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A. POPOVSKA*
S. MAMUCEVSKA-MILJKOVICHK*
Z. KOKOLANSKI**

RESERACHES AND THE CONSERVATION ON THE ICON ST. NICHOLAS FROM THE NATIONAL MUSEUM IN MACEDONIA

Keywords: Icon, Researches, Over-painting, Retouches, XRF analyses

Abstract: *The icon of "St. Nicholas" belongs to the deposit icons at the National Museum of Macedonia –Skopje[1]. During the period of 50 years until nowadays, the conservations' teams restored this icon twice. In 2014 began the new conservation researches aimed for its accurate attribution by distinguishing the over-painting and removing the not appropriate retouches.*

INTRODUCTION

The icon of St. Nicholas originates from the church "St.Dimitrija" (14th century) placed in Ohrid and its datingis based according to the artistic style, that point to a later period of the 14th century [2], with the assumption that was brought later in this church [3]. Its artistic style features point to a later period of the second half of the 15th century, which suggests similarities with the fresco painting in the church of St. Constantine and Elena (about 1460) [4], in St.Ascension, village Leskoec (1462) or later chapel of the church St. Nicholas Bolnichki (1480/81 years) [5]. Except this artistic style located in Ohrid and its surrounding vicinity, this icon also shows similarities with the several icons in the Museum of Medieval Art in Korca, Albania [6]. The backside of the icon represents ornate cross with a cryptogram in nine rows, that is almost identical in content and performance with the depicted Cross in the southern entrance of the church of St.Constantine and Elena (around 1460) [7] or at the entrance of the Virgin Mary Eleusa in Prespa (1410) [8].[1]

Through the technical analyses we obtain that the icon "St. Nicholas" contains traditional iconography technique with the multiple systems of layers. The wooden board is tangentially cut from the trunk with dimensions of 82 x 39 (37) x 2cm. The central part of the panel surface is hollow out and surrounded with the elevated shallow (8mm) frame, which is at the top and bottom with the width of 3.5 cm, and on the left and right side with the width of 2.5 cm. On the preparation layer was applied the drawing pattern with a brush. Icon painting is in traditional tempera technique by using the basic colors and their tone mixing. Painted cross in red, decorates the backside of the icon. Thin coating of a natural resin varnish in a yellowish color was used as a final protection only on the front side.

DISSCUSION

The old conservation file, under registration number 72 (St. Nicholas) in the archives of INDOK at NCC-Skopje contained only the photo documentation negatives (under number 2134-reference material) without any descriptive information. These photos record the existing icon condition and the conservation treatment performed in 1954 (Fig.1-a). Compared with the present condition we recorded reconstructions performed mainly in the middle of the icon painting (Fig.1-b) pointing to the fact that, over the time, this icon suffered damages. Assuming that the concave shape of the wooden support was a subsequent deformation, which resulted into cracks mostly in the central part (Fig.2), the evidential damages used to be treated through the next conservation treatment.

In terms of the old and the current state of retouches, we identify complete reconstruction of the red decorative stripe, the gospel and the final highlights on the blue cloth made after 1954. Unlike

* National Conservation Centre - Skopje, Macedonia
** Faculty of Electrical Engineering and Information Technologies

[1] These historical statements are part from the Conservation project in 2014 from the National Conservation Centre - Skopje (historian of art - V. K. Popovska from the Museum of Macedonia-Skopje)

a b c

Fig. 1 – *Photo documentation of the old conservation dossier: a)The condition after the conservation treatment in 1954; The condition in 2014: b) Front side; c) Back side*

Fig. 2 - *The back side of the icon with the decorative cross and the bottom edge with the cracks and concave form*

these reconstructive retouches, newer retouches were found as monochrome lacunas, lacking in details of decoration, such as white pearls, embroidery or the decorative stripe (omophorion) with crosses or the gospel, those present at the first retouching (Fig.1-a).

Archive photographical documentary has given us the first guidelines by recognizing the retouched changes during the period from 1954-2014, which speaks of conservation corrections carried out by the professional service at the National Museum of Macedonia-Skopje. We suppose that these interventions were probably done during the 80s, when the museum used to conduct huge preventive actions towards their disposal icons.

METHODS OF RESEARCH

The main addition on the new researches was the presence of the old varnish still recognized by its patina, assuming that the previous conservation treatments did not include further and deeper analyses. New investigations were performed in order to identify the system layers, authentic painting, as well as to locate the retouchareas and to determine the over painting layer. Following investigations we accomplished in cooperation with the National Conservation Centre-Skopje, Faculty of Electrical Engineering and Information Technologies and the Institute of Radiology in Skopje.

- Digital photography and UV images were performed (V.Kiprijanovski) with CANON Eos 5D Mark II, ISO 1000, exp.1/30sec), for identification of the retouching parties carried out in the previous conservation (Fig.3);

- X-ray and tomographic images have been made in Institute of Radiology - Skopje in the State Hospital (K.Trajkovski) on apparatus SOMATOM Siemens

a b

Fig. 3 - *UV images: a) – The front and backside of the icon; b) - Details from the front side indicating the retouches lacunas*

128, digital X-ray SHIMADZU for identification of the lower original iconography and the location of the over-painting layer (Fig.4, 5);

- Optical and microchemical analysis were carried out on pigments and binders from various parts of the icon. There were analyzed from the cross-sections with an *Optical Microscope* (Carl Zeiss Axioplan 2). An optical microscopy [9] was used to obtain information about the thickness and stratigraphic analyses.

- X-ray fluorescence spectroscopy (XRF) was applied for analysis of inorganic pigments and ground layer of the icon on both sides [10]. The objective of the measurements was related with the identification of specific pigments. The analyses on icon were performed by using a commercial portable spectrometer Niton XL3t. The spectrometer consists of a low power X-ray tube (10 W, 50 kV, Be window) with Au-anode material and a Si – PIN detector with 200 eV full width at half maximum (FWHM) at Mn-Ka. (Fig.7) [11].

- In addition to the researches, graphic documentation was made in relation to the retouched parties and over-painting which were removed by a decision of the expert team involved in this conservation project.

RESULTS

Ultraviolet Fluorescence examination

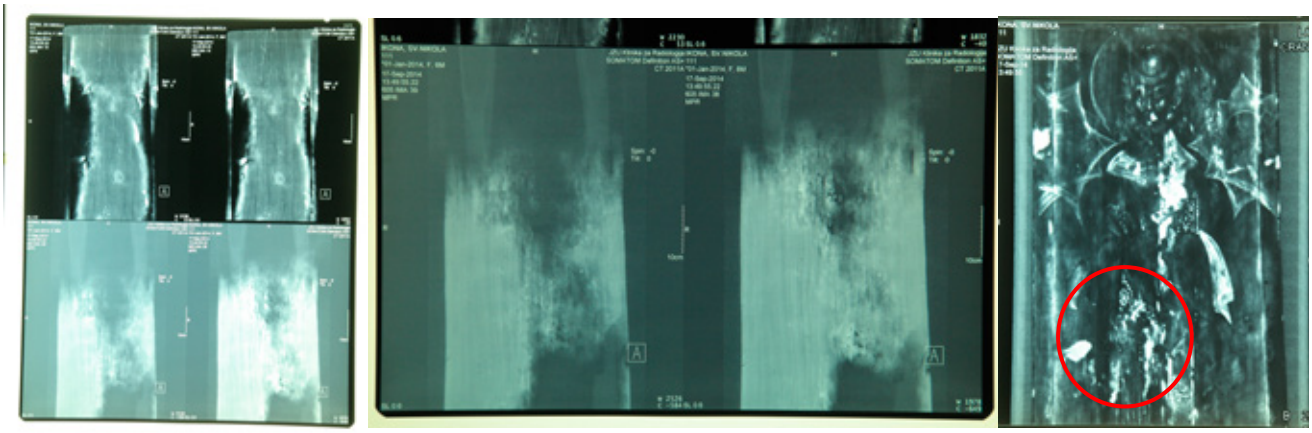
The most commonly used lighting tool for icon painting is a long-wave ultraviolet lamp used to look at the surface of the icon. Depending on the age of the coatings, their thickness or number of layers, the older retouches may be highly detectable. Retouches areas often look brown or muddy[2], which are recorded in the Fig.3-a. The varnishes fluoresce differently depending on their composition and ages. Aged natural resin varnishes appear greenish-yellow while newer synthetic varnish appears milky-white[3] (Fig.3-b). Through these investigations, we confer our assumptions about the previous reconstructive retouches, but the area left of the central part, which displays white under the UV light become questionable. That leads us to conclude that during the time, this icon was reconstructed several times, once in the past period, with this kind of successive painting intervention and later with the professional conservation retouches.

Computer Tomography (CT) and X-Ray radiography

The Tomography employed to examine the structure of the support of a painting, as well as details of areas painted with pigments containing heavy elements [12] recognized as white lead, usually used in traditional icon painting. The tomographic image of the icon of St. Nicolas (Fig.4-a) proved the concave shape of the wooden support, which extend the surface painting up to cracking from the front side. Further, we notified the tangentially cut of the wooden trunk and the wooden knags, mainly on the central part, whichsimply developed in wooden cracks (Fig.4-b). The front side of the painting discovered rhombus shape decoration, identified as original painting underneath the local blue over painting (Fig.4-c).

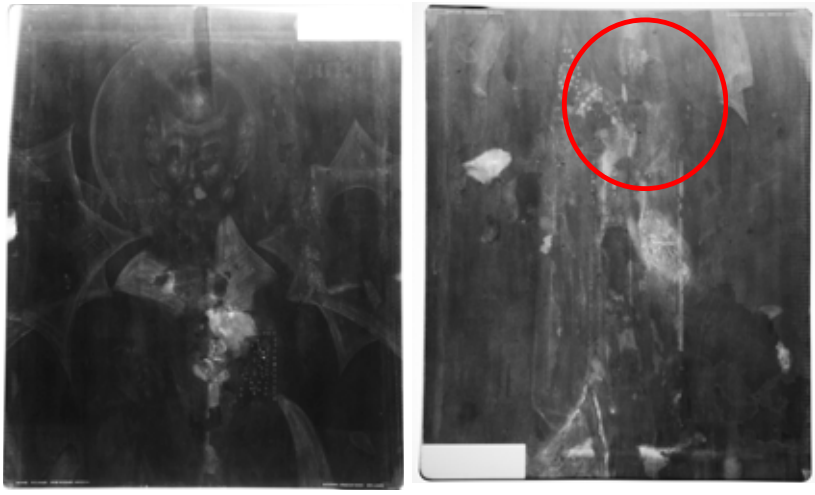
[2] http://www.artic.edu/collections/conservation/revealing-picasso-conservation-project/examination-techniques/ultraviolet

[3]http://www.artcons.udel.edu/about/kress/examination-techniques-and-scientific-terms/ultraviolet-illumination#commonly



a b c

Fig. 4 - *Tomographic imaging Front side – a) - Recording layer by layer from the wooden board , b) - Indication of two places on the wood knot support, c) - Indication of two wood knot places on the wooden support*



a b

Fig. 5 –*Upper and lower half of the iconography with indication of lower iconography under the over-painting*

These indications were also reconsidered through X-Ray radiography improving the depth of the painting and the hidden details from the original (Fig.5) already displayed with the Tomography imaging [13].

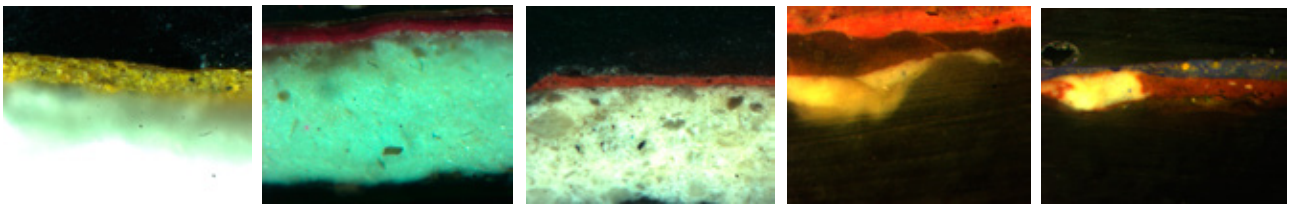
Optical and microchemical analyses of the painting material

In order to understand in a better way the painting structure, analysis of pigments, binders and varnish was carried out combining optical microscopy, microchemical and histochemical tests.

Optical microscopy was used as the initial phase for the identification of painting layers performed on samples fragments (1-2mm) and on polished cross sections. Cross-sections of the micro fragments of paint layers were prepared by embedding each sample in polyester resin in molds with size 1x1x1 cm. Different grades silicon carbide grinding paper was used for grinding and polishing the cross sections.The cross sections provide additional information about the layer sequence, layer thickness, color, pigment distribution, pigment size, and composition of the individual layers.

The surface of the micro samples and their cross sections were studied and photographed with optical microscope (Universal Axioplan 1 ZEISS microscope) equipped with a complete system of white reflected and ultraviolet source of light and digital AxioCam camera.The samples were examined under reflected visible and UV light, with magnification of x50 to x200 in the dark field. The magnification varied depending on the size of the micro samples (Fig.6).

We obtained the histochemical and micro chemical analyses as well, in order to determine the nature of binding media as well as the kind of the pigment of the sample.



a b c d e

Fig. 6 – *Microphotographs of the cross section: a) - Sample 6 (yellow auripigment), b) - Sample 8 (vermilion), c)- Sample 9 (red ocher), d)- Sample 10 (two layers of red ochre), e)- Sample 4 (from the location of the blue over-painting)*

Fig.7 – *Location of the samples for chemical analyses*

Front side:

Sample 1- Red from the frame – (the original layer)

Sample 2 - Green background from the bottom - the original layer)

Sample 3 - Blue from blue cloth

Sample 4 - Varnish patina

Sample 5 - Ocher from the aureole

Sample 6 - Ocher from the background (upper zone)

Sample 7 - Black and white from the decorative stripe

Backside:

Sample 9 - Red from the decoration

Sample 10 - Dark red from the decoration

The analytical results from micro chemical analysis are summarized in **Table 1** and they are combined with the data obtained from the analysis of this area by XRF technique:

	Stratigraphic description of the sample	**Color**	**Chemical composition**
1	Layer of red color from the frame and a thin layer of black color on the top	Lower layer-red ocher Upper-layer carbon black	Fe_2O_3 C
2	Layer of green background	Green earth + White lead	aluminosilicate mineral $+2PbCO_3Pb(OH)_2$
3	Layer of black from the bottom robe	Charcoal black + Ultramarine +White lead	$C+2PbCO_3Pb(OH)_2 +$ $Na_{8-10}Al_6Si_6O_{24}S_{2-4}$
4	Layer of red paint which is applied on a thin black layer	Lower layer – vermilion Upper layer – same layer as in the sample no. 3	HgS $C+2PbCO_3Pb(OH)_2$
5	Layer of ochre color on the aureole	Yellow ochre +White lead	Fe_2O_3 $+2PbCO_3Pb(OH)_2$
6	Layer of yellow color from the background	Yellow auripigment	As_2S_3
7	White layer on which is applied a thin layer of black color	Lower layer –white lead Upper layer carbon black	$2PbCO_3Pb(OH)_2$ C
8	Red layer of clothing	Vermilion	HgS
9	Light red from the decoration	Red ocher	Fe_2O_3
10	Light red layer from the decoration on which is applied dark red color	Lower layer –red ochre Upper layer –red ochre	Fe_2O_3 Fe_2O_3

Through the analyses, we determined the presence of local over-painting layer over the authentic iconography (samples 3. and 4.) (Fig.8-a,b).

Proteinaceous material identified as a binder for the pigments found in both layers, the original and the over painted one, indicate tempera painting techniques.

Based on the results, two different primal layers according to their chemical composition and their location were recognized (Fig.8-c): -Yellow lime $CaCo_3$ (chalk-glue) ground layer located on the area of the ocher background; and - White gypsum $CaSO_4$ x $2H_2O$ ground layer represented only on the base of the Saint's figure and on the border frame.It was identified a small amount of oil in both ground layers added as a plasticizer.

The micro chemical analysis and probes of solubility indicate that during the previous conservation treatment the original varnish layer was removed and replaced with the synthetic varnish.

a *b* *c*

Fig. 8 – a) - *Graphical drawing with the location of the over-painted area*
b) –*Detail of the lower authentic icon painting*
c) - *Graphical drawing of the two different ground layers: lime and gypsum*

X-RayFluorescence analysis

X-ray fluorescence analysis (XRF) is a non-destructive, universal and relatively simple analytical method for the multi-elemental analysis of artefacts and one of the most basic physical research methods in the conservation-restoration field. XRF is a method based on stimulating atoms of the examined sample by X-rays resulting in the emission of fluorescence radiation from the material characteristic for the element composition. This information gives us both a qualitative as well as quantitative indication of the elemental composition of the sample.

This analytical technique was the first step in the characterization of pigments and ground layer. Twelve micro samples from over painted layers and samples belonging to original layer were analyzed with X-ray fluorescence spectroscopy (Fig.9).

Red pigments: All spectra (Graph 1) recorded in the measuring points of red color (number 1, 2, 3, 4, 5and 6) identified mercury (Hg) as a main element (Gr.1). The intensity of the peak indicates the application of pigment vermilion as a dominant pigment. Besides mercury in all measuring points with red color appears a peak of iron (Fe) with low intensity. An exception is the measuring point number 3, where the dominant element is iron. The measuring points1 and 5, besides Hg and Fe also show lead (Pb). Analysis of the spectra of red colored layers, identified vermilion, red ocher and their mixtures in different relations. The lead in the spectra measured in the fields with a brighter coloris associated with the presence

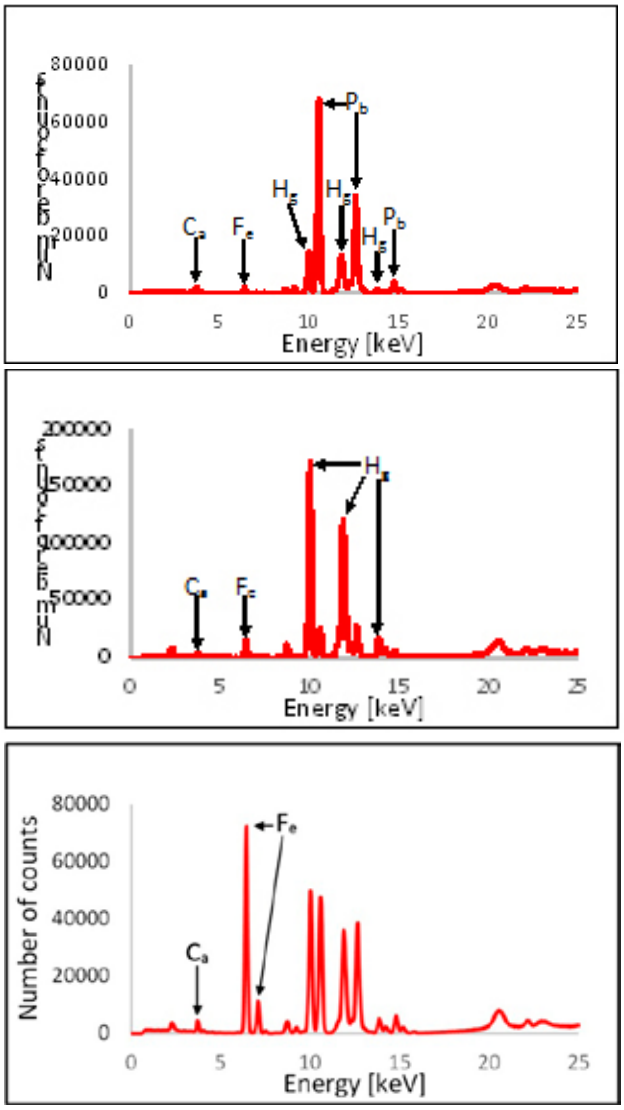
Point no.	Identified elements	Identified pigments
1,5	Ca, Fe, Hg, Pb	vermilion, lead white + blue pigment
7,8	Ca, Fe, Pb, Zn	lead white, zinc white + blue pigment – white highlight from the blue cloth, zinc from the retouch part
2,3,6 4	Ca, Fe, Hg Ca, Fe	vermilion, green earth pigment red ochre
10	Ca, Fe, Zn, As, Pb	orpiment, lead white, green earth pigment, zinc white
11	Ca, Fe, As, Zn	orpiment, yellow ochre
12	Ca, Fe, Pb	lead white

Table 2– *Identified pigments with XRF analysis*

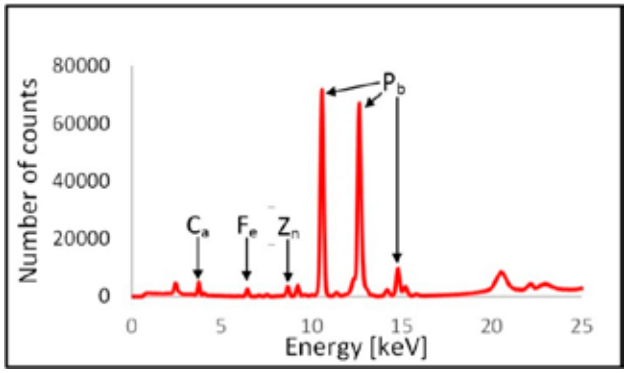
Fig. 9 – *Measurement points analyzed with the e X-ray fluorescence analyses*

of pigments based on lead, such as white lead, added with aim to get a lighter red tone. On the darker red parties of the chiton of St. Nicholas is used red ocher, and on the brighter shades of the chiton is used mixture of vermilion with lead white. On the decorative stripe and ornamental crosses of the clothing we identified only vermilion, or vermilion with a small amount of red ocher.

Blue pigment: The spectra obtained by recording the measuring points number 7, 8 and 9 were detected calcium (Ca), iron (Fe) and lead (Pb). The applied XRF technique could not accurately identify a single blue pigment. Based on the elemental composition certain conclusions came out about the used blue pigment mixed with the white lead and mineral black in different proportions, depending on the desired tone (Fig.10).The XRF examination of the blue pigment revealed relatively high content of Pb, and nor of a characteristic element for a blue pigment was recorded, thus suggesting that the blue pigment could be ultramarine or indigo mixed with lead white. The old manuscript often refers the use of indigo in combination with ultramarine, but with this applied technique, it was not possible to determine this issue. It is assume that indigo was used in combination with ultramarine blue as the first layer in order to get deeper hue and reduce the cost of materials [14]. Micro chemical analysis confirmed the presence of ultramarine.



Graph 1 *–Measurement point 1, 2, 3, 4, 5, 6 – XRF spectrum of reds pigments: a) – Cinnabar with lead white, b) – Cinnabar, c) – Red ochre*



Graph 2*–Measurement point 7,8-XRF spectrum of blue pigment -no characteristic element is identified, Zn is identified in the retouch*

Yellow and green pigment: At the measuring points recorded on the background of the icon, and on the oriole (number 10 and 11) significantly points out the occurrence of arsenic (As), which indicate that the entire background of the icon originally was painted with yellow auripigment obtained from the mineral or-

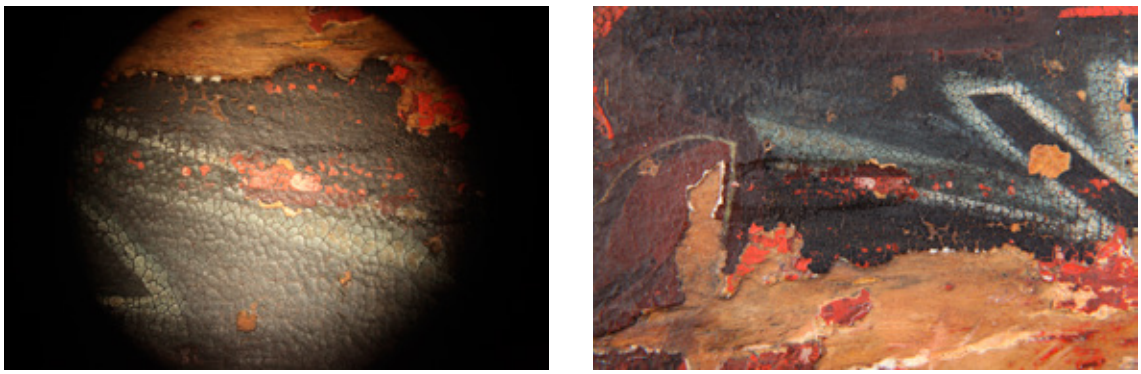
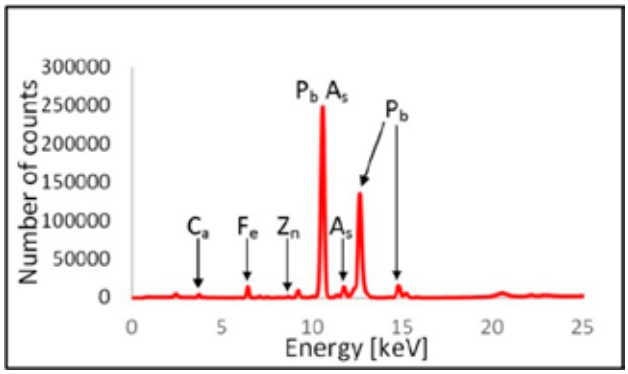
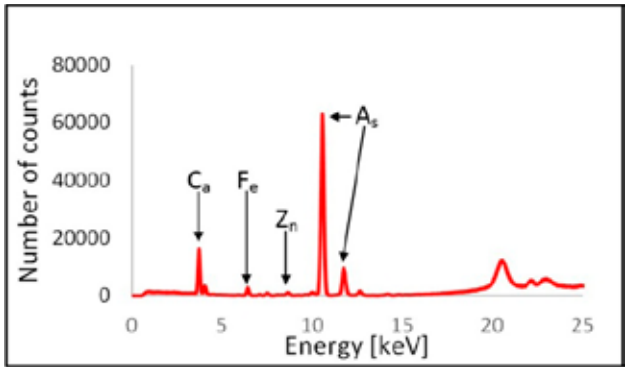


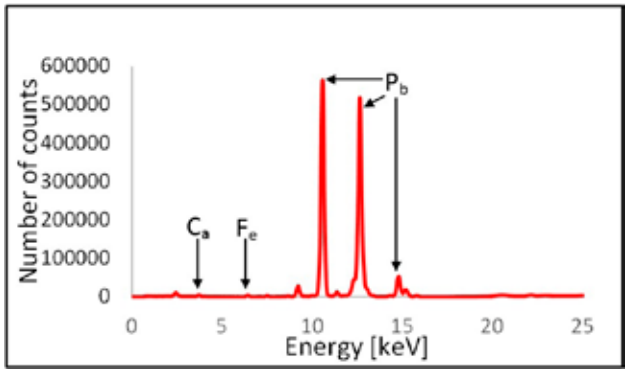
Fig.10 - *Microscopic images pointing the top blue layer on the cloth and the bottom red layerunderneath*



Graph 3-*Measurement point 10 - XRF spectrum of green color identifying (Ca) from the primal layer, (As) from the yellow background, (Fe) from the green earth pigment and the yellow ochre and (Zn) from the white in the retouch parties*



Graph 4 –*Measurement point 11 - XRF spectrum of yellow background identifying yellow orpiment (As) and(Fe) from the yellow ochre , and (Zn) from the retouch part*



Graph 5– *Measurement point 12 - XRF spectrum of white lead (Pb)*

piment. The lower part of this background indicates another green layer over the yellow auripigment. According to its composition, the green layer indicates green earth mixed with white lead 2 $PbCO_3Pb(OH)$. On the top of the other half of an icon, as well as the oriole, the auripigment was covered with another layer of yellow ochre.

Retouches and subsequent interventions detected in measuring points 8, 10 and 11 identifying zinc, suggest the use of zinc-based pigments.

White pigment: The only white pigment used in the authentic icon painting is the white lead.

CONSERVATION-RESTORATION PROCCESES

Conservation treatments primary directed to consolidation of the authentic icon painting fixed with the animal glue (10%) injected under the raised parts and pressed after the treatment with metal pads.

Through the conservation processes, we proceeded with removing of the varnish layers [15], including the old and the conservation one. The cleaning of

Fig.11 – *Details: Probes for removing: a) - The layer of the varnish with chemical solvents, b)- Removing the over-painted layer*

a *b*

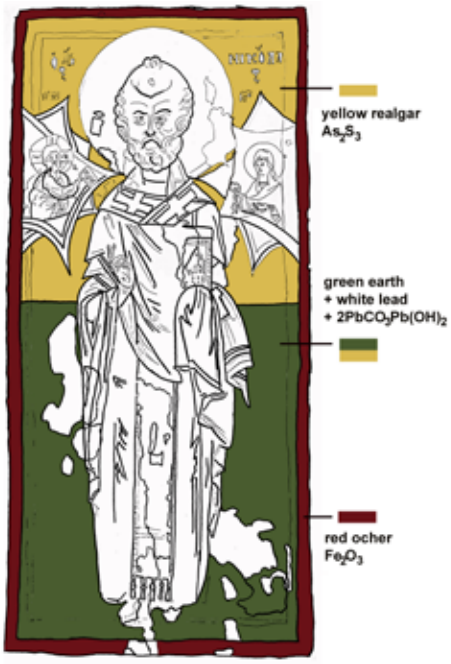
Fig.12- *During the restoration processes:*
a) – Removing the old retouch lacunas and over-painting layer, b) – Grounding borders with gypsum ground

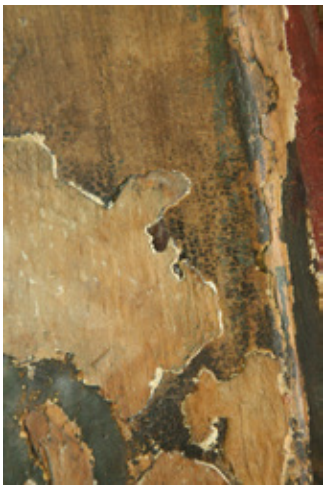
the varnish layers was done chemically, with pulps soaked in organic solvent Dioxalan.The duration of the soaked pulps on the protective varnish was determined according to the speed of its solubility and its thickness. The dirt surface of the old varnish on the yellow background was cleaned with Vulpex liquid soap [16] whereas the other surface dirt from the backside of the icon was cleaned only with a dry brush (Fig.11-a).

The parts from a local over-painting, detected by X-ray and CT images, were removed combined-mechanical and chemical cleaning, using the solution of turpentine, ethyl alcohol and dimethylformamide(1:1:2) (Fig.11-b). Some painted parts, which did not belong to the authentic (lower) iconography, that are recognized as reconstructions from previous historic periods (Fig.12-b) were sustained and by that meaning, we respected these areas as painting interventions from the past (Fig.13).

Besides the measures taken for this recovery, the icon got closer to the authentic look without the old conservation primer and in appropriate retouches. Larger areas of the original are left in such a state,emphasizing the original iconography,which is assumed to have originated from the second half of the 15th century. Minimum retouches are performed only on those places where it is estimated that do not distort the original iconography, however, enable smooth visual perception of the icon as a museum piece (Fig.13).

Fig.13 – *Final retouch: Image of the front and backside of the icon St. Nicolas after conservation-restoration treatment*





Graph 6 – *Graphical drawing of the background,*
Fig. 14 – *Detail of the painting background with yellow base and green painting layer above*
Graph 7 - *Graphical drawing of the retouches performed during the 80th*

CONCLUSIONS

In this paper were performed several analytical and imaging techniques which enable us to distinguished the original painting, the old painting reconstructions and the new conservation retouches, that highly improve the directions in the executed conservation treatments. Accomplished analyses brought new lights about the technical compound of the system painting layers and the art pigments used in this iconography:

The red pigments which are identified as redochreand red vermilion differs in location on the iconography. The colored frame on the front side and the back's decoration is painted with the red ochre and the vermilion is present only on the cloth of the saint's figure (Graph 6);

The blue pigment which was identified in the lower older iconography is identical with the pigment, chronologically used later, identified on the over-painting;

Yellow Auripigment painted over the entire background surface of the scene, as a substitution for golden background. (Fig.12). [17]

XRF analyses confirm the use of zink-based pigment on certain parts of the over-painting as well as on the retouches parties. This led us to conclude that these interventions dates from the 19th century or perhaps even later (Fig.14 and Graph 7)

On the icon, we identified fragments whose origin has not been clarified so far. Namely, during the conservation treatment were recognized some puzzling details, such as the red traces directly embedded on the wooden support on the front side (Fig.15-a). Another, discovered beneath the green background, indicating the existence of remnants of earlier written text, now recognized as red leftovers (Fig.15-b).

Other fragment identified as carbon paper directly glued on the wooden surface (Fig.15-c) of the front

Fig.15- *Details of the puzzling fragments:*
a) – Red traces on the wooden support; b) – Red traces under the green colored background; c)- Local carbon paper

side (the area of the bottom crack of the wooden truss). This locally applied cardboard was attached to prevent and replace the traditional canvas, usually applied on wooden supports on the icons. That leads to the fact that the wood carrier tended to center shooting (due to the choice of wood with the wooden knots). This local cardboard point to tendency of further cracking of the wooden knots, which was taken into consideration during the preparation phase of the wooden surface.

The above results and discussion signify that during the period of 15thcentury, the painting palette was rather limited. Using cheaper pigments, especially the yellow arsenic mineral orpiment, as a common replacement for gilded background characteristic for the traditional processing icon, the painting palette actually reflects the current poor economic situation [18]. Art technology and the range of pigments are common in traditional iconography, as well as the over-paintings recognized as a reconstructive intervention, very usual for covering the damages on the east Christian religious icons.

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А. ПОПОВСКА*
С. МАМУЧЕВСКА-МИЉКОВИЌ*
Ж. КОКОЛАНСКИ**

КОНЗЕРВАТОРСКИ ИСТРАЖУВАЊА И ТРЕТМАНИ НА ИКОНАТА СВ.НИКОЛА ОД НУ МУЗЕЈОТ НА МАКЕДОНИЈА-СКОПЈЕ

Резиме

Иконата Св.Никола, датира од 14 век и води потекло од црквата «Св Димитрија» од Охрид. На предната страна е претставен светец во цел раст, а задната страна е со претставата на Крст, богато украсен со криптограми распоредени во девет реда, што го открива стилот на 15-от век. Во период од 50-на години до денес, иконата е конзервирана два пати од страна на стручни конзерваторски тимови. Во 2014 година започнаа новите конзерваторски истражувања, со цел утврдување на локалната преслика и отстранување на несоодветните конзерваторски ретуши.

Конзерваторските истражувања беа насочени кон идентификацијата на сликарските системски слоеви, подеднакво на оригиналниот иконопис (од предна и задна страна) и на слојот од пресликата (од предна страна), како и идентификацијата на конзерваторските материјали користени во претходно извршените конзерваторски ретуши. Користени се две аналитички техники: -рендгенската флуоросцентна спектроскопија (XRF) во комбинација со класични микроквалитативни и хистохемиски анализи за идентификацијата на пигментите врзивата и подлогата. Со помош на рендгенско (X-ray) и томографското компјутерско снимање (CT), се утврди пределот на пресликата и состојбата на дрвениот носач, а ултравиолетовата флуоресценција (УВ) ги детерминира и диференцира ретуширaните лакуни.

Врз основа на резултатите од физичко-хемиските истражувања, констатирано е дека подлогата на пределот на иконописот од предната страна е различна по својот хемиски состав. Туткално- варова подлога е идентификувана на пределот на окер позадината од предната страна на иконата, каде што како полнител е користен калциум карбонат ($CaCO_3$), додека другата подлога е лоцирана на пределот на фигурата од светецот и бордурната рамка од ковчецот, идентификувана како гипсено-туткална подлога ($CaSO_4$ x H_2O).

Според добиените резултати од микро хемиските анализи и рендгенската флуоросцентна спектроскопија (XRF), во оригиналот и во пресликата идентификувани се следните сликарски пигменти: црвениот окер (Fe_2O_3) на пределот на боената рамка и боениот крст од задната страна, потоа циноберот (HgS) на омофорот од Св.Никола, орпимент (жолт реалгар) на пределот на позадината на фигурата (As_2S_3). Во долниот дел од окер позадината идентификуван е уште еден зелен слој над окерот, кој по својот состав укажува на користење на зелена земја мешана со оловно бела боја ($2PbCO_3Pb(OH)_2$). Синиот пигмент кој е идентификуван во долниот постар иконописен слој е идентичен со синиот пигмент од слојот на пресликата.

Присуството на цинк белата боја во слојот на пресликаните делови укажува дека пресликата хронолошки датира во периодот на доцниот 19-ти век или можеби дури подоцна. Истиот пигмент е идентификуван и на конзерваторските ретуши изведени во 80-те години од 20 век.

Во овој труд се применети неколку аналитички техники и фотодијагностичи методи кои овозможија подобар увид во претходно изведените конзерваторско-реставраторски работи, како и определување на конзерваторските методи кои беа применети за делумно отстранување на пресликата и целосно отстранување на старите конзерваторски ретуши. Фотодијагностичките методи го утврдија процентот на застапеност на долниот иконопис, неговите оштетувања и површината на пресликата. Отстранување на пресликата беше применета единствено на деловите каде беше утврдено постоење на долниот иконопис, а на делови каде истиот беше оштетен пресликата беше сочувана. Се примени комбиниран метод за отстранување на пресликата и конзерваторските ретуши, по хемиски и механички пат.

Новите конзерваторски истражувања на иконата Св.Никола од НУ Музејот на Македонија - Скопје идентификуваа сликарска палета карактеристична за периодот на 15-от век. Жолтиот аурипигмент, користен во тој период, често служел како имитација за златната позадина, што е констатирано и во овој пример, а всушност е одраз на тогашната економска ситуација или актуелниот сликарски тренд.