**Introduction**

A panel painting of Italian origin from the 16th century depicts the scene of raising of Lazarus. A multi-analytical research was essential for planning the safest course of conservation actions with a focus on retouching removal. It included observation in raking light, optical microscopy (OM), ultraviolet induced fluorescence photography (UVIFP), infrared radiography (IRR), X-ray radiography (XRR), scanning X-ray fluorescence spectroscopy (MA-XRF), energy dispersive X-ray spectroscopy (SEM-EDS) and infrared spectroscopy (ATR-FTIR).

**Object**

**Technique** • The style and technique suggest Venetian school. It was painted with oils (ATR-FTIR) on wooden panel made of Populus sp. (OM). The support was covered with double layered gypsum ground (SEM-EDS) and a dark imprimatura (Figure 2) which is slightly darker on top of the painting. MA-XRF and observation of cross-sections helped to identify pigments: smalt (with bismuth and nickel impurities), copper green, cinnabar, lead-tin yellow (type I), lead white, earth pigments, organic black. The painting was coated with latter varnish from natural resin (ATR-FTIR).

**Condition** • The first question was how much of an original paint layer was preserved? The UVIFP and IRR showed some of retouches (Figure 7) but only MA-XRF maps revealed the true situation (Figure 8). The overpaintings were placed mostly on top of fillings which were situated along the paint edges and plank joints.

The main reason for all damages was a thin wooden frame fixed with nails (Figure 9) to the support. It caused warping of wooden planks (Picture 1) as well as deforming and cracking of later fillings (Picture 4).

The back of the panel was covered with thick layer of gypsum and protein based paint (ATR-FTIR). Because of that it was difficult to assess the wood condition. XRR uncovered the fragile woodworm eaten inner structure.

**Conservation-restoration project**

**Aim** • The goal is to restore a natural curve of the panel with minimal interference. It was decided to remove almost all the retouches and filings because their esthetic quality was unacceptable and only around X% of original paint layer was missing. Moreover, the unnecessary putty might obstruct the reassembly of the wooden planks. The frame will be left for the duration of a cleaning process as a temporary structural support. Firstly, the front will be cleaned. Otherwise, during back cleaning the front might crack in an unpredictable manner.

**Plan** • The first step is varnish removal. Tests proved ethanol to be the best choice. It is relatively safe and does not damage the paint layer. The solvent also takes away the first layer of overpaintings consisted of oil-resin paint (Figure 6). The remains of retouches, resin salts formed form degraded paint, can be solubilized with chelating agent (citrate salt) and then removed with cotton swab soaked on ethanol. Residues of oxidized varnish will be cleaned with affinity surfactant (abietate salt).

The chalk and gypsum based fillings and back gypsum layer will be removed mechanically with the help of Laponite® and water with slightly lowered pH. Synthetic fillings will be softened with acetone compresses and also carefully taken away mechanically. A stereomicroscope will be used when needed.

After dismembering the frame, the planks will be consolidated with Paraloid® B-72 in toluene and then reassembled to form a convex surface. Filling the ground and paint loses follows.

**Conclusion** • Study of materials and condition of the painting was essential in determining the most appropriate course of actions. Thanks to the range of analytical techniques it was possible to estimate the extent of original layer and uncover the condition of wood. On the other hand, identifying secondary materials was crucial in choosing the most effective cleaning materials.