

Investigation of techniques of gilding and tin-relief decoration in Bohemian panel paintings from the gothic period

Kateřina Tomšová^{1*}, Radka Šefců¹, Štěpánka Chlumská², Václav Pitthard³

¹*Chemical-technological Laboratory, National Gallery in Prague, Staroměstské nám. 12, 110 15 Prague 1, Czech Republic*

²*Old Masters Collection, National Gallery in Prague, Czech Republic*

³*Conservation Science Department, Kunsthistorisches Museum Wien, Burgring 5, 1010 Wien*

*katerina.tomsova@ngprague.cz

This paper deals with the results of the survey of painting techniques during the Late Gothic period on the Reliefs of the Fourteen Holy Helpers (ca. 1480, Inv. no.: P 3017 – P 3020) and the two wings of the Altarpiece from Kadaň – Birth of the Lord and Adoration of the Magi (ca. 1480, Inv. no.: O 7036 – O 7037), which are both stored in the National Gallery in Prague. The work is focused mainly on the technique of gilding and specific decorative technique of tin-relief (Pressbrokat), which are used in the reliefs, wings and ark itself and, thus, they have to be considered in the mutual context from the material and historical point of view. Hence, this work is a result of the interdisciplinary collaboration among the scientists and art historian.

In the course of the chemical-technological investigation of taken samples, polished sections were prepared on which an individual stratigraphy was observed. Then, the pigments present in the individual colour layers were examined by optical microscopy and by means of specific micro-chemical reactions. To confirm these investigations as well as to non-destructively differentiate a filler material of the relief decoration, a micro-Raman spectroscopy was used as an invaluable tool [1]; the spectra were measured on the individual pigment grains or on the polished sections using the mapping mode. In addition, elemental analysis using a Scanning Electron Microscopy coupled with an energy-dispersive detector and an X-ray Fluorescence were also performed in order to differentiate between both the individual pigments in colour layers and gilding. Finally, binding media were determined by means of a Gas Chromatography coupled with a Mass Spectroscopy.

From the obtained results, it was possible to compare the materials of decorative techniques on the reliefs, wings and ark itself as well as to differentiate between the original technique and later supplements. In addition, more fundamental workshop differences can be traced in the decorative tin-relief technique by considering its material base [2]: on the ark itself and reliefs, the filler material of the pressbrokats was the same (natural chalk), whereas on the wings (especially on the Virgin Mary coat), a red lead bottom layer was also found. Thus, this investigation helped to understand the use of historical techniques and factual details of the workshop practice in the course of the history.

[1] Burgio, L.; Clark, R. J. H. Library of FT-Raman spectra of pigments, minerals, pigment media and varnishes, and supplement to existing library of Raman spectra of pigments with visible excitation. *Spectrochim. Acta, Part A*, **57** (2001) 1491–1521.

[2] Chlumská, Š., Šefců, R.: Technika cínovaného reliéfu na deskových malbách Rakovnického, Rokycanského a Litoměřického oltáře, *Technologia artis* 6 (2008), Akademie výtvarných umění v Praze, s. 66-83.