

PHySICAL

Profound study of Hydrous and Solvent Interactions in Cleaning Asian Lacquer

DURATION
 15/01/2017 - 15/04/2021

BUDGET
 396.444 €

PROJECT DESCRIPTION

INTRODUCTION

Asian lacquer, the sap of some endemic trees growing in Southeast Asia, Japan and China is used as a coating material to decorate materials such as bamboo, wood, metal, leather and ceramics. Asian lacquer has been crossing borders since the 10th century and ended up in many collections, including both the East Asian and the Southeast-Asian collections in the Royal Museums of Art and History (RMAH). A large part of this collection is not on display, or only temporarily. Both exposition of the objects as well as long-term storage leads to degradation of the lacquer surface by discoloration through light exposure, through changes in relative humidity or by dust deposits. Before exposition, and hence valorization of these unique and precious objects, cleaning is often mandatory. Current cleaning methods, however, are not scientifically founded and can cause damage in the long-term. A systematical evaluation of the cleaning procedures, especially solvent based ones, is required to define "best practices" for cleaning Asian lacquered objects, before exposition in the museum environment.

Objectives

This research proposal focuses on the scientific study of the interactions of cleaning solvents with the lacquer surface in order to formulate "best practices" for cleaning Asian lacquers with special attention to the lacquer collection of the RMAH. To elucidate the solvent/lacquer interactions chemical analyses will be carried out at the Royal Institute for Cultural Heritage (KIK-IRPA) and Ghent University (UGent), applying mainly complimentary chromatographic and mass spectrometric techniques. Based on a thorough inventory of the Asian lacquer collection of the RMAH, some objects actually stored in the reserves, will be cleaned using solvents which are - based on the outcome of the chemical research - proven to be safe and effective.

Methodology

In a first phase the influence of different solvents on the Asian lacquer surface will be evaluated on reproductions. Soluble extracts will be analyzed using state-of-the-art analytical techniques in order to obtain information on a molecular level. In order to be applicable for conservators and actual treatments, the analytical results will be compared with visible changes of the cleaned surface. This should eventually lead to appropriate solvents for cleaning Asian lacquers. In the meantime, a study of the lacquer objects in the storages of the RMAH will allow them to be inventoried and to identify some exemplary items that could be used as testing material for solvent cleaning. The final outcome of this project will be well-founded solvent cleaning practices, allowing to safely clean Asian lacquered objects, preparing them to be exposed where they should: in the museum galleries.

Network

In order to fulfill these tasks, an interdisciplinary and complementary network is established. The chemical research requires different state-of-the-art techniques to be able to identify extracted compounds in tiny amounts. At KIK-IRPA the emphasis will be on the reproduction and artificial ageing of the Asian lacquers, and the analysis of lacquers and extractable components with gas chromatography, while at the UGent the emphasis will be put on liquid chromatography of the extracted compounds, and the exploration of sorption techniques to carry out pre-concentration of the extractable compounds. The RMAH will study and document lacquer objects in their collection, including describing the kind of damage noted on the lacquer surface. They will also make a selection of objects to be treated in the second phase of the project, applying the solvent(s) selected during the chemical research. The RMAH is hence partner, target audience and end user, so that a close collaboration is established between exact science and conservation practices, safeguarding the main goal of selecting solvents for the cleaning of damaged Asian lacquer surfaces.



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Outcome

The final outcome of this research is the formulation of dedicated 'best practices' cleaning procedures for Asian lacquer objects, a thorough knowledge of possible solvent interactions with the lacquer surface, and the full exploitation of the possibilities of sorption techniques for the study of minor compounds in lacquers. At the same time the inventory of the Asian lacquer collection of the RMAH will be updated, adding information on the current state of conservation, and on the material aspects. A minor selection of objects will be cleaned using selected solvents, and fulfilling the goal of bringing the lacquered object from storage to museum room. This will have a major impact on the conservation and the museum policy for the exposition of Asian lacquers. As nowadays the knowledge on the cleaning process is very limited, cleaning is often postponed, implying that storage of the objects, as preventive conservation measurement, is a better strategy than exposing them in the museum. As such, the objects are off course not accessible to the larger community. As the research proposed will lead to a detailed and comprehensive understanding of the solvent-lacquer interactions, it will be more straightforward to propose cleaning methods that are not harmful to the object, so that objects can be displayed in the museum again, if not constantly, at least on a temporary basis, validating the important lacquer collection of the RMAH.

The results will be validated through different channels, such as conferences and publications in dedicated journals, or through a dedicated workshop where the experience on the cleaning of Asian lacquer can be shared with restorers. A large audience will profit from the research through the possibility of appreciating Asian lacquer in its full glory in the museum environment.



Figure 1.:

Two exemplary objects of the RMAH lacquer collection ranging from small items to furniture.

Above a standing clock case (J.240), and below a Japanese inro (M.1137).
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LINKS

<http://org.kikirpa.be/physical/>