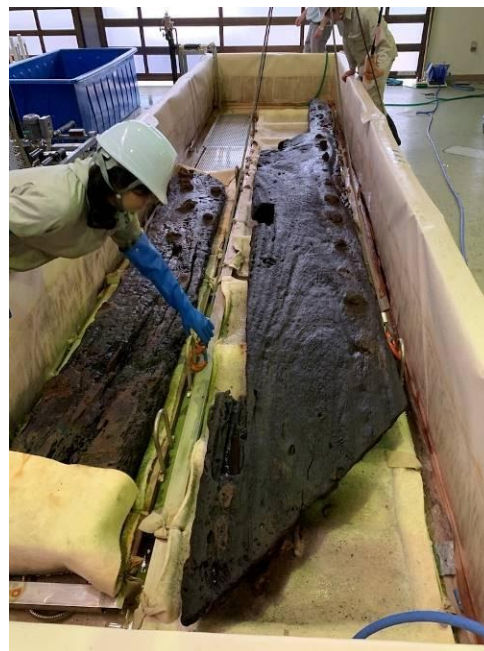


Figure 1: A piece of bulkhead plank and outer hull plank placed in the impregnation tank, just before the start of the impregnation process.

Impregnation equipment (manufactured by Terada Iron Works) (figure 2)

So far, I have designed three solar thermal collectors impregnation devices. The unit used this time is No. 3, which consists of a solar heat collector, a heat exchange tank, and an impregnation tank.

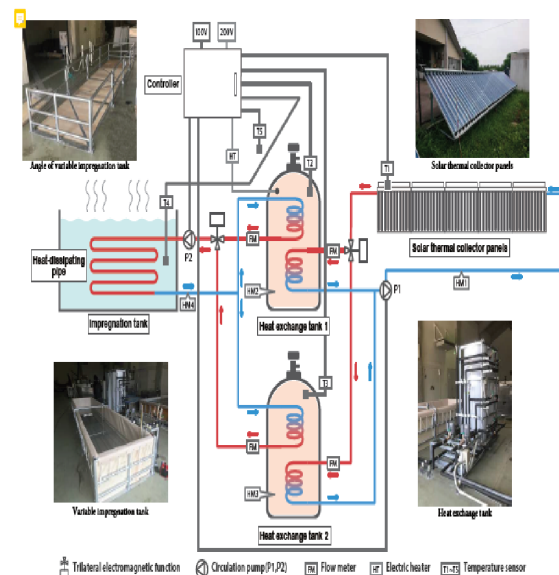


Figure 2: Solar thermal collectors impregnation device No.3 Overview Drawing.

The most distinctive feature of this device is its variable impregnation tank. Its length can be changed to suit the size of the target wooden objects. A frame was assembled at an angle, with heat insulating material placed on the inner surface, and a highly heat-resistant, waterproof sheet attached to the inside. This sheet is made of the same material as the roof of Tokyo Dome.

a) Solar thermal collector

Heat collection panel: Vacuum glass tube type (maximum heat collection temperature 295 °C), 5 panels connected in a series.

b) Heat exchange tank

Storage tank: 500 liters, 2 units connected in parallel.

Double coil heat exchange method.

Built-in electric heater (AC220V / 5kW) in one unit.

c) Impregnation tank

Inner dimensions: 650cm x 150cm x 63cm (Outer dimensions: 666cm x 166cm x 70cm)

Frame material: Carbon steel pipe (SGP40A, φ6 cm, φ5 cm)

Side / floor insulation: Phenol foam (thickness 5 cm, NEOMA FORM manufactured by ASAHI KASEI Corporation)

Liquid level insulation: Hard foam material board (thickness 4 cm, SANKO Co., LTD. EPERAN)

Tarpaulin: High heat resistance and high weather resistance fluororesin film (CHUKOH CHEMICAL INDUSTRIES, LTD. FGT-800)

Heat dissipating pipe: Stainless steel flexible pipe (diameter 2 cm)

Device performance

One of the two heat exchange tanks has a built-in electric heater and is a hybrid system that both heats and maintains the temperature using electrical energy when solar heat decreases, such as at night. This heat exchange tank has the capability to reduce the temperature loss of the heat medium (80°C water) to less than 10°C for 12 hours when the outside temperature is

0°C. I had initially worried about the heat retention of the impregnation tank, but there was no need.

The decrease in water temperature was compared with that of a conventional stainless-steel impregnation tank (inner dimensions 2 x 1 x 1 m, held by the Osaka City Cultural Properties Association). The heat source was stopped when the water temperature in the impregnation tanks reached 50°C, and the temperature was measured again 12 hours later. The temperature within the stainless-steel impregnation tank had dropped to 45.1°C, but that of impregnation tank No. 3 was 48.7 °C: a loss of only 1.3°C (outside temperature 27.5°C). Very high heat retention performance indeed.

Impregnation status

In order to control the progress of the impregnation we weighed the bulkhead plank piece using a crane scale.

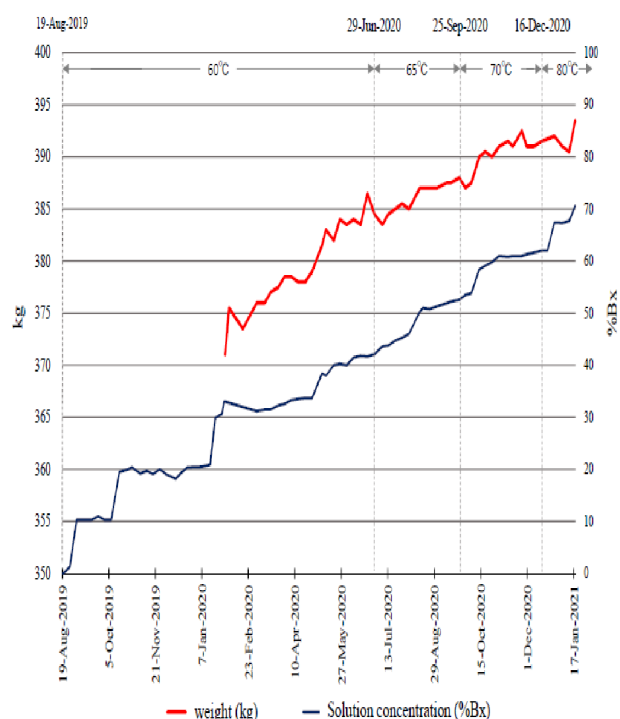


Figure 3: Increased weight of bulkhead plank piece. There was a problem with the support frame on which the bulkhead had been placed, and it was replaced in February 2020. The weight data from before the replacement has been omitted as it is unreliable.

Figure 3 shows the increase in the weight of the bulkhead plank piece as the concentration of the trehalose aqueous solution increased. From this graph, we can see that the adjustment of the concentration and the weight increase of the bulkhead plank piece are both going well.

Conclusion

To date, the bulkhead plank piece being conserved at this time is the largest object that has been recovered from an undersea site in Japan. It is also the largest object to undergo conservation using the trehalose method. For these reasons, the importance of this current conservation work is not only in its success, the trial and error that went into the process is equally vital for future conservation work.

In particular, about the long-term, stable operation of the solar thermal collectors impregnation device, the reduction of power consumption, the effectiveness and durability of the variable impregnation tank, and how to control the progress of impregnation, among other things.

In January 2021, the concentration of the trehalose aqueous solution was increased to 70% Bx, as planned. If all continues to go well, the impregnation process will be completed in March 2021. Then, following the impregnation treatment, the solidification step can start. During solidification, it is important to measure changes in weight and to understand how the trehalose is solidifying inside the wood. It is also necessary to measure the dimensions in order to identify any changes in shape. I expect the loss of weight associated with the solidification to end by around September

2021. In 2022, it will be possible to open the bulkhead and hull planking that have been finished to the surface treatment.

Acknowledgments

I would like to thank Ms. Yumi Yasuki, who is carrying out the conservation of the Mongolian vessels, and Mr. Ryosuke Kitamura, who is a collaborator in the development of the impregnation device.

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Unexpected Asbestos: Treating A Waterlogged Rope

Kate McEnroe, Associate Conservator of Archaeological Materials, Colonial Williamsburg Foundation

A waterlogged rope fragment was excavated from a tavern site in Colonial Williamsburg's Historic Area in 2020 and brought immediately to the conservation lab for treatment.

Organic fibers are unusual survivors at Colonial Williamsburg and so the research interest in this piece was high.

Though I took samples for fiber ID, I did not wait for the results before beginning treatment. Instead, I proceeded as if the artifact were the natural fiber rope fragment I expected it to be.



Photo 1: Asbestos Bundle, Before Treatment. Image courtesy of The Colonial Williamsburg Foundation.

It was after the piece had completed immersion in a PEG solution and while the piece was undergoing natural freeze drying that I received results on the fiber ID. During PLM, our materials analyst observed very thin fiber size and a lack of distinguishing features. Using FTIR, she confirmed that the fibers were asbestos.

I had never adequately considered that my work may cause me to interact with asbestos materials and I had a very poor understanding of the types of artifacts that may be likely to be asbestos. I began research into asbestos and asbestos artifacts to understand possible use and date for the

artifact in question, determine the potential effects of the PEG and natural freeze-drying treatment on the artifact, and to figure out a method to prevent future accidental exposure to asbestos. Preliminary research indicated that the asbestos, a naturally occurring fibrous mineral, would not be negatively affected by the treatment. I decided to allow the artifact to fully dry in the chest freezer, as determined by regular weight checks. Once dry, the artifact did not appear to have become embrittled, discolored, or otherwise visually deteriorated due to the PEG and natural freeze-drying treatment (**photo 2**).



Photo 2: Asbestos Bundle, After Treatment. Image courtesy of The Colonial Williamsburg Foundation.

After research and discussion with colleagues, what we decided made the most sense for our area of work, primarily 18th-21st century material in a semi-urban context, was to regard any fibrous survival as a red flag. With new understanding of the visual characteristics of asbestos, I created a chart that, based on observations at macro, micro, and analytical levels would help conservators identify possible asbestos without exposing themselves to the health and safety risk

Conservation Lab Approach to Unidentified Artifacts

Kate McEnroe | November 20, 2020

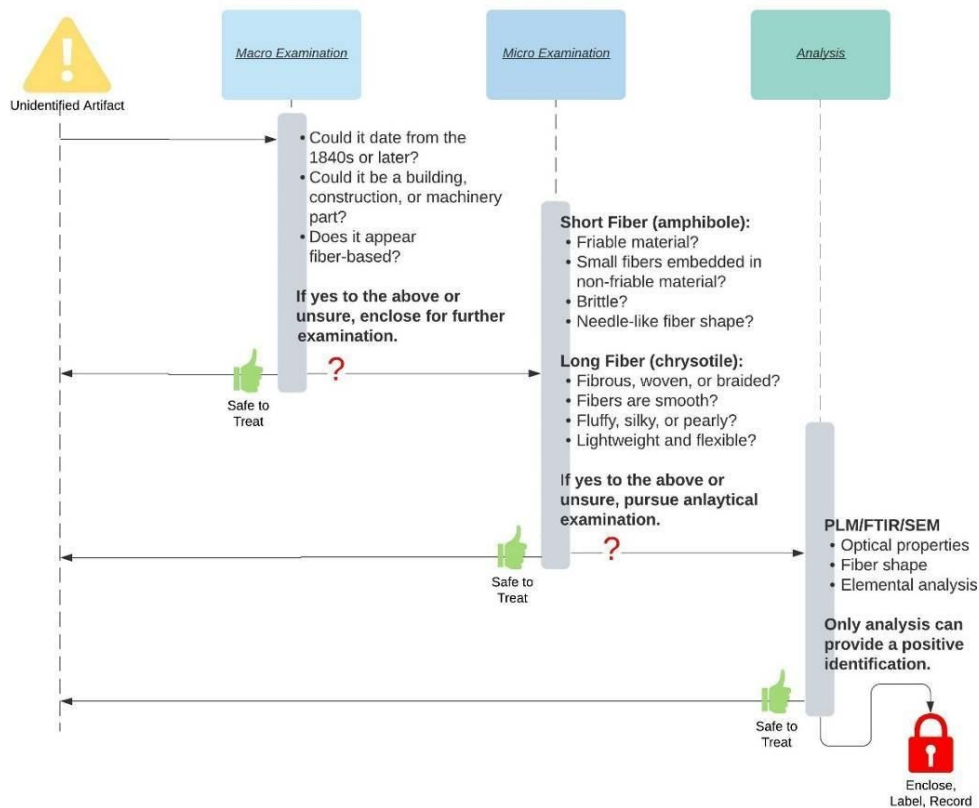


Photo 3: Conservation Lab Approach to Unidentified Artifacts.

We also now have procedures in place for sampling unidentified fibers. For those of us working with materials that encompass the second half of the 18th century through modern times, the fact that asbestos is a chemically resilient mineral makes it very possible that fragments and artifacts exist in collections and will continue to be encountered in the field. Fortunately, most asbestos artifacts encountered in archaeological settings are likely small enough in nature to be able to be safely contained within double plastic bags while decisions on treatment and retention are fully investigated. This does not apply to sites with layers of modern asbestos contamination, where different rules apply to the excavation and processing.

For anyone working with material culture, it is important to be aware that asbestos was mined in vast quantities and used in innumerable applications, particularly mechanical applications where material was being exposed to high temperature, flames, steam, friction, or corrosion, and in building materials such as flooring and roof tiles (for general information, see: <https://www.epa.gov/asbestos>). For conservators and others who often have close contact with artifacts and perform tasks that may result in the disruption of surfaces and fibers, it is especially important to be familiar with general characteristics so that, through preemptive identification, we avoid exposure to a carcinogenic mineral.

Deacidification Treatment Testing at The Mariners' Museum and Park

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In the early 1980s, an archaeological excavation in Manhattan, New York, USA uncovered the remains of an 18th century ship. This ship was later tentatively identified as *Princess Carolina*, a merchant vessel built in 1716 that traded transatlantically until damaged in 1729 and eventually used as a cribbing structure for land expansion. Believed to be the oldest surviving, European-American built merchant ship, this vessel holds a significant place in shipbuilding history (Riess, 2015).

Approximately 330 timbers were recovered from the ship's bow structure during excavation and are currently housed at The Mariners' Museum and Park (TMMP). In recent years, staff have noticed yellow rings and precipitates forming on the timbers' surfaces indicative of sulfuric acid formation. This discovery led to more in-depth analysis of the timbers' condition and the deterioration occurring. A comprehensive pH survey and environmental scanning electron microscopy with EDS analyses indicated that sulfuric acid formation was being catalyzed in areas of increased iron exposure (e.g. fastener holes). TMMP has recently received donor funding to begin a large-scale rehousing initiative with the purpose of mitigating this formation.

However, concerning pH levels already present in the timbers remain unaddressed. In 2019, staff began planning an experiment to comparatively test potential treatment options based on past and present deacidification research. Products chosen include several weak bases in nanoparticle form as well as soluble/partially soluble carbonates. Tests have since begun in January of 2021 with promising early results. This work is being supported in part

through fellowship funds received from the Samuel H. Kress Foundation administered by Foundation of the American Institute for Conservation.



Kress Conservation Fellow, Christina Altland, administering treatment to a timber.
Image courtesy of The Mariners' Museum and Park.

Once treatment is complete, staff will gather results over several months and, along with other practical variables (e.g. cost), determine if any product is suitable for treatment. If successful, treatment will expand to a larger population of timbers with the goal of developing a standard methodology. This would allow for the large-scale treatment of all the *Princess Carolina* timbers and eventually a partial reconstruction of the bow. The ultimate goal of the project being that the public will be able to engage with the vessel as originally intended.

It is hoped that the bow can become a focal point to telling the story of early trade and shipbuilding in North America.

References

Riess, Warren C. with Sheli O. Smith. *The Ship that Held Up Wall Street*. College Station, TX; Texas A&M University Press, 2015.

Attending online conferences (a first-time personal experience)

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The past year has taught us new habits - to wear masks, to keep distance, to work remotely and to take part in online meetings. It may seem cosy – no need to rush anywhere, you are at home, in your favorite sweater, in front of your computer that you can easily navigate through, and next to you is a cup of fragrant warm tea. You can see the world on screen from any angle, with the sound you feel comfortable with, and pause whenever you want. But then, suddenly, cats appear and jump on the keyboard. After them, your children come running and beg you to allow them to use your computer, because the program they need only works on it.

And then you get distracted, lose your train of thought and forget to ask the speaker your question. The anxiety, however, remains. At what point did I leave the conference - before the cats' arrival or after an argument with children? Did it stay inside the family or did all one hundred participants see it? I feel like I am starting to fear my computer.

Last November I managed to take part in three conferences dedicated to the problems of restoration. They all took place online. The organizers approached the challenge in different ways, but in the end, they all succeeded. I would like to express my deep gratitude to all the organizers of

online conferences for the opportunity to take part in such significant events, despite the unusual conditions.

Once I even was a speaker at two conferences, held in two different places, in one day! This magic happened on Friday, 13th November!

One of the most important events dedicated to the preservation of cultural heritage took place in St.Petersburg, Russia in November 12th - 14th, 2020. It was The IV International Scientific and Practical Conference "Preservation of Cultural Heritage: Conservation, Heritage Science, New Discoveries". It was organized by the Ministry of Culture of the Russian Federation and the St.Petersburg Repin Academy of Fine Arts.

Of course, I was very nervous before giving my first online lecture "Contemporary methods of conservation of waterlogged archaeological wood in the State Hermitage museum." I rehearsed my speech online in front of a friend the day before. I corrected the text of the report several times and was not letting anyone approach the computer. The comfort of my home helped me to overcome anxiety. Then the presentation was over, I even managed to answer a question, although I did not get a chance to meet the person who asked it.

After finishing the first report, I had only a half an hour to tune in to a different topic, follow the new link and upload a new presentation.

The II International Scientific and Practical Conference "Museum treasures", was held in November from 12th - 13th, 2020 in Brest, the Republic of Belarus. The conference was organized by the Brest Museum of Regional Studies. The seminar "Current issues of the study, conservation and museumification of archaeological wooden objects", took place during the conference. Taking part in a seminar on such a relevant topic was not just interesting, but necessary for professional development. Together with Elena Stepanova, Vladimir Mylnikov, Igor Slyusarenko and Nikita Konstantinov, we have prepared a report "Field conservation of waterlogged organic materials during the supplementary examination of the Fifth Pazyryk barrow in 2019". The presentation was successful, but, unfortunately, the online platform we used did not allow me to listen to other reports in this section. In addition, remote participation deprived me of the joy of visiting the Brest Museum of Regional Studies and its branch, the Archaeological Museum "Berestyie", and meeting Belarussian colleagues. I look forward to the release of the collection of reports from this noteworthy conference.

The Scientific and Methodological conference "Research in the conservation of cultural heritage" on the topic "Examination of cultural values: technical, technological

and art history" was held in November from 24th - 25th, 2020 in Moscow, Russia. It was organized by the State Research Institute of Restoration, Moscow. Serious topics were discussed here, important and even fundamental in terms of the tasks set. Together with Anna Stepanova, Kyrill Shmelev and Natalia Shirokova, we presented a report "Preliminary studies of the ice-chamber from the Corner Chambers of the Palace of Alexandr Menshikov (wood identification and condition)". And during this conference, something that I feared back on Friday 13th happened... I had some technical problems. At first, the sound was lagging, and then the video stopped working. As a result, I watched the entire conference already in recording, several days after its completion.

I will not argue about pros and cons of this experience. I think many can agree that we cannot do without offline conferences, with their live communication, immersion in a professional environment, the feeling of belonging to a large circle of specialists and the impressions from new places and acquaintances. But it is also impossible not to notice the advantages of online communication. It is safe, you can chat and listen to reports at the same time, and besides, you can watch a video recording of a conference whenever you want. Hopefully, over time, each of us will be able to find our happy medium between online and offline communication.

3. BOOKS, CONFERENCES AND COURSES

The trehalose method in print and on facebook



Kouji Ito, scientist, restorer; Osaka City Cultural Properties Association, Osaka, Japan

In June 2020, I published a book on an overview of trehalose impregnation with the title: "Study and Practice of Cultural Property Conservation using Trehalose -Process leading and the Prospect of the Sugar Impregnation Method-. In it I introduce examples of experiments and conservation treatments, and concretely explain my experience with the PEG impregnation treatment: firstly, my involvement in the development of the sugar alcohol method (lactitol method) and its practical application, and then, the research and practical application of the trehalose method. I hope that this book will be useful to those who are studying the trehalose method and who are thinking of using it to conserve objects. Regrettably, however, the book is currently only available in Japanese.

The publisher is SANKEISYA.

ISBN number is 978-4-86693-248-4.

In May 2015, I established a Facebook group called the Trehalose Method Laboratory. The aim of this group is to make improvements to the trehalose method by sharing information, good and bad, between its members. For this reason, it is not open to the public. To become a member you need to belong to a public institution and practice cultural property conservation, and promise to maintain the confidentiality of the group. If you agree with the purpose of the group and would like to join, apply to me first (<https://www.facebook.com/kouji.ito.7161>). Then, please write a brief profile, such as your affiliation, and send it by direct message. After that, I will send you an invitation.

Below you can read a review of the book:

The book is your friend, without it is like without hands ¹(or review of the first book about Trehalose method)

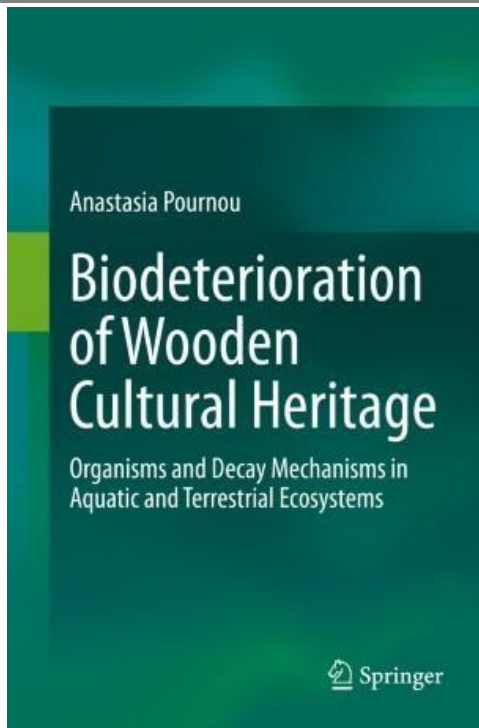
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The conservation of a historical object requires the study of the history of the artifact, the diagnosis of its state of preservation, the development of methods, the availability of equipment, and the participation of specialists. Each restorer is constantly searching for the optimal method for the conservation of finds and in constant doubt about the decision made. We often rely on the invaluable experience of our colleagues and do not stop learning from each other. In this helps us to communicate in a professional environment: participation in conferences, online consultations, information exchange in social networks, correspondence. Despite the great variety in the ways of communication, a book is still the first assistant for any specialist.

Traditionally, on New Year's Eve, it is customary to remember the good events of the past year and thank the outgoing year for them. One of these events for me was the book written by Kouji Ito "Study and Practice of Cultural Property Conservation using Trehalose. Process leading and the Prospect of the Sugar Impregnation Method". This is the first book dedicated to this method, published in Japanese. The book briefly describes the history of the study and application of various methods of conservation of waterlogged archaeological organic materials in Japan, gives the basics of the theory of the Trehalose method, describes experimental work, provides examples of practical work with detailed instructions for using the method in each case. Of particular interest are the chapters on the conservation of wet archaeological plant fibers and archaeological lacquer objects with the trehalose method.

The Trehalose method is already included in the conservation practice of waterlogged archaeological wood in the Laboratory for scientific restoration of works of applied art made from organic materials in the State Hermitage Museum. We are also trying to apply trehalose to preserve other wet organic materials. Despite a number of errors in machine (online) translation, I managed to read the book. And I, as a beginner practicing this method, am very lucky that I now have such a support as the book of Sensei. I hope it will be translated into other languages in the future. I would like to wish Kouji Ito and his team creative success and inspiration for the next works!

¹ It is the Russian proverb about the book



There is also book news from Anastasia Pournou, who has published a book entitled "Biodeterioration of Wooden Cultural Heritage: Organisms and Decay Mechanisms in Aquatic and Terrestrial Ecosystems". This is a book which must be of interest to many in the group.
<https://link.springer.com/book/10.1007/978-3-030-46504-9>

The publisher is Springer.
Print ISBN number is 978-3-030-46503-2

A paper has come out recently in Heritage Science which may be of interest. Dr Kirsty High and Dr Kirsty Penkman from the University of York have undertaken a review of the analytical methods used to assess the condition of waterlogged wood. The review is very thorough and includes both low and high-tech techniques and makes recommendations about how these may be used together to make decisions about stability and conservation treatment.

Abstract

Waterlogged archaeological wood can present management challenges due to its vulnerability to chemical and biological decay, both during burial and post-excavation. Decay processes also often leave it severely weakened and therefore susceptible to mechanical damage. Quantifying preservation and understanding active decay mechanisms is therefore critical in informing the management of this unique cultural resource. It is critical that assessments of preservation are robust, and sensitive enough to allow changes over time to be detected. A wide range of analytical methods can be applied to assess the state of preservation of waterlogged archaeological wood, and determining which of these is most appropriate to the circumstances can be challenging.

This review summarises some of the most commonly reported methods suitable for the analysis of waterlogged archaeological wood, ranging from widely used ‘low-tech’ methods, to assessment using advanced analytical instrumentation. Methods are evaluated in terms of the information gained weighed up against their cost, logistical considerations, and time investments, with the aim of supporting the development of an analytical strategy. We conclude that although an analytical strategy must be informed by the aims of assessment as well as any external restrictions, the best available analytical techniques should be employed in order to supply an accurate baseline against which future change can be measured.

Critically, a multi-analytical approach is vital in obtaining a clear picture of the present state of decay, as no single technique gives the best assessment.

The paper is available as an open access document with the link:

https://www.researchgate.net/publication/343651550_A_review_of_analytical_methods_for_assessing_preservation_in_waterlogged_archaeological_wood_and_their_application_in_practice

Conferences

The 19th ICOM-CC Triennial Conference with the theme “Transcending boundaries”, meant to take place in Beijing, is now a virtual conference, and will take place from 17th-21st May, 2021.

The first three days will consist of pre-recorded working group presentations and live plenary and Q&A sessions, while Thursday and Friday are reserved for the live working group business meetings. The sessions for the first three days will be broadcast on 4 parallel channels, with channel 1 reserved for sessions with Chinese papers (although some presentations in English will also be broadcast here). Chinese papers will have English sub-titles, while the live Q&A sessions will offer simultaneous English / Chinese translation.

Unlike a regular conference, you will be able to see all the presentations, as well as enjoy virtual tours to all the heritage sites, rather than having to choose just one.

Access to the papers and tours is included as part of your modest registration fee, from 17th May until 17th June 2021. If you have not already done so, register now at <https://www.icom-cc2020.org/> For ICOM members, the rate is 990 cny (after 25 march); for non-ICOM members, the fee is 1150 cny, and for students 500 cny. Note: to qualify for the student rate you must be a full time student at a tertiary (undergraduate/post-graduate) institution at the time of the conference and a student ID or official letter from your university must be provided.

The registration fee includes:

- 1 month access (from 17th May to 17th June 2021) to all working group sessions and video presentations
- Access to plenary sessions, keynote and international museum day event
- Access to pre-recorded technical visits in various museums throughout china
- Access to preprints from 1st May to 17th June 2021
- Posters in pdf format to be downloaded
- Real time Q&A sessions
- Virtual exhibitions

If you have questions, please contact: icom-cc2020registration@kit-group.org

In our working group we have three presentations all on Wednesday 19th of May:

- Ingrid Stelzner: Non-destructive assessment of conserved archaeological wood using computer tomography.
- Dawa Shen: Experimental Study on the consolidation of decayed wooden planks on the Quanzhou ship: A discussion of the possibility of retreatment.
- Hailing Zheng: Silk fibroin consolidation and tracking the protective effect on ancient saturated silk fabrics.

We also have three posters:

- Mathilde Monachon: Bio-based treatment for the extraction of Fe/S species from waterlogged archaeological woods.
- Elizabeth E Peacock: Mapping the State of the Art. The use of structured interview surveys in conservation research - the Trondheim Archaeological Leather Project (TALP).
- Qiu-Ju He: Scientific analysis and emergency protection of a Ming dynasty golden lacquer coffin excavated in Wuli Tuo, Shijingshan, Beijing.

Metals 2022, 5-9 September, Helsinki,

Finland <http://www.icom-cc.org/51/news/?id=559#.YEdGWo5KhPY>

The ICOM-CC Metals Working Group, The National Museum of Finland and Metropolia University of Applied Sciences, Helsinki, Finland, are pleased to announce the call for papers for the 10th Interim Meeting of the ICOM-CC Metals Working Group.

The conference will be held at Suomenlinna Fortress, a UNESCO World Heritage Site located at the entrance to Helsinki's harbour.

The conference will be offered in a hybrid format with in-person AND virtual programming. This is a new format for the Working Group as we try to expand inclusion and outreach. Although we are very hopeful that we can meet in person in 2022, the conference may transition to a 100% virtual event depending on the COVID-19 situation.

Selected papers will be published as digital Preprints and provided to attendees at the meeting (whether in-person or virtual) and will also be available after the meeting as print on demand at www.lulu.com.

Please note that for the publication, all authors will be asked to transfer copyright of the contribution to ICOM-CC. Metal 2022 will also feature a dedicated Young Conservation Professionals session. Deadline for submissions: April 15, 2021.

Conference organizers: Paul Mardikian (Coordinator, ICOM-CC Metals Working Group), Liisa Näsänen (Conference Chair, The National Museum of Finland) Eero Ehanti and Heikki Häyhä (Steering Committee, The National Museum of Finland and Metropolia University of Applied Sciences)

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