

FACTSHEET #2

JPICH/JHEP JOINT PILOT CALL FEATURED PROJECTS



AGEING STUDY OF TREATED COMPOSITE ARCHAEOLOGICAL WATERLOGGED ARTIFACTS



Title

Ageing Study of Treated Composite Archaeological Waterlogged Artifacts (ArCo)

Dates

01 April 2014 – 31 March 2016

Budget

Total project budget: €369 000
Funding awarded: €294 000

Project Summary

Wooden objects in different collections are affected by serious deterioration processes caused by the presence of unstable salts. Chemical reactions of iron compounds and alum salts - as most prominent examples - lead to the forming of different acids and an acidification of the wood (pH < 2). Iron can migrate into wood from the

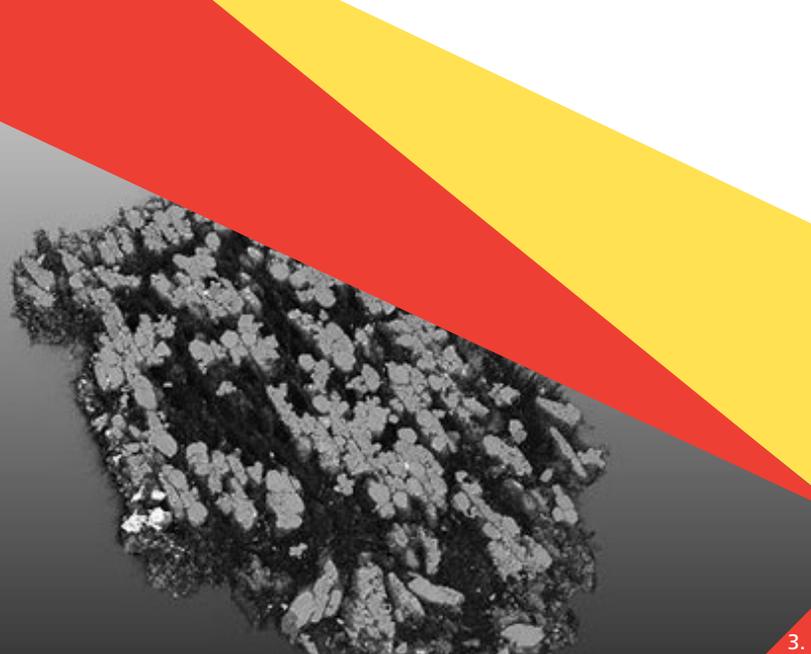
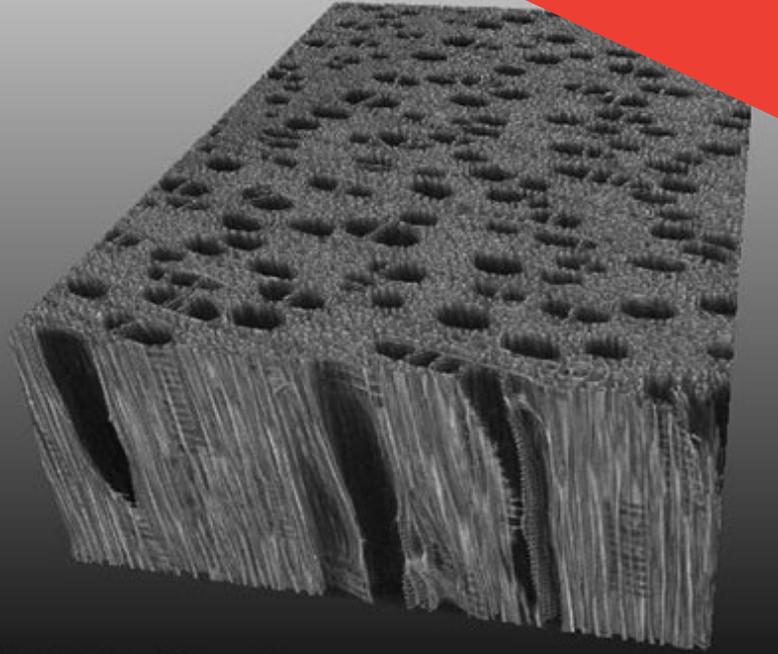
environment or may be released during corrosion processes. Unstable iron compounds can attack wood components and promote the forming of sulphuric and organic acids, as known from numerous finds of archaeological wood, for example shipwrecks.

Unstable salts can also be introduced into wood during conservation treatments. The conservation using alum salts in the period ca 1850 - 1950 initiated a slow but ongoing deterioration process.

It is an aim of the conservation community to develop a preventive way to limit and to stop the decomposition of unstable salts present in the wood. To do so requires detailed knowledge about the long-term behavior of unstable salts and their interaction with different consolidants and other conservation materials.

The ArCo project will develop a testing protocol for archaeological wood containing unstable salts and treated with different consolidants, well-known as well as newly developed materials.





Application and Impact

The presence of unstable salts is one of the most striking problems in archaeological wood. The chemical processes occurring during the decomposition of such compounds are quite complicated. Within the scope of ArCo wood samples containing unstable salts – untreated as well as such treated with selected conservation agents - will be accelerated aged varying different parameters. The process will be monitored by chemical analyses, optical and electron microscopy and tomography. The project will develop a standard testing protocol to make different methods comparable. This will enable conservators and conservation scientists to choose the most suitable preservation strategy for different types of archaeological wood.

Coordinator

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Participants

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Subject Area(s)

Archaeological Wood, Conservation, Weathering, Pyrite, Alum

Project Website

<http://natmus.dk/en/forskning/research-projects/arco/>

Image Captions

1. A piece of wood, treated with alum in the beginning of the 20th century. Oseberg collection, Museum of Cultural History, Oslo.
2. The climate chamber allows accelerated aging under controlled conditions. The influence of temperature, humidity and light on the decomposition of salts and the deterioration of wood can be studied.
3. Synchrotron based X-ray tomography shows clearly the deterioration caused by the unstable alum salt in wood on a cellular level. a) Fresh poplar; b) Alum-conserved wood.



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