

# Restoration of a xvii century's predella reliquary: From physico-chemical characterization to the conservation process

Bettina G.F., Giambra B., Cavallaro G., Lazzara G., Megna B., Fakhrullin R., Akhatova F.  
*Kazan Federal University, 420008, Kremlevskaya 18, Kazan, Russia*

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## Abstract

We report on the restoration of a XVII century's predella reliquary, which is a part of a larger setup that includes a wall reliquary and a wooden crucified Christ, both belonging to the church of "Madre Maria SS. Assunta", in Polizzi Generosa, Sicily, Italy. The historical/artistic and paleographic research was flanked successfully by the scientific objective characterization of the materials. The scientific approach was relevant in the definition of the steps for the restoration of the artefact. The optical microscopy was used for the identification of the wood species. Electron microscopy and elemental mapping by energy-dispersive X-ray (EDX) was successful in the identification of the layered structure for the gilded surface. The hyperspectral imaging method was successfully employed for an objective chemical mapping of the surface composition. We proved that the scientific approach is necessary for a critical and objective evaluation of the conservation state and it is a necessary step toward awareness of the historical, liturgical, spiritual and artistic value. In the second part of this work, we briefly describe the conservation protocol and the use of a weak nanocomposite glue. In particular, a sustainable approach was considered and therefore mixtures of a biopolymer from natural resources, such as funori from algae, and naturally occurring halloysite nanotubes were considered. Tensile tests provided the best composition for this green nanocomposite glue.

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## Keywords

Electron microscopy, Halloysite nanotubes, Reliquary, Restoration, Wood

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