在外日本古美術品保存修復協力事業
The Cooperative Program for the Conservation of
Japanese Art Objects Overseas

般若図

Hannya the Demon

ナショナル・ギャラリー・オブ・ビクトリア
（オーストラリア連邦）所蔵
佐々木泉玄筆　絹本着色　掛軸装　1幅

National Gallery of Victoria, Commonwealth of Australia
SASAKI Sengen, color on silk, a hanging scroll

No.2015-5

平成27年度修復事業
2015 Japanese Fiscal Year

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1. 修復報告

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1.1. 名称等

名称	般若図
制作者	佐々木泉玄（1805～1879）
制作年代	19 世紀半ば（1865 年以降）
所蔵者	ナショナル・ギャラリー・オブ・ビクトリア（オーストラリア連邦）
所蔵番号	1901-D1A
品質・形状	絹本着色　掛軸装（幢補三段表装）　1 幅
料絹織り組織	絹平織　経 31 中 80 枚 2 ッ入　緯 31 中 2 本ヌキ 100 横（約 3.03 cm 角） ※本紙料絹横使い

1.2. 工期及び施工者等

工期	平成 28 年 4 月 4 日～平成 31 年 3 月 29 日
施工場所	独立行政法人国立文化財機構　東京文化財研究所　修復アトリエ（紙）
施工者	東京文化財研究所、株式会社修護

1.3. 修復前の状態　（Table 1.1、Table 1.3、Fig.1.1 (a)、Fig.1.2、Fig.1.4、Fig.A.1.1）

・本紙および表装裂の全体に多数の折れや皺が生じていた（Fig.1.6 (a)、Fig.1.7 (a)、Fig.1.8 (a)）。
・本紙が複数個所で部分的に裂けていた（Fig.1.9 (a)、Fig.1.10 (a)）。
・本紙の裏打ち紙からの部分的な剥離が画面全体に生じていた（Fig.1.11 (a)）。
・本紙に染みや接着剤様の付着物があった（Fig.1.12 (a)）。
・絵具の剥落が散見され、特に白色絵具や折れ付近において顕著であった。
・軸木の左側は軸幅より短く、その先端に継ぎ足した木片に軸首を取り付けていた。軸首は、右と同様の色に塗装した薄い金属製のものが装着されていた（Fig.1.13 (a)）。

1.4. 修復方針

現状維持、原状回復を基本として保存修復処置を行う。

・本紙全体に、裏打ち紙からの剥離および折れや裂けなどが生じていたことから、肌裏紙の交換を行う。
・掛軸の形式は、修復前と同様の幢補三段表装に仕立てる。
・旧表装の内、中縁および一文字、風帯、それぞれの裂を再使用する。裏打ち紙や軸木などの表装材料および保存箱などの保存用具を新調する。
・修復前に使用されていた表装材料および保存用具は全て別置保存とし、所蔵館へ返却する。
・必要に応じて随時材料分析などを行う。

1.5. 修復工程

修復材料は Table 1.5 を参照。

(1) 修復前調査（Fig.1.14.1）

本紙および表装の全体写真と部分写真を撮影した。顕微鏡写真撮影および蛍光X線分析を行った上で、作品の損傷状態を記した損傷図面を含む調書を作成した（付録 1、2）。

(2) 解体（Fig.1.14.2）

本紙を表装から切り離して解体した。

(3) 埃の除去（Fig.1.14.3）

刷毛を用いて本紙表面の埃を除去した。

(4) 絵具の剥落止め［1 回目］（Fig.1.14.4）

主に白色絵具に対して、膠水溶液（牛剃毛生皮軟水 3 番抽出膠、1 wt-%）を筆で塗布した。その表面が乾き始めたことを確認してから、本紙をポリエステル紙、吸い取り紙の順に挟み、その上に板と錘を乗せて乾燥した（プレス乾燥）。

(5) 裏打ち紙除去（Fig.1.14.5）

本紙の裏面を水で徐々に加湿し、肌裏紙以外の裏打ち紙を除去した（Fig.1.14.6）。

(6) 水による洗浄（Fig.1.14.7）

本紙裏面にレーヨン紙を水で貼り付け、水を本紙表面に噴霧し、本紙の下に敷いた吸い取り紙に汚れを吸収した（Fig.1.14.8）。その後、静置して乾燥した。

(7) 絵具の剥落止め［2 回目］（Fig.1.14.9）

本紙裏面に貼り付けたレーヨン紙を除去した。着色箇所全体に膠水溶液（パール印粉状膠、1 wt-%）を噴霧してプレス乾燥した後、再度、筆で膠水溶液を塗布しプレス乾燥した。

(8) 絵具の剥落止め［3 回目］

本紙裏面にレーヨン紙と楮紙を水で貼り付けた。本紙の着色箇所全体に膠水溶液（パール印粉状膠、2 wt-%）を噴霧し、次に裏彩色を確認した箇所に筆で膠水溶液を塗布した。レーヨン紙と楮紙を除去し、錘を塗布箇所に乗せて一定時間置いた後、仮張り板に張り込んで乾燥した。

(9) 本紙表面の保護（Fig.1.14.10）

本紙の表面に、室温で抽出したフノリ水溶液でレーヨン紙を 2 層貼り、次に煮出して抽出したフノリ水溶液でサンモア® 紙を貼り付けた。

(10) 肌裏紙除去（Fig.1.14.11、Fig.1.14.12）

裏彩色の確認箇所を除き、本紙の裏面を湿らせて肌裏紙を徐々に除去した。裏彩色の確認箇所に対しては、その全面を湿らせずに筆で部分的に水分を与えながら小面積ずつ肌裏紙を除去した。

(11) 補修（Fig.1.14.13）

手織りの絵絹に 2300 kGy（総量）の電子線を照射して人工的に劣化させた劣化絹を、ヤシャで染色したものを補修絹として用意し、本紙料絹の欠失箇所に補塡した（Fig.A.1.8）。

(12) 裏面調査

通常光による写真撮影、顕微鏡写真撮影および近赤外線写真撮影などにより、本紙裏面と裏彩色箇所を記録した（Fig.A.1.3、Fig.A.1.4、Fig.A.1.5、Fig.A.1.7）。

(13) 裏彩色の剥落止め（Fig.1.14.14）

裏彩色を確認した箇所に、膠水溶液（パール印粉状膠、2 wt-%）を筆で塗布し乾燥した。

(14) 肌裏打ち（Fig.1.14.15）

本紙の色に合わせて、美濃紙をヤシャで染色し、炭酸カリウム水溶液により pH 10.5 に調整した。

その美濃紙を本紙の大きさに合せて繋ぎ合わせた。なお、美濃紙の繊維方向は本紙料絹の経糸方向と平行にした[註1]。

本紙表面保護の為のサンモア®紙とフノリを除去した上で、小麦デンプン糊を用いて繋ぎ合わせた美濃紙を本紙の裏に貼り付けた。その後、本紙表面保護のレーヨン紙を除去した。

(15) 増裏打ち（Fig.1.14.16）

美濃紙をチョウジで染色し、炭酸カリウム水溶液により pH 10.5 に調整した。美濃紙を、紙の繊維方向が本紙料絹の経糸方向と交差するように、本紙の大きさに合せて繋ぎ合わせた。小麦デンプン糊を用いて繋ぎ合わせた美濃紙を本紙の裏に貼り付けた。

(16) 増々裏打ち（Fig.1.14.17）

美栖紙をチョウジで染色し、炭酸カリウム水溶液により pH 10.5 に調整した。古糊を用いて美栖紙を本紙の裏に貼り付けた。

(17) 折れ伏せ入れ（Fig.1.14.18）

美濃紙をチョウジで染色し、炭酸カリウム水溶液により pH 10.5 に調整した。乾燥後に約 2.8 mm 幅に裁断して紙帯（折れ伏せ）をつくった。本紙の折れや裂け、また将来折れを生じる可能性のある箇所に、裏面から折れ伏せを小麦デンプン糊で貼り付けた。

(18) 表装裂地調整（Fig.1.14.19）

新調した上下の表装裂をタデアイで染め、次にヤシャで染色して炭酸カリウム水溶液により pH 10.5 に調整した（1.7 特記事項）。裂の肌裏紙として、美濃紙をヤシャで染色して炭酸カリウム水溶液により pH 10.5 に調整した。さらに、一文字の欠失を電子線劣化絹で補塡した（Fig.1.14.20）。肌裏打ちとして美濃紙を小麦デンプン糊で、更に増裏打ちとして美栖紙を古糊で、各裂に貼り付けた（Fig.1.14.21）。

(19) 付け廻し（Fig.1.14.22）

本紙と表装裂地を小麦デンプン糊で繋ぎ合わせ、幢補三段表装の形にした。

(20) 中裏打ち（Fig.1.14.23）

幢補三段表装の形に付け廻した本紙と裂地の裏に、古糊を用いて美栖紙を貼り付けた。

(21) 総裏打ち（Fig.1.14.24）

宇陀紙をヤシャで染色して、炭酸カリウム水溶液により pH 10.5 に調整した。古糊を用いて、宇陀紙および上巻絹を貼り付けた。

(22) 補彩（Fig.1.14.25）

補絹した箇所に、棒絵具、ガンボージを用いて、本紙基調色の補彩を施した（Fig.A.1.8）。

(23) 仮張り

本紙画面の表面を露出して仮張り板に本紙を一定期間張り込み、その後本紙を剥がし、裏面を露出して仮張り板に張り込みなおし、一定期間静置して乾燥した。

(24) 仕上げ（Fig.1.14.26）

仮張り板から本紙を外し、吊金具、紐、八双、軸木、軸首を新調し掛軸装に仕立てた。

(25)　記録（Table 1.2、Table 1.4、Fig.1.1 (b)、Fig.1.3、Fig.1.5、Fig.1.6 (b)、Fig.1.7 (b)、Fig.1.8 (b)、Fig.1.9 (b)、Fig.1.10 (b)、Fig.1.11 (b)、Fig.1.12 (b)、Fig.1.13 (b)、Fig.A.1.6）

作品の写真撮影を行い、本修復に関する記録を集約した。

(26) 保存（Fig.1.14.27、Fig.1.14.28）

太巻添軸、保存箱、包裂、四方帙を新調し、作品を納入した。また、修復前に使用されていた表装材料である表装裂（上下、ラベル付き）、吊金具、紐、八双、軸木、軸首、裏打ち紙（肌裏紙、増裏紙、総裏紙）、および保存箱は別置保存とし、全て所蔵館に返却した。

(註1) 小田桃子、元喜載、加藤雅人、君嶋隆幸、白井啓太「ナショナル・ギャラリー・オブ・ビクトリア所蔵　佐々木泉玄筆「般若図（絹本着色 掛軸装)」修復事例報告」文化財保存修復学会第 41 回大会、要旨集 pp. 144-145、2019

1.6. 修復銘

軸木に以下の文を墨書した。

『絹本著色 佐々木泉玄筆 般若図 ナショナルギャラリー オブ ビクトリア所蔵
平成三十一年 （2019）三月修理了
独立行政法人国立文化財機構　東京文化財研究所による
平成二十八～三十年度 在外日本古美術品保存修復協力事業によって
東京文化財研究所アトリエ（紙）に於て施工す　株式会社 修護』

1. Restoration Report

ODA Momoko*, WON Heejae*, KATO Masato*, KIMISHIMA Takayuki**, and SHIRAI Keita**
*Tokyo National Research Institute for Cultural Properties, **Shugo Co., Ltd.

1.1. Information of the Artwork

Title	*Hannya the Demon* (般若図)
Artist	SASAKI Sengen (佐々木泉玄, 1805-1879)
Period	Middle of the 19th century (after 1865)
Owner	National Gallery of Victoria, Commonwealth of Australia
Accession no.	1901-D1A
Media and format (style)	Color on silk, a hanging scroll (*doho*-style with three kinds of mounting fabric)
Structure of artwork-silk	Warp: 31 denier 80 double-strands per 3.03 cm Weft: 31 denier 100 double-strands per 3.03 cm *Warp of the artwork-silk runs sideways

1.2. Information of the Restoration Project

Duration	4 April 2016 - 29 March 2019
Place	Restoration Studio (Paper), Tokyo National Research Institute for Cultural Properties
Restorers	Tokyo National Research Institute for Cultural Properties, Shugo Co., Ltd.

1.3. Condition before Restoration (Table 1.1, Table 1.3, Fig.1.1 (a), Fig.1.2, Fig.1.4, Fig.A.1.1)

- Many vertical and horizontal creases occurred on the areas of artwork and mounting overall (Fig.1.6 (a), Fig.1.7 (a), Fig.1.8 (a)).
- The artwork-silk had tears in a number of places (Fig.1.9 (a), Fig.1.10 (a)).
- The artwork-silk was partly delaminated from the lining paper (Fig.1.11 (a)).
- There were surface dirt on the artwork and mounting fabric, and accretion like adhesive on the recto of the artwork (Fig.1.12 (a)).
- There were losses of the paint layer in a number of places and this was especially notable in white paint and the paints near creases.
- The roller rod was shorter than the width of the hanging scroll. Therefore, the roller knob was attached to the piece of extension wood that had been adhered to the tip of the left side. The material of the knob was metal with same coloring as the one on the right (Fig.1.13 (a)).

1.4. Restoration Policy

Restoration of the artwork to its status quo ante and the maintenance of the present condition were to be the fundamental policy in restoring the artwork.

- Due to the creases, tears of the artwork-silk and delamination between the artwork-silk and lining paper, it was decided to replace the first lining paper.
- The artwork would be mounted in *doho*-style with three kinds of mounting fabric which was the same style as the previous.
- Previous mounting materials, such as lining paper and the roller rod, and storage equipment, such as the storage box, would be reproduced, except for the following mounting materials: mount fabrics of the central border (*chuberi*), inner border (*ichimonji*) and front side of the decorative strips (*futai*), which would be cleaned and reused.
- Previous mounting materials and storage equipment would be stored separately from the artwork and returned to the museum.
- Materials would be analyzed whenever necessary.

1.5. Restoration Process

Regarding restoration materials, see Table 1.5.

(1) Examination before restoration (Fig.1.14.1)

The condition of the artwork and mounting were examined and documented; photographs and micrographs were taken, X-ray fluorescence analysis and damage-mapping were conducted (Appendices 1, 2).

(2) Disassembling (Fig.1.14.2)

The artwork was separated from the mounting fabric.

(3) Removing dust (Fig.1.14.3)

Dust was removed from the surface of the artwork with a brush.

(4) Consolidating the pigments [first time] (Fig.1.14.4)

An animal glue (of shaved raw cow hide extracted from third brew in soft water) aqueous solution of 1 wt-% was applied with a brush mainly to the white paint. Then, when the surface started to dry, the artwork was sandwiched between sheets of polyester paper and then blotting paper, and finally pressed and dried.

(5) Removing the lining paper (Fig.1.14.5)

The artwork was gradually moistened from the backside and the layers of lining paper were removed (Fig.1.14.6).

(6) Washing (Fig.1.14.7)

Rayon paper was attached to the verso of the artwork with water as a temporary lining. By spraying deionized water to the recto of the artwork, the blotting paper that was placed under the artwork absorbed the dirt (Fig.1.14.8).

(7) Consolidating the pigments [second time] (Fig.1.14.9)

Rayon paper as the temporary lining was removed. An animal glue (in granules) aqueous solution of 1 wt-% was sprayed on all colors and then applied again with a brush. Then, when their surfaces started to dry, the artwork was pressed and dried in the same way as the first time.

(8) Consolidating the pigments [third time]

Rayon paper and then *kozo* paper were attached to the verso of the artwork with water as a temporary lining. An animal glue (in granules) aqueous solution of 2 wt-% was sprayed on all colors and applied with a brush to the colors with verso painting. Then the rayon paper and *kozo* paper were removed. Weights were placed onto

consolidated areas for a while. Finally, the artwork was attached to a *karibari* panel for conditioning.

(9) Protecting (Fig.1.14.10)

The recto of the artwork was covered with rayon paper in two layers with seaweed paste extracted at room temperature and then sanmoa® paper with seaweed paste extracted by hot water.

(10) Removing the first lining paper (Fig.1.14.11, Fig.1.14.12)

The first lining paper was moistened, other than on the areas where verso painting was observed, and removed gradually. The lining paper on the area with verso painting was removed little by little by applying water with a brush.

(11) Infilling (Fig.1.14.13)

For preparation of the infilling silk, silk fabric was artificially deteriorated by irradiating an electron beam (2300 kGy, total amount) in order to decrease its physical strength, and then the fabric was dyed with *yasha* [*Alnus firma*]. The infilling silk was applied to fill the losses of artwork-silk (Fig.A.1.8).

(12) Examining the verso of the artwork

The verso of the artwork and verso painting were documented by taking photographs, micrographs and IR photography (Fig.A.1.3, Fig.A.1.4, Fig.A.1.5, Fig.A.1.7).

(13) Consolidating the pigments on verso painting (Fig.1.14.14)

An animal glue (in granules) aqueous solution of 2 wt-% was applied with a brush to the area with verso painting and dried without pressure.

(14) First lining (Fig.1.14.15)

Mino paper was colored with *yasha* at pH 10.5 with potassium carbonate in order to match the artwork. Then pieces of *mino* paper were assembled to make one large sheet of lining paper in the size of the artwork. Besides, the lining paper was prepared with fiber direction parallel to the direction of the warp of the artwork-silk [1].

The sanmoa® paper as well as the seaweed paste applied in the process of Protecting were carefully removed. Lining paper was applied to the artwork with wheat starch paste. Finally, the rayon paper for protecting was removed.

(15) Second lining (Fig.1.14.16)

Mino paper was also dyed with *choji* [*Syzygium aromaticum*] at pH 10.5 with potassium carbonate. Pieces of *mino* paper were assembled to make one large sheet of lining paper in the size of the artwork with fiber direction crossing the direction of the warp of the artwork-silk. The lining paper was applied to the artwork with wheat starch paste. Then *mino* paper was applied to the artwork with aged wheat starch paste.

(16) Third lining (Fig.1.14.17)

Misu paper was also colored with *choji* at pH 10.5 with potassium carbonate. *Misu* paper was applied to the artwork with aged wheat starch paste.

(17) Applying reinforcement paper strips (Fig.1.14.18)

Reinforcement paper strips were made with *mino* paper colored with *choji* at pH 10.5 with potassium carbonate. Using wheat starch paste, the reinforcement paper strips were applied to tears, creases, and potential area forming creases in the future onto the artwork from the verso.

(18) Preparing the mounting fabrics (Fig.1.14.19)

New mounting fabric on the outer border (*kami* and *shimo*) was dyed with *tadeai* indigo [*Persicaria tinctorial*] and then the colorant was fixed with *yasha* at pH 10.5 with potassium carbonate (1.7 Note). Then, for the first lining, *mino* paper was colored with *yasha* at pH 10.5 with potassium carbonate in order to match the artwork.

The losses of the inner border fabric were infilled with artificially deteriorated silk (Fig.1.14.20). Then the *mino* paper was applied with wheat starch paste as the first lining (Fig.1.14.21). For the second lining, *misu* paper was applied with aged wheat starch paste.

(19) Assembling (Fig.1.14.22)

The artwork and the mounting fabrics were assembled with wheat starch paste in a hanging scroll format called *doho*-style.

(20) Fourth lining (Fig.1.14.23)

Misu paper was applied to the set of assembled artwork and mounting fabrics by using aged wheat starch paste.

(21) Final lining (Fig.1.14.24)

Uda paper was colored with *yasha* at pH 10.5 with potassium carbonate. Then the *uda* paper and the cover silk fabric were applied with aged wheat starch paste.

(22) Adjusting color of infills (Fig.1.14.25)

In order to match the color of the artwork, some color was applied onto the infilled parts of the artwork with stick- type paints for Japanese painting and gamboge (Fig.A.1.8).

(23) Drying and conditioning

The artwork with mounting (the object) was attached to the *karibari* panel face up and left for a while. After the object was dried, it was removed and attached again to the *karibari* panel face down for a while.

(24) Finishing (Fig.1.14.26)

The artwork with mounting was removed from the *karibari* panel and finished into the hanging scroll format with new mounting materials – the washers and eye-pins, cords, hanging rod, roller rod, and roller knobs.

(25) Documenting (Table 1.2, Table 1.4, Fig.1.1 (b), Fig.1.3, Fig.1.5, Fig.1.6 (b), Fig.1.7 (b), Fig.1.8 (b), Fig.1.9 (b), Fig.1.10 (b), Fig.1.11 (b), Fig.1.12 (b), Fig.1.13 (b), Fig.A.1.6)

The records related to the restoration were compiled including photographs.

(26) Housing (Fig.1.14.27, Fig.1.14.28)

The wrapping cloth, outer case, storage box, and roller clamp were made. The mounting materials and the storage equipment which had been used before restoration – mounting fabrics with a sticker (of the outer border), washers and eye-pins, cords, hanging rod, roller rod, roller knobs, lining paper (of the first, second and final) and storage box – were stored separately and returned to the museum.

[1] ODA Momoko, WON Heejae, KATO Masato, KIMISHIMA Takayuki, SHIRAI Keita: Conservation Report on "*Hannya the demon*" (painting on silk, hanging scroll) drawn by SASAKI Sengen, the National Gallery of Victoria, the 41st annual meeting of the Japan Society for the Conservation of Cultural Property, abstracts in Japanese, pp.144 - 145, 2019

1.6. Inscription regarding Restoration

The following inscription was made in Chinese ink on the roller rod.

『絹本著色 佐々木泉玄筆 般若図 ナショナルギャラリー オブ ビクトリア所蔵
平成三十一年 （2019）三月修理了
独立行政法人国立文化財機構 東京文化財研究所による
平成二十八～三十年度 在外日本古美術品保存修復協力事業によって
東京文化財研究所アトリエ（紙）に於て施工す 株式会社 修護』

(English translation of the inscription)

"Hannya the Demon by SASAKI Sengen, color on silk, a hanging scroll. National Gallery of Victoria
Restoration completed in March 2019
As a project of the Cooperative Program for the Conservation of Japanese Art Objects Overseas 2016 JFY -2018 JFY, organized by the Tokyo National Research Institute for Cultural Properties, Independent Administrative Institution National Institutes for Cultural Heritage.
At the Restoration Studio (Paper) of the Tokyo National Research Institute for Cultural Properties
Implemented by Shugo Co., Ltd."

Table 1.1　寸法　修復前
Dimensions, before restoration

	縦 Height (cm)	横 Width (cm)
本紙 Artwork	69.4	122.0
全体 Artwork with mounting	179.0	138.2

Table 1.2　寸法　修復後
Dimensions, after restoration

	縦 Height (cm)	横 Width (cm)
本紙 Artwork	69.9	120.6
全体 Artwork with mounting	178.6	136.3

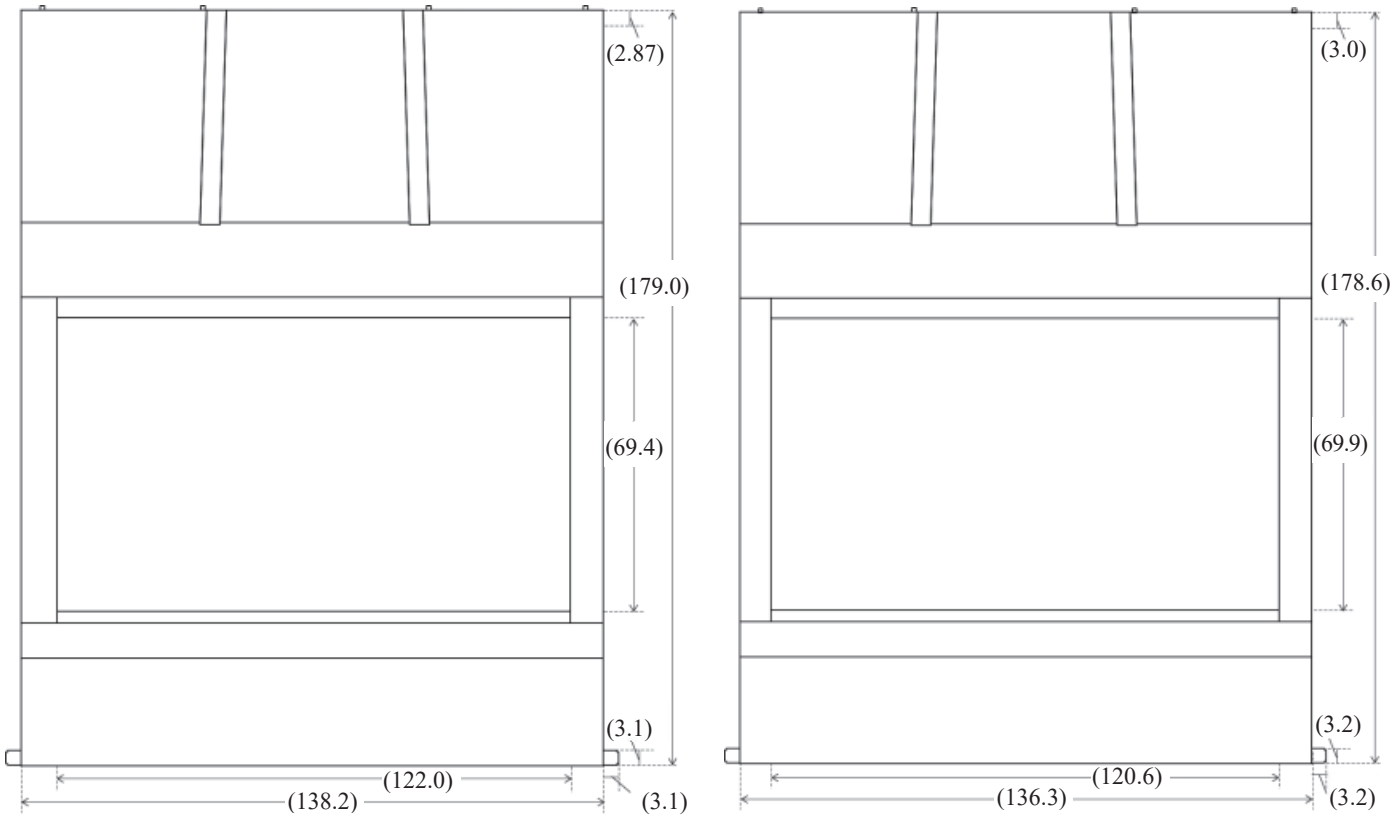


Fig.1.1　寸法見取図（単位 cm）　(a) 修復前　(b) 修復後
Dimensions (in cm) (a) before restoration　(b) after restoration

Table 1.3 形式・仕様等　修復前
Format and mounting materials, before restoration

形式［様式］ Format [Style]	掛軸装［幢補三段表装］ Hanging scroll [*doho*-style with three kinds of mounting fabric]
一文字、風帯 Inner border fabric (*ichimonji*), decorative fabric strips (*futai*)	白茶地花兎文金襴 *Kinran* (gold brocade) with a motif of rabbit with flower on a whitish brown background
中縁 Central border fabric (*chuberi*)	茶地唐草文銀欄 *Ginran* (silver brocade) with an arabesque on a brown background
上下 Outer border fabric (*kami* and *shimo*)	浅黄鬼絖 Plain brown fabric with an uneven thread
軸首 Roller knobs	金属製塗装軸（向かって左）、骨軸（向かって右） Colored on metal (on the left), bone (on the right)
八双・軸木 Hanging rod, roller rod	木製 Wood
吊金具 Washers, eye-pins	木瓜座金打込鐶（向かって左）、花菱座金打込鐶（向かって右） *Mokko* (Japanese melon) -shaped washer and straight eye-pin (on the left), flower-shaped washer and straight eye-pin (on the right)
紐 Cord	三色啄木紐 Braided cord in *takuboku*-style with three-color string
肌裏紙（本紙） First lining (artwork)	楮紙 *Kozo* paper
肌裏紙（裂） First lining (mounting fabric)	楮紙 *Kozo* paper
増裏紙（本紙 1 層目） Second lining	楮紙［填料入り］ *Kozo* paper [containing filler]
総裏紙 Final lining	楮紙 *Kozo* paper
保存箱 Storage box	木製印籠蓋箱 Wooden box in *inro*-style
四方帙 Outer case	紙製四方帙 Paper box

Table 1.4 形式・仕様等　修復後
Format and mounting materials, after restoration

形式［様式］ Format [Style]	掛軸装［幢補三段表装］ Hanging scroll [*doho*-style with three kinds of mounting fabric]
一文字、風帯 Inner border fabric, decorative fabric strips	再使用 (reused)
中縁 Central border fabric	再使用 (reused)
上下 Outer border fabric	正絹紬（鳥居） Plain brown fabric with an uneven thread (purchased through Torii)
上巻絹 Cover silk	藍地平織絹（鳥居） Plain-woven silk fabric in indigo color (purchased through Torii)
軸首 Roller knobs	角製切軸（速水商店） Bone (purchased through Hayamizu Shoten)
八双・軸木 Hanging rod, roller rod	木製［杉材］（速水商店） Wood [Japanese cedar-made] (purchased through Hayamizu Shoten)
吊金具 Washers, eye-pins	木瓜座金打込鐶（速水商店） *Mokko* (Japanese melon) -shaped washer and straight eye-pin (purchased through Hayamizu Shoten)
紐 Cord	正絹二色啄木紐（速水商店） Silk braided cord in *takuboku*-style with two-color string (purchased through Hayamizu Shoten)
肌裏紙、増裏紙 First lining, second lining	楮紙［美濃紙］（鈴木竹久） *Kozo* paper [*mino* paper] (made by SUZUKI Takehisa)
増々裏紙 Third lining	楮紙［美栖紙］（上窪良二） *Kozo* paper [*misu* paper] (made by UEKUBO Ryoji)
中裏紙 Fourth lining	楮紙［美栖紙］（上窪良二） *Kozo* paper [*misu* paper] (made by UEKUBO Ryoji)
総裏紙 Final lining	楮紙［宇陀紙］（福西和紙本舗） *Kozo* paper [*uda* paper] (made by Fukunishi Washi Honpo)
太巻添軸 Roller clamp	桐製太巻添軸［木口詰］（小早川桐箱製作所） Paulownia [*Paulownia tomentosa*] roller clamp (made by Kobayakawa Kiribako Seisakujo)
包裂 Wrapping cloth	正絹羽二重（速水商店） Lined silk wrapping cloth (purchased through Hayamizu Shoten)
保存箱 Storage box	桐製印籠蓋箱（小早川桐箱製作所） Paulownia *inro*-style box (made by Kobayakawa Kiribako Seisakujo)
四方帙 Outer case	紺布貼四方帙（小早川桐箱製作所） Paper box covered with navy blue fabric (made by Kobayakawa Kiribako Seisakujo)

Table 1.5 修復材料
Restoration materials

水 Water	イオン交換水 Deionized water
糊 Paste	小麦デンプン（中村製糊） Wheat starch (manufactured by Nakamura Seiko)
	古糊（坂田墨珠堂） Aged wheat starch paste (made by Sakata Bokujudo)
膠 Animal glue	パール印粉状膠（放光堂） Animal glue in granules (purchased through Hokodo)
	牛剝毛生皮軟水 3 番抽出膠（宇髙健太郎） Animal glue of shaved raw cow hide extracted from third brew in soft water (supplied by UDAKA Kentaro)
フノリ Seaweed paste	マフノリ、フクロフノリ、ハナフノリ［久平］（大脇萬蔵商店） *Mafunori* [*Gloiopeltis tenax*], *Fukurofunori* [*Gloiopeltis furcata*], *Hanafunori* [*Gloiopeltis complanata*] [Kyuhei] (made by Owaki Manzo Shoten)
折れ伏せ Reinforcement paper strips	楮紙［美濃紙］（鈴木竹久） *Kozo* paper [*mino* paper] (made by SUZUKI Takehisa)
補修絹 Infill silk	絵絹（廣信織物）独立行政法人日本原子力研究開発機構高崎量子応用研究所にて電子線を照射 Painting silk fabric (made by Hironobu Orimono) irradiated with electron beams at Takasaki Advanced Radiation Research Institute, Japan Atomic Energy Agency 本紙：経 21 中 60 枚 2 ッ入 緯 21 中 2 本ヌキ 120 横 裂：経 31 中 40 枚 2 ッ入 緯 31 中 2 本ヌキ 100 横 For the artwork: Warp: 21 denier 60 double-strands, weft: 21 denier 120 double-strands per 3.03 cm For the mounting fabric: Warp: 31 denier 40 double-strands, weft: 31 denier 100 double-strands per 3.03 cm
染料 Dye	ヤシャ（田中直染料店） *Yasha* [*Alnus firma*] (purchased through Tanaka Nao Senryoten)
	チョウジ（田中直染料店） *Choji* [*Syzygium aromaticum*] (purchased through Tanaka Nao Senryoten)
	タデアイ（東京文化財研究所） *Tadeai* indigo [*Persicaria tinctorial*] (Tokyo National Research Institute for Cultural Properties)
	墨［油煙墨］（墨運堂） *Sumi* ink [oil soot] (made by Bokuundo)
pH 調整剤 pH adjusting agent	炭酸カリウム（田中直染料店） Potassium carbonate (purchased through Tanaka Nao Senryoten)
補彩絵具 Paints for adjusting color of infills	日本画用棒絵具［藍、本洋紅］、ガンボージ（金開堂） Stick type paints for Japanese paintings [indigo and red], and gamboge (purchased through Kinkaido)

Fig.1.2　全体 修復前

Artwork with mounting before restoration

Fig.1.3　全体 修復後

Artwork with mounting after restoration

Fig.1.4　本紙 修復前

Artwork before restoration

Fig.1.5　本紙 修復後

Artwork after restoration

(a) (b)

Fig.1.6　折れ (a) 修復前（斜光照射）　(b) 修復後（斜光照射）

Creases (a) before restoration (with raking light)　(b) after restoration (with raking light)

(a) (b)

Fig.1.7　表装の折れ (a) 修復前（斜光照射）　(b) 修復後（斜光照射）

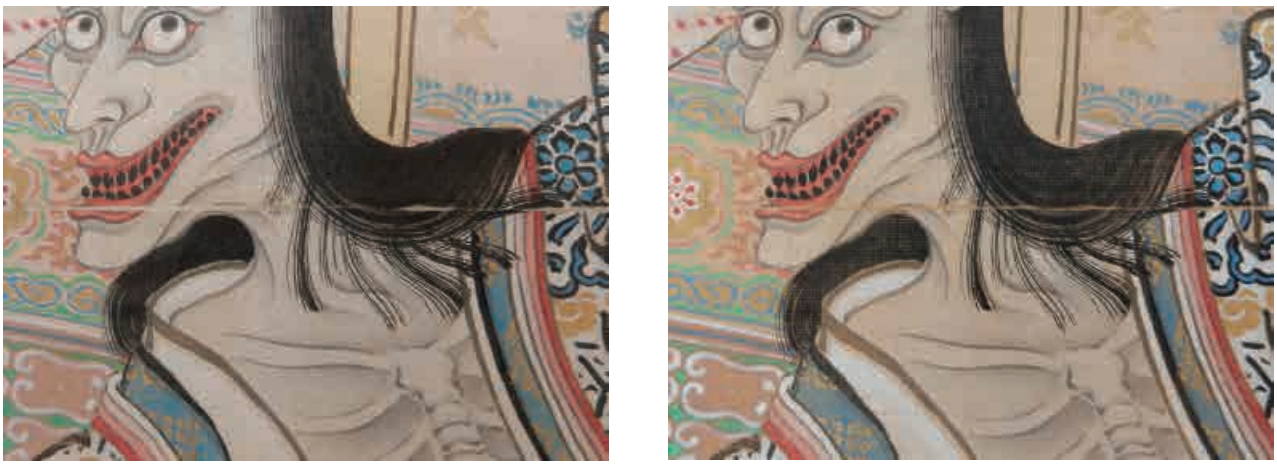
Creases of the mounting fabric (a) before restoration (with raking light)　(b) after restoration (with raking light)

(a) (b)

Fig.1.8　裏打ち紙の剥離によるシワ (a) 修復前（斜光照射）　(b) 修復後（斜光照射）

Wrinkles caused by delamination of lining paper

(a) before restoration (with raking light)　(b) after restoration (with raking light)



(a) (b)

Fig.1.9　裂け (a) 修復前　(b) 修復後

Tear (a) before restoration　(b) after restoration

(a) (b)

Fig.1.10　本紙の裂けおよび裏打ち紙からの剥離 (a) 修復前　(b) 修復後

Tear and separation of the artwork from the lining paper (a) before restoration　(b) after restoration

(a) (b)

Fig.1.11　本紙の裏打ち紙からの剥離 (a) 修復前（斜光照射）　(b) 修復後（斜光照射）

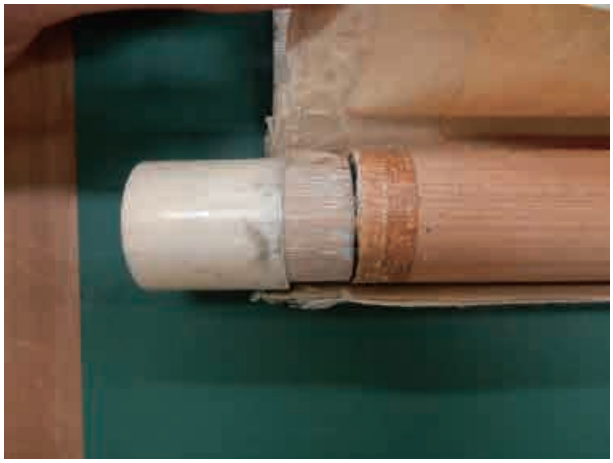
Delamination between the artwork and lining paper

(a) before restoration (with raking light)　(b) after restoration (with raking light)

(a) (b)

Fig.1.12　点状のシミ (a) 修復前　(b) 修復後

Stain (a) before restoration　(b) after restoration



(a) (b)

Fig.1.13　左側の軸首　(a) 修復前（金属製塗装）　(b) 修復後（角製切軸）

Roller knob on the left (a) before restoration (metal, colored)　(b) after restoration (bone)

Fig.1.14.1　修復前調査（顕微鏡観察)
Examination before restoration
(microscopic observation)

Fig.1.14.2　解体
Disassembling

Fig.1.14.3　埃の除去
Removing dust

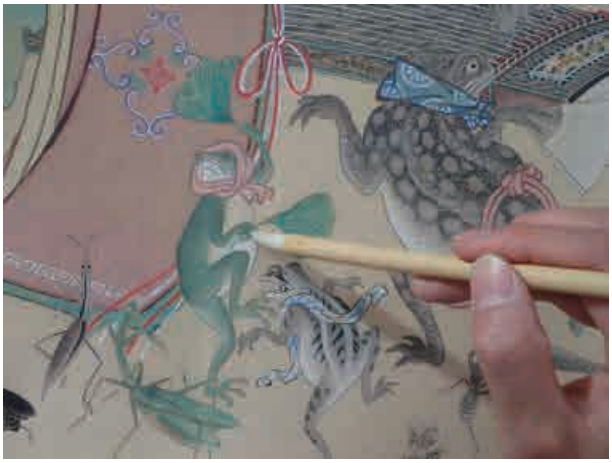


Fig.1.14.4　絵具の剥落止め
Consolidating the pigments

Fig.1.14.5　裏打ち紙除去（肌裏紙を除く）
Removing lining paper (other than first lining paper)

Fig.1.14.6　除去した裏打ち紙
Removed lining paper

Fig.1.14.7　水による洗浄
Washing

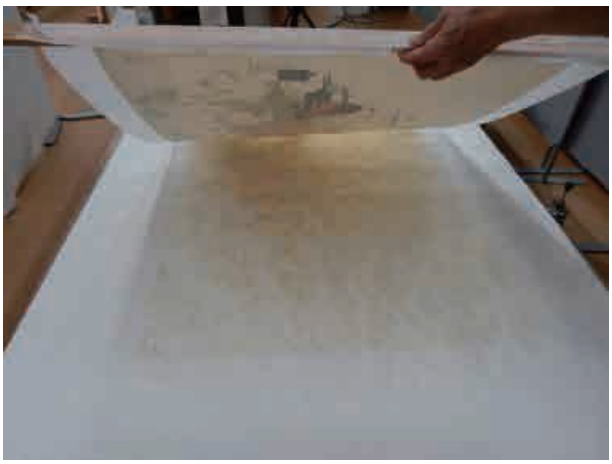


Fig.1.14.8　洗浄後の吸い取り紙
Blotting paper after washing

Fig.1.14.9　絵具の剥落止め
Consolidating the pigments

Fig.1.14.10　本紙表面の保護
Protecting

Fig.1.14.11　肌裏紙除去
Removing the first lining paper

Fig.1.14.12　肌裏紙除去
Removing the first lining paper

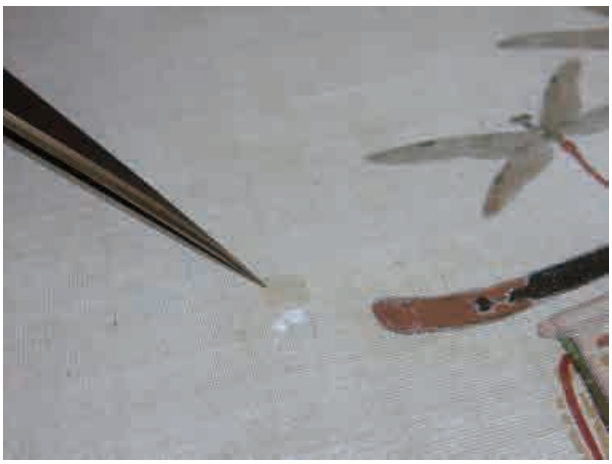


Fig.1.14.13　補修
Infilling

Fig.1.14.14　裏彩色の剥落止め
Consolidating the pigments on verso painting

Fig.1.14.15　肌裏打ち
First lining

Fig.1.14.16　増裏打ち
Second lining

Fig.1.14.17　増々裏打ち
Third lining

Fig.1.14.18　折れ伏せ入れ
Applying reinforcement paper strips

Fig.1.14.19　表装裂地調整（裏打ち紙除去）
Preparing the mounting fabrics
(removing lining paper)

Fig.1.14.20　表装裂地調整（裂の補修）
Preparing the mounting fabrics (infilling to the fabric)

Fig.1.14.21　表装裂地調整（裂肌裏打ち）
Preparing the mounting fabrics (first lining)

Fig.1.14.22　付け廻し
Assembling

Fig.1.14.23　中裏打ち
Fourth lining

Fig.1.14.24　総裏打ち
Final lining

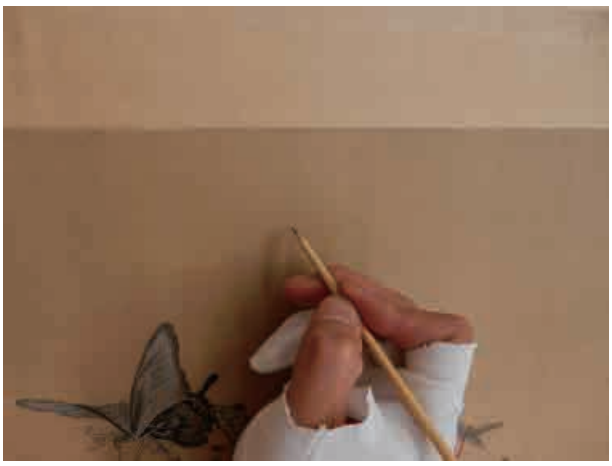


Fig.1.14.25　補彩
Adjusting color of infills

Fig.1.14.26　仕上げ
Finishing

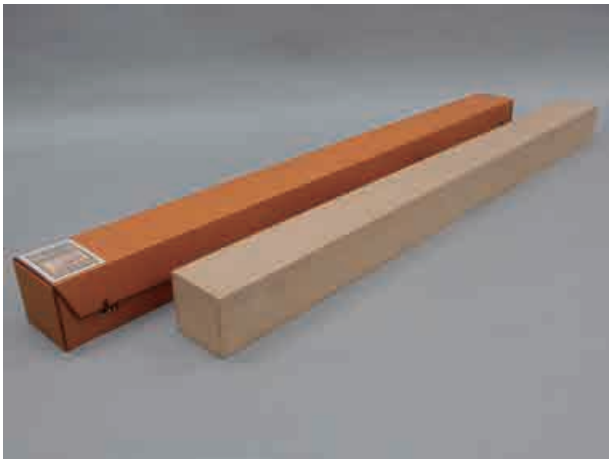


Fig.1.14.27　四方帙、保存箱（旧蔵）
Outer case and storage box
(previously used)

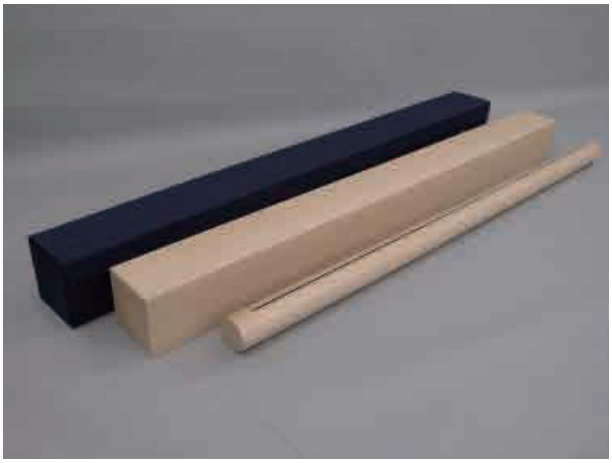


Fig.1.14.28　四方帙、保存箱、太巻添軸（新調）
Outer case, storage box and roller clamp
(newly made)

1.7. 特記事項

新調した上下の裂の染色では、タデアイ（蓼藍［*Persicaria tinctorial*］：タデ科イヌタデ属）の一年生植物を用いた「生葉染め」を行った。具体的には、ミキサーで粉砕したタデアイに水を加えて濾過したものを染液とし、裂を一定時間浸漬して水で洗浄し、乾燥した。

参考：川野辺渉「〔報告〕 藍の生葉染めに関するいくつかの試み」『保存科学』58 号、pp.133-138、2019

1.7. Note

The new mounting fabric of the outer border was dyed with fresh leaves of annual *tadeai* indigo [*Persicaria tinctorial*]. For dyeing with fresh leaves, the extract was prepared by crushing *tadeai* leaves with water in a blender. The mounting fabric was soaked into the liquid for a while and then washed with water and dried.

Reference: KAWANOBE Wataru, Trials on Dyeing with Fresh Indigo Leaves, Science for Conservation vol. 58, pp.133-138, 2019

Fig.1.14.29　タデアイの収穫
Harvesting *tadeai* indigo

Fig.1.14.30　タデアイの生葉を用いた染色
Dyeing the mounting fabric with
fresh leaves of *tadeai* indigo

2. 作品解説

東京文化財研究所　江村　知子

横長の画面に般若が舞い、その周りで擬人化された虫、蛙、蛇、蜥蜴などが乱舞する様子を描いた作品。縦 69.9×横 120.6cm の大幅で、画絹は経糸が横向きになる、いわゆる横使いにされている。画面右下には「法眼泉玄六十一歳筆」の落款と、「源守公印」白文方印が捺されていることから、加賀藩御用絵師を勤めた佐々木泉玄（1805〜1879）による慶応元年（1865）の作品であることがわかる（Fig.2.1）。

画面中央に立てられた几帳の前で、赤い豆絞りの手拭いを頭に巻き、左手で檜扇を頭上に掲げ、華麗な小袿、緋袴を着けた鬼女が袂や袴の裾を翻しながら舞い踊る姿が描かれている。頭の右上には手拭いから灰色の角が飛び出し、白粉を塗った額に作り眉を置き、飛び出しそうな大きな眼球は血走り、大きく裂けた赤い口の中には人間の倍ほどの数の黒い歯が表されている。内側に着ている白い衣の胸元は大きくはだけ、灰色の肌色に白い肋骨のような描写がなされ、すでにこの世のものではないことを示している。几帳は中間色を多用して華麗で繊細な文様が色彩豊かに描かれている。また几帳の背後、右側には十七絃の琴、角盥、鏡台などが置かれ左側には乱れ箱が置かれている。黒漆地に金蒔絵が施された調度品などはまさに大名道具のような豪華な描写となっている。

そしてこの作品で特に眼を引くのがおびただしい虫、両生類、爬虫類の描写である。几帳の上桟には巨大な黒揚羽蝶や数種の蜻蛉などの虫が舞っている。几帳の左側の宙空には蜘蛛の巣が描かれ、そこからカラフルに彩色された蜘蛛が下がってきている。その下の乱れ箱には巻紙を切っているカミキリムシ、糸切り鋏にはハサミムシ、冊子にはシミ、手前の竹尺にはシャクトリムシなどが描かれ、ユーモアに溢れた描写となっている。その手前の蛇と緑色の蜥蜴は手拭いのような布を頭に巻いている姿で描かれ、般若の裾近くに描かれる蛇も手拭いを頭に巻いているが、蛇腹から 4 本の赤い脚が出ており、龍を想像させる描写となっている。画面右側の琴の手前にはヒキガエルが首に手拭いを巻き、淡い紅色の下帯を巻き、右手には扇子を持っている。その左側の緑色の蛙は両前脚に緑色の銀杏の葉を持ち、軽妙に踊っているように見える。角盥には巨大なカタツムリが擬人的な両腕を上に持ちあげる姿で描かれ、内側に張られた水にはヤゴとオタマジャクシが描かれている。調度品の描写から、描かれているのは室内のはずであるが、幻想的な情景描写にするためか、画面右下には緑色のススキと忍ぶ草が描かれている。

かつては豪華な衣裳や調度品に囲まれるような高貴な女性が、鬼女の姿に変貌してしまっていることの背景にある悲話の存在が考えられ、たとえば能の般若の面が用いられる「葵の上」などとの関係も想像されるが、鬼女と虫たちが乱舞している様子は、悲愴さはなく、諧謔味溢れる画面となっている。

佐々木泉玄は、幼名は愛之輔、宮内、守貞、守公、別号は春鳴、一白居士ともいった。同じく加賀藩御用絵師を勤めていた佐々木泉景（1773〜1848）の長男で、父と同じく京都に出て鶴澤派に師事した。泉景は師の鶴澤探泉（1755〜1816）の号を一字拝領したものであろう。文政 5 年（1822）、泉玄 18 歳の時、加賀藩第 12 代前田斉広が自らの隠居所として造営し、兼六園と命名した竹沢御殿の御用を父と共に行い、以後、藩の御用を数多く勤めた。天保 5 年（1834）30 歳で法橋を叙任、嘉永元年（1848）、44 歳の時に父の泉景の死により家督を相続、嘉永 5 年（1852）48 歳で法眼に叙任された。本作品が絹本の大幅であること、豪華な衣裳や調度品の描写、鬼女を主題としていることから、能が盛んに行われていた加賀藩において、何らかの特別な御用に合わせて、御用絵師の泉玄が絵筆を揮った作品である可能性も考えられる。またこの作品は 1861 年創立のナショナル・ギャラリー・オブ・ビクトリアに 1887 年に所蔵されており、草創期からのコレクションでもあり、19 世紀の海外における日本美術作品の収集を考える上でも興味深い作品と言える。

2. Description about the Artwork

EMURA Tomoko
Tokyo National Research Institute for Cultural Properties

In the present work, a *hannya* is depicted dancing on the wide screen with personified insects, frogs, snakes and lizards. The painting is large, it being 69.9cm x 120.6cm. The warp of the artwork-silk runs sideways; in other words, the artwork-silk is used in that direction. On the lower right of the screen is an inscription reading "Work by Sengen as a rank of Hogen at the age of 61" (法眼泉玄六十一歳筆) and a square intaglio seal with "Seal of Minamoto Morikimi." (源守公印［白文方印］). From this information it is clear that the work is by Sasaki Sengen (1805-1879), the official painter of Kaga domain, and that the painting was painted in 1865 (Fig. 2.1).

A female demon wearing a beautiful *kouchigi*, over garment, and red *hakama*, skirt, with a hand towel of a red-dot pattern on her head is holding a fan above her head with her left hand and is dancing, her sleeves and the bottom of her skirt swaying, in front of a partition screen placed in the middle of the scene. To the above right of her head, a grey horn protrudes from the towel. Eyebrows are painted on her white powdered forehead and her bloodshot eyes are huge as to give an impression of their being ready to fall out. Blackened teeth twice the number of a human's are found inside the red, largely torn mouth. The white clothing she wears inside exposes her breast, showing white ribs on a grey skin. All these suggest that she is not of this world. The partition screen is depicted with many colors, medial colors being used most, and there are beautiful, delicate patterns on it. Behind the partition screen, to the right are a 17-string harp, *tsunodarai*, a washbowl, and a mirror; to the left is a tray. The furnishings in the room, black *urushi* lacquer coated and decorated with gold *makie* decoration, appear gorgeous like the furnishings of a lord.

What strikes the eye especially in this work are the numerous insects, amphibians and reptiles. On the upper bar of the partition are insects like large butterflies and several types of dragonflies. In the space to the left of the partition screen is a spider web, with a colorfully depicted spider hanging. In the tray below is a long-horned beetle cutting a piece of rolled paper, an earwig on a pair of scissors, bookworm on a book, and an inchworm on a bamboo measure – all a humorous rendition. The snake in front and the green lizard are depicted with a cloth like a towel around their heads. The snake near the skirt of the *hannya* also has a towel on its head, but there are 4 legs coming out of its abdomen, making the impression of a dragon. In front of the harp on the right side of the screen is a frog with a towel around its neck, a faint red color loincloth, and a fan in its right hand. The green frog to its left has ginkgo leaves in front of its front legs and appears to be dancing lightly. On the *tsunodarai*, a huge snail is depicted with its personified-like arms uplifted. In the water inside the *tsunodarai* are larvae of dragonfly and tadpoles. From the depiction of the furnishings, the scene should be inside, but to make the description imaginary, there are green pampas grass and fern on the lower right.

One may think of a tragedy of a noble lady who, once enveloped in elaborate clothing and furnishings, metamorphosed into a demon and may see an allusion to "Aoi no ue," a noh repertory in which the mask of a *hannya* is used. However, there is no pathetic atmosphere in the scene of the demon dancing with insects; instead, the scene is full of humor.

Sasaki Sengen, in his childhood, was named Ainosuke (愛之輔). As an adult, he called himself Kunai (宮内), Morisada (守貞), and Morikimi (守公). He also used Shunmei (春鳴) and Ippakukoji (一白居士) as his artist name. Sengen is the eldest son of Sasaki Senkei (佐々木泉景, 1773-1848), also an official painter of Kaga domain.

Like his father, he went to Kyoto to study under Tsurusawa School. His name, Sengen, probably takes a character from the name of his master Tsurusawa Tansen (鶴澤探泉, 1755-1816). In 1822, when Sengen was 18 years old, he worked with his father on Takezawa Palace, which the twelfth lord of Kaga, Maeda Narinaga (前田斉広), built as his retirement residence and named it Kenroku-en. Since then, Sengen worked many times for the domain. In 1834, at the age of 30, he was given the title of Hokkyō and in 1848, at the age of 44, he inherited his family's headship when his father passed away. He was titled as Hōgen in 1852 at the age of 48. That this work is a large silk artwork, that elaborate clothing and furnishings are depicted and that the theme is that of a demon suggest the possibility that it was depicted by the official painter of the domain, Sengen, on some special occasion of the Kaga domain where noh performance was very popular. In 1887, this work was acquired in the collection of the National Gallery of Victoria, which was established in 1861. It is a collection from the early days of the Gallery and is a very interesting work from the point of view of the collection of Japanese works of art overseas in the 19th century.

Fig.2.1　落款印章
Inscription and seal

付録　Appendices

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Tokyo National Research Institute for Cultural Properties

付録 1.　記録

Appendix 1. Documentation

■	折れ	Crease
■	裂け	Tear
■	染み	Stain
■	付着物	Accretion
■	絵具の剥離・剥落	Lift and loss of paints
■	裏打ち紙の浮き	Delamination of the lining paper

Fig.A.1.1　修復前損傷図面

Mapping of damages before restoration

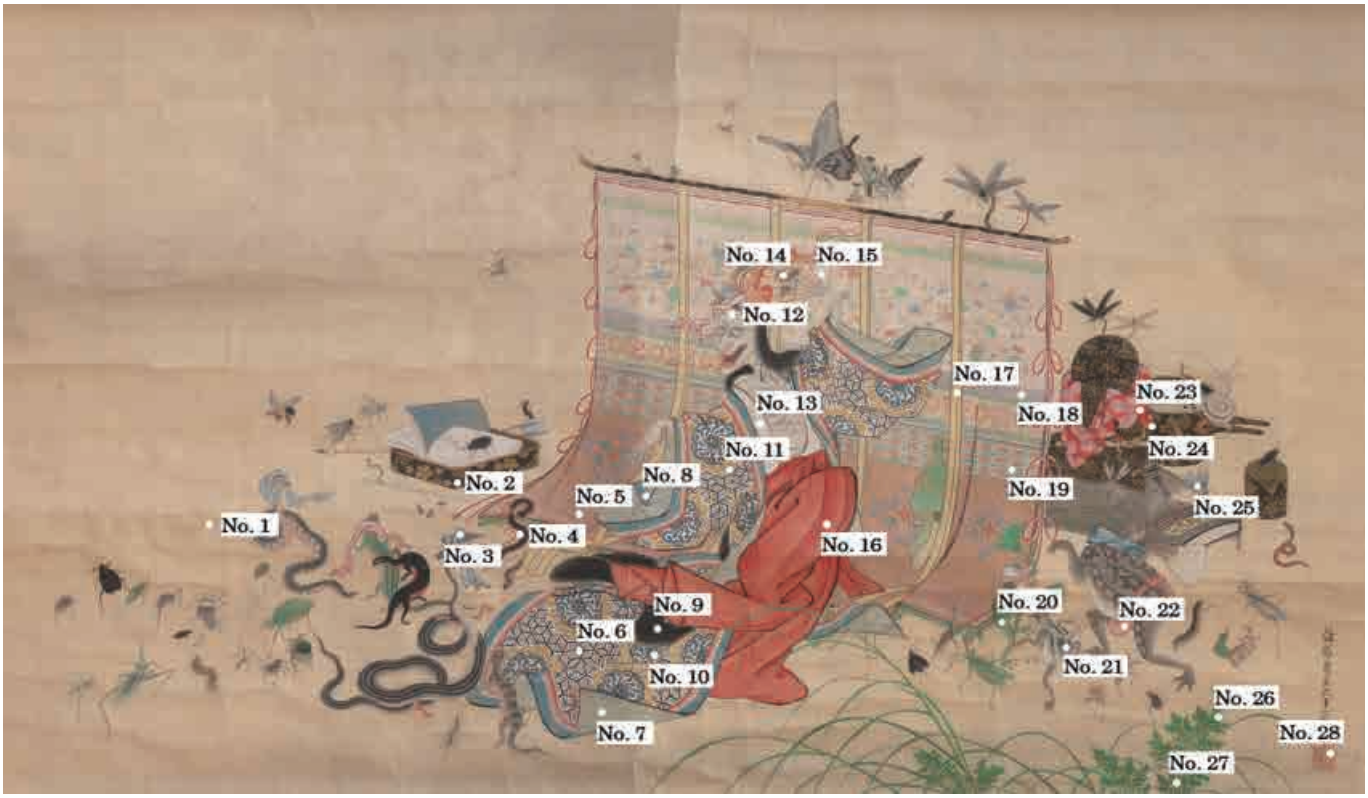

Fig.A.1.2　顕微鏡写真撮影箇所

Points where micrographs were taken

使用機器	デジタルマイクロスコープ（ShuttlePix P-400R、ニコンインステック社製）
ピクセル数	1600×1200
画像フォーマット	JPEG
Apparatus	Digital microscope (ShuttlePix P-400R, Nikon Instech)
Image	1600×1200
Image format	JPEG

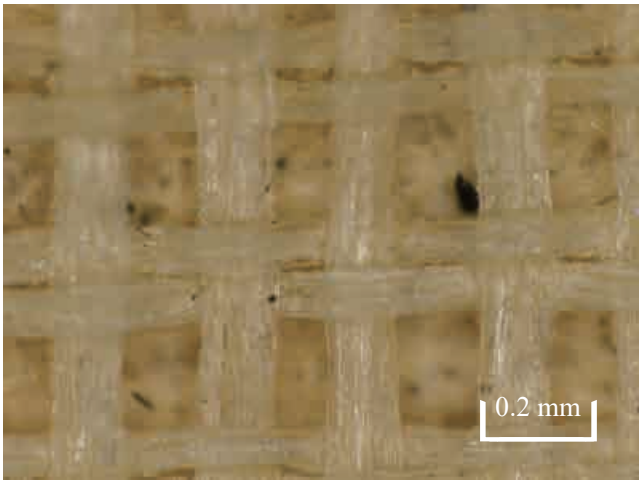

Fig.A.1.2.1　顕微鏡写真（1）

Micrograph (1)

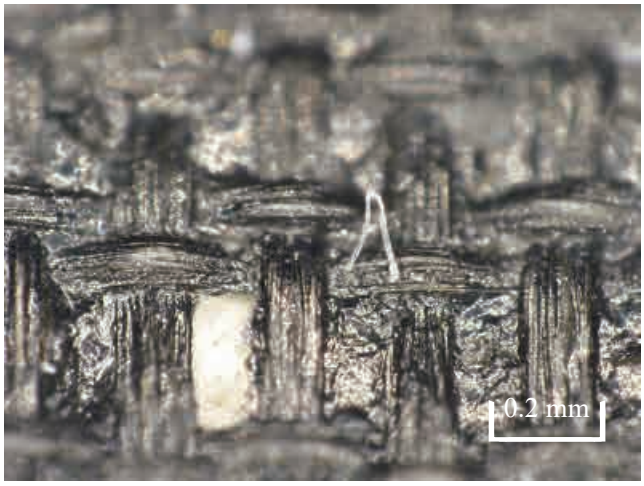

Fig.A.1.2.2　顕微鏡写真（2）

Micrograph (2)

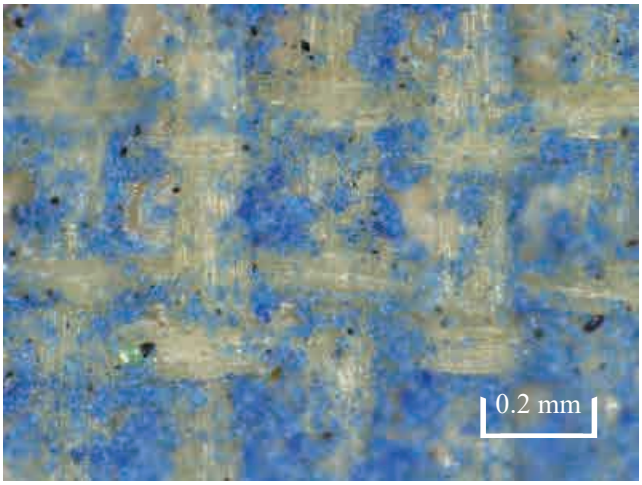

Fig.A.1.2.3　顕微鏡写真（3）

Micrograph (3)

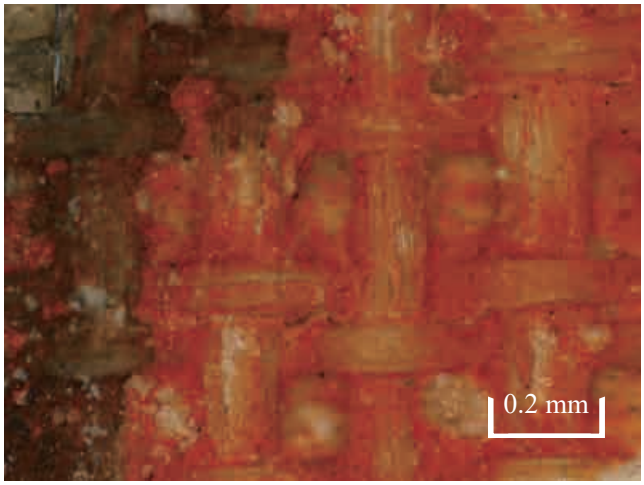

Fig.A.1.2.4　顕微鏡写真（4）

Micrograph (4)

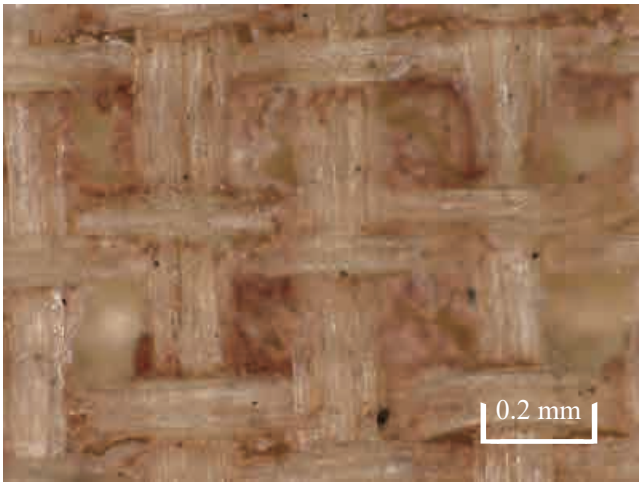

Fig.A.1.2.5　顕微鏡写真（5）

Micrograph (5)

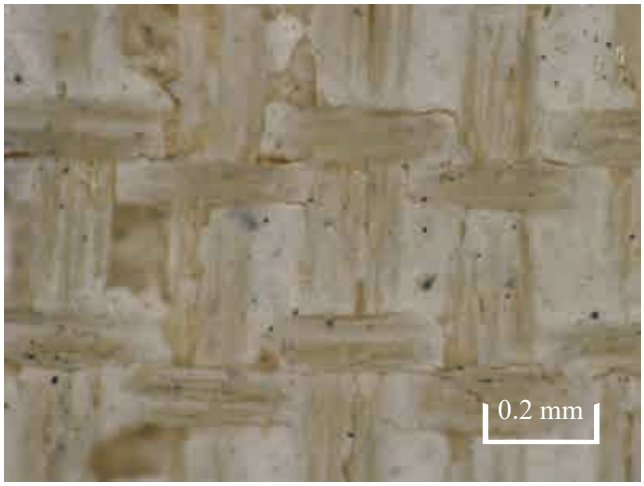

Fig.A.1.2.6　顕微鏡写真（6）

Micrograph (6)

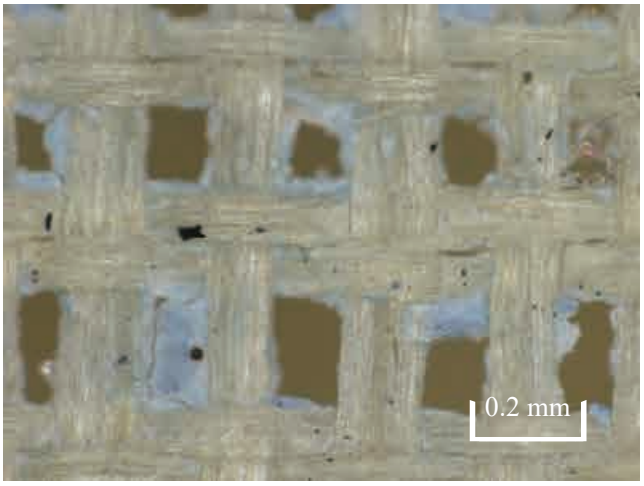

Fig.A.1.2.7　顕微鏡写真（7）

Micrograph (7)

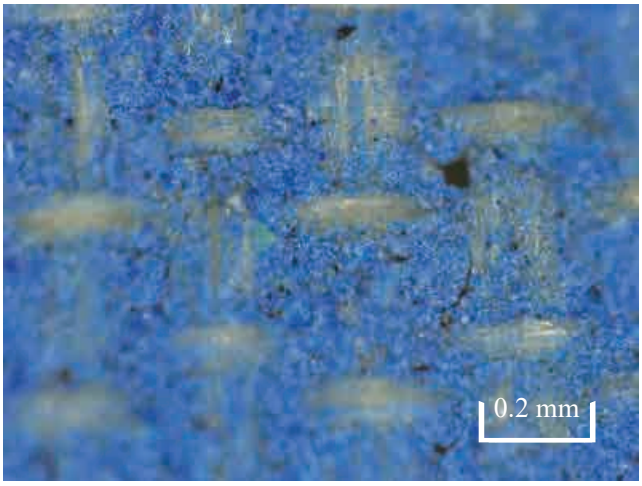

Fig.A.1.2.8　顕微鏡写真（8）

Micrograph (8)

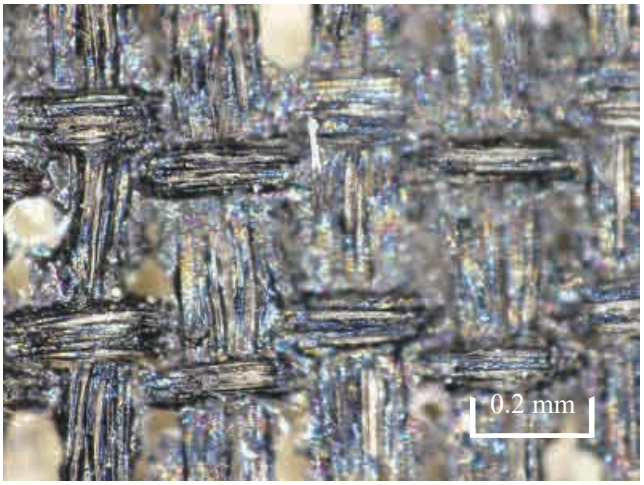

Fig.A.1.2.9　顕微鏡写真（9）

Micrograph (9)

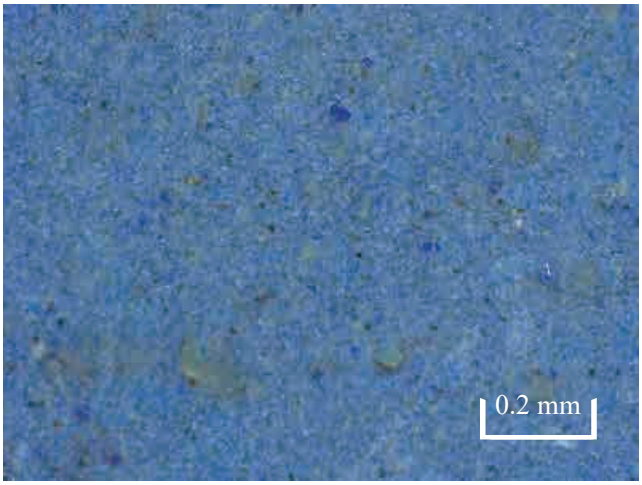

Fig.A.1.2.10　顕微鏡写真（10）

Micrograph (10)

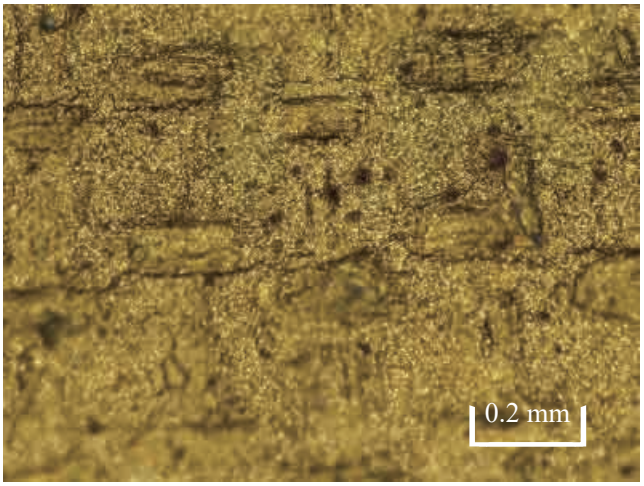

Fig.A.1.2.11　顕微鏡写真（11）

Micrograph (11)

Fig.A.1.2.12　顕微鏡写真（12）

Micrograph (12)

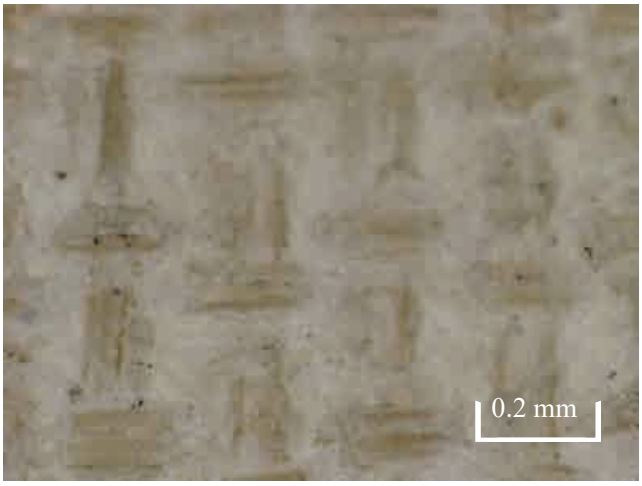

Fig.A.1.2.13　顕微鏡写真（13）

Micrograph (13)

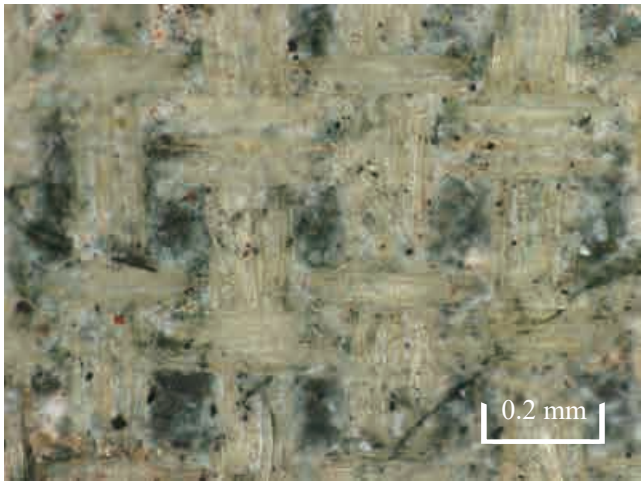

Fig.A.1.2.14　顕微鏡写真（14）

Micrograph (14)

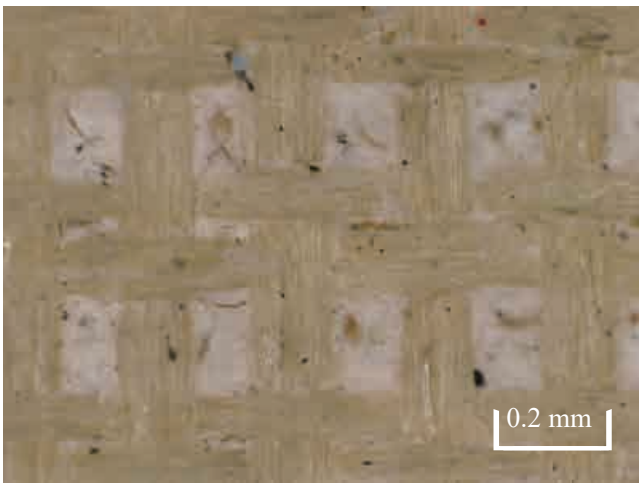

Fig.A.1.2.15　顕微鏡写真（15）

Micrograph (15)

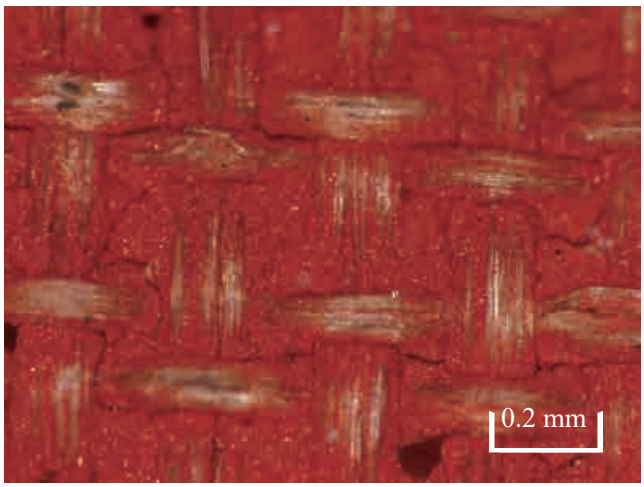

Fig.A.1.2.16　顕微鏡写真（16）

Micrograph (16)

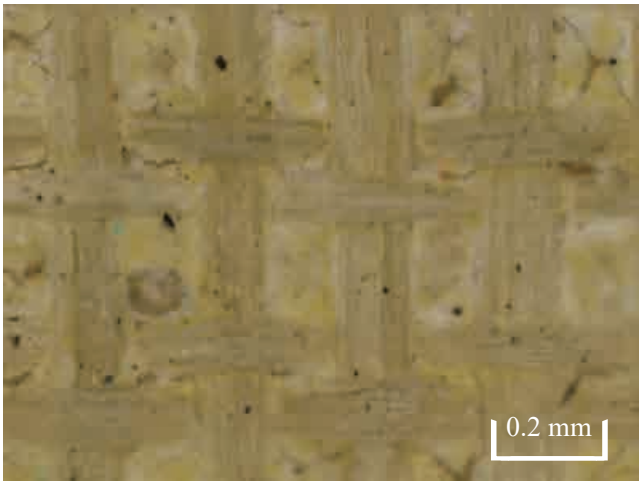

Fig.A.1.2.17　顕微鏡写真（17）

Micrograph (17)

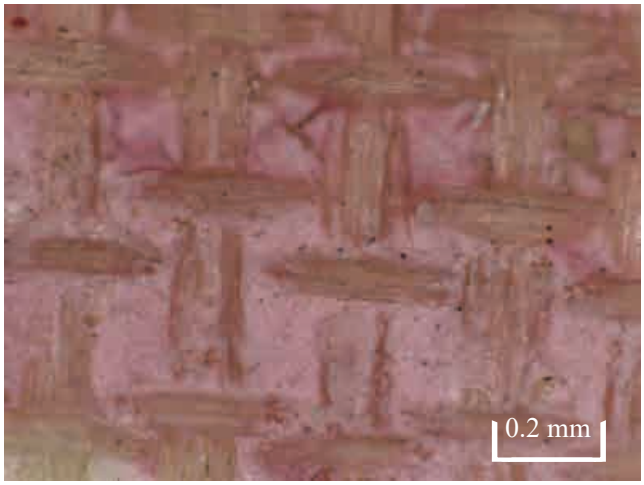

Fig.A.1.2.18　顕微鏡写真（18）

Micrograph (18)

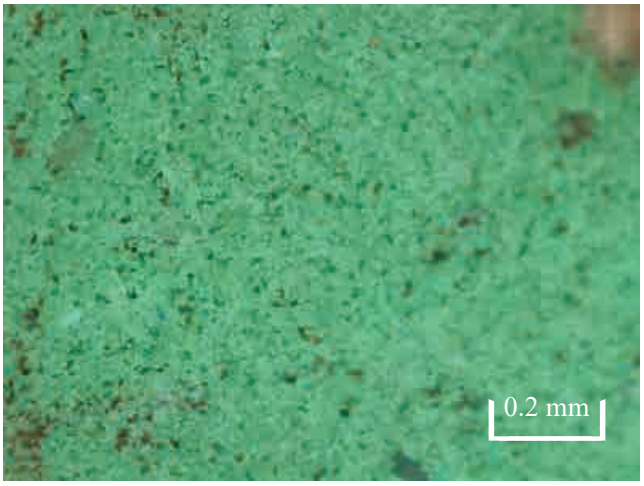

Fig.A.1.2.19　顕微鏡写真 (19)

Micrograph (19)

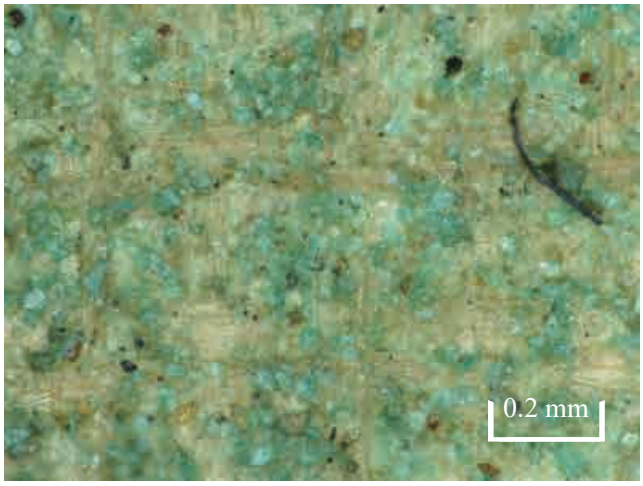

Fig.A.1.2.20　顕微鏡写真 (20)

Micrograph (20)

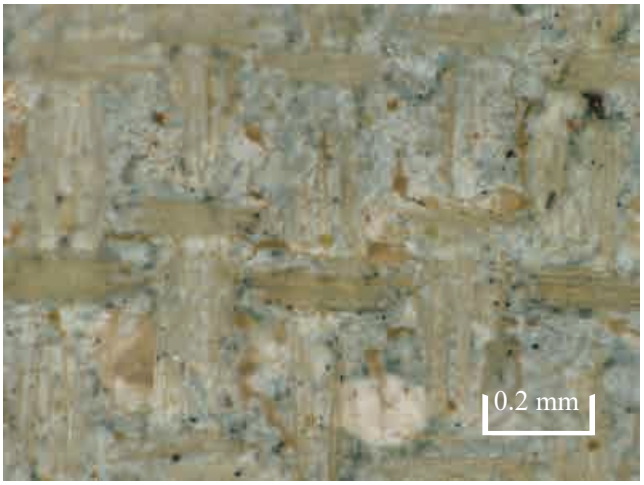

Fig.A.1.2.21　顕微鏡写真 (21)

Micrograph (21)

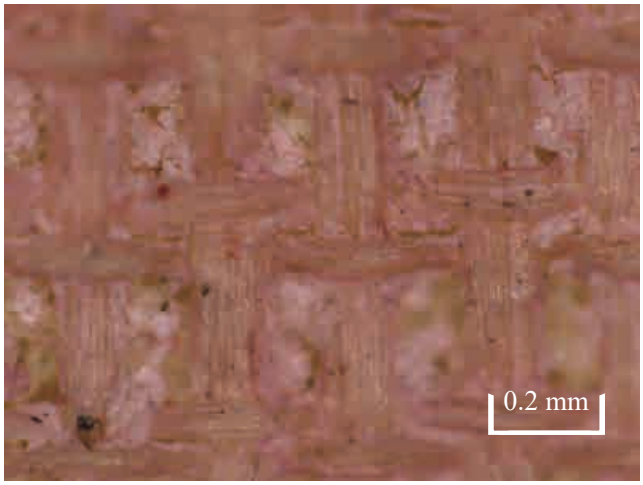

Fig.A.1.2.22　顕微鏡写真 (22)

Micrograph (22)

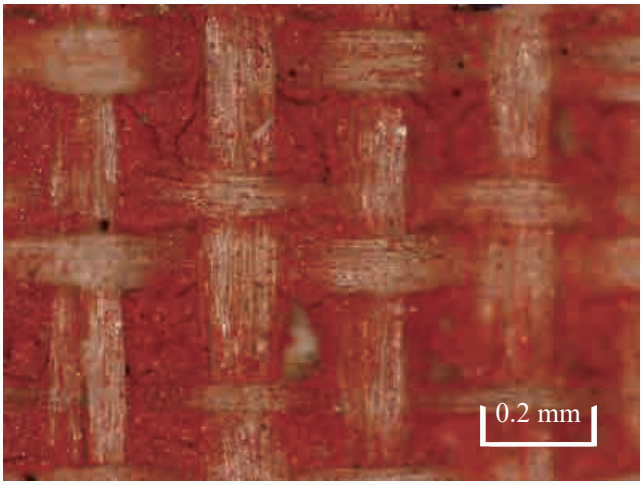

Fig.A.1.2.23　顕微鏡写真 (23)

Micrograph (23)

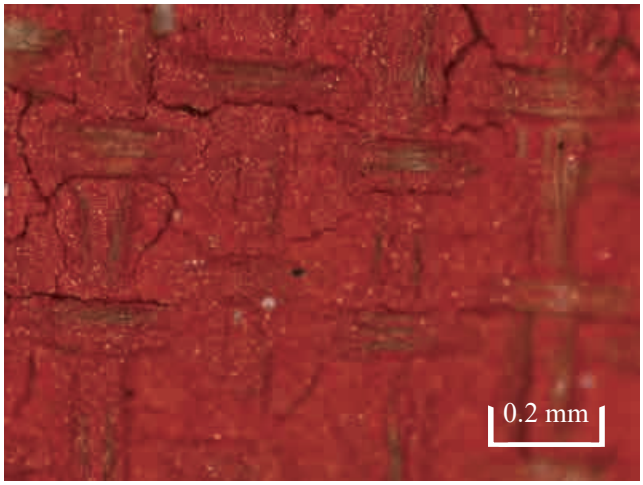

Fig.A.1.2.24　顕微鏡写真 (24)

Micrograph (24)

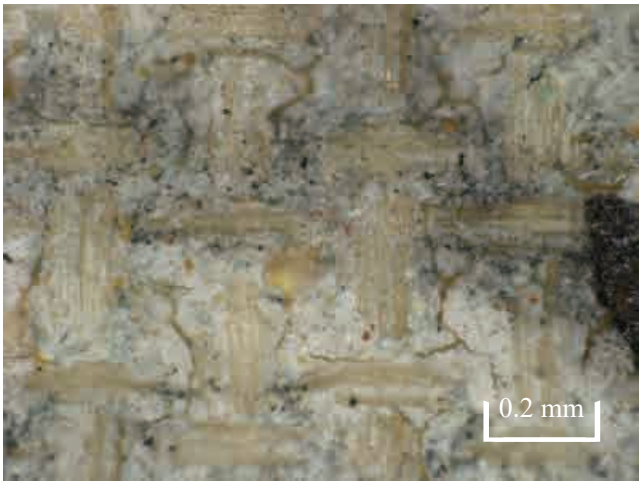

Fig.A.1.2.25　顕微鏡写真（25）

Micrograph (25)

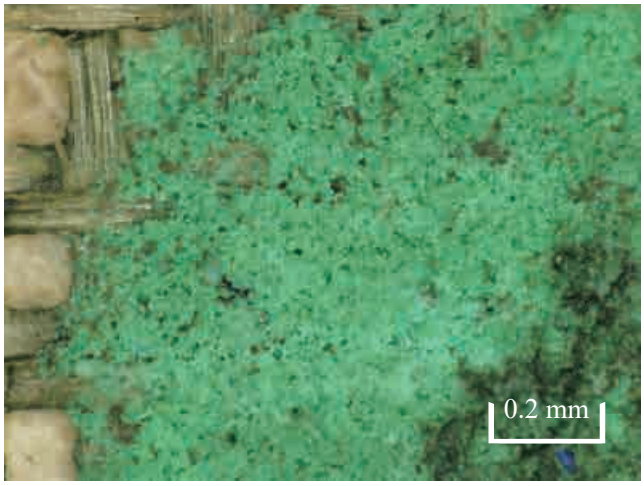

Fig.A.1.2.26　顕微鏡写真（26）

Micrograph (26)

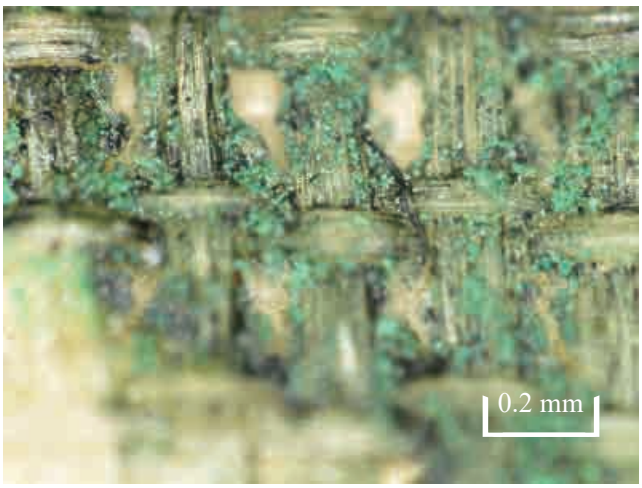

Fig.A.1.2.27　顕微鏡写真（27）

Micrograph (27)

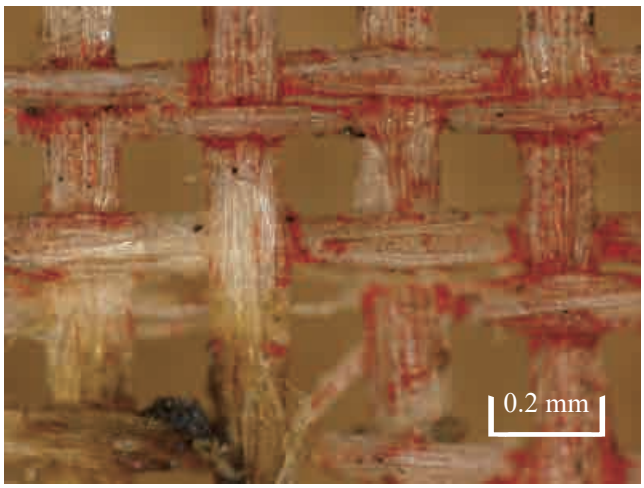

Fig.A.1.2.28　顕微鏡写真（28）

Micrograph (28)

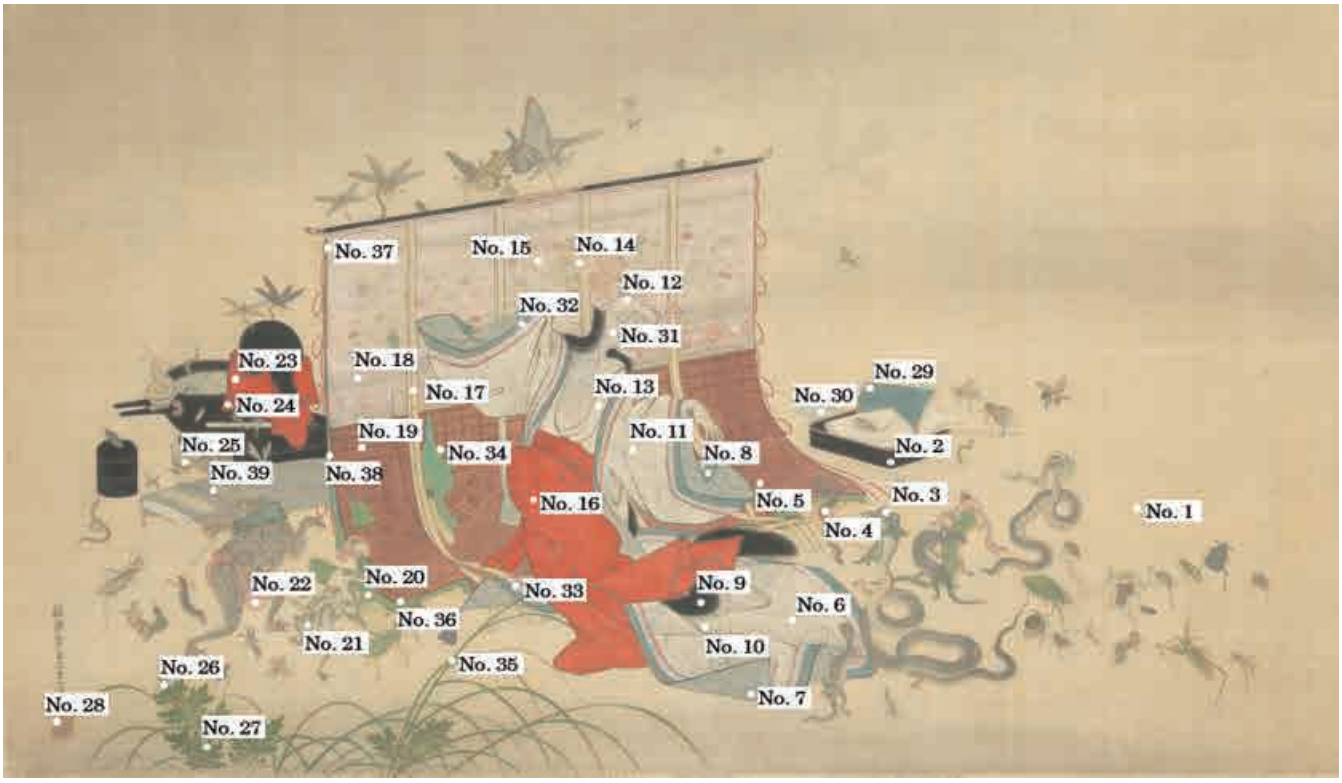

Fig.A.1.3　部分写真撮影箇所（本紙裏面）

Points where micrographs were taken (verso of the artwork)

使用機器	デジタルカメラ（OLYMPUS DIGITAL CAMERA　TG-4、オリンパス社製）
ピクセル数	1920×1280
画像フォーマット	JPEG
Apparatus	Digital camera (OLYMPUS DIGITAL CAMERA TG-4, OLYMPUS CORPORATION)
Image	1920×1280
Image format	JPEG

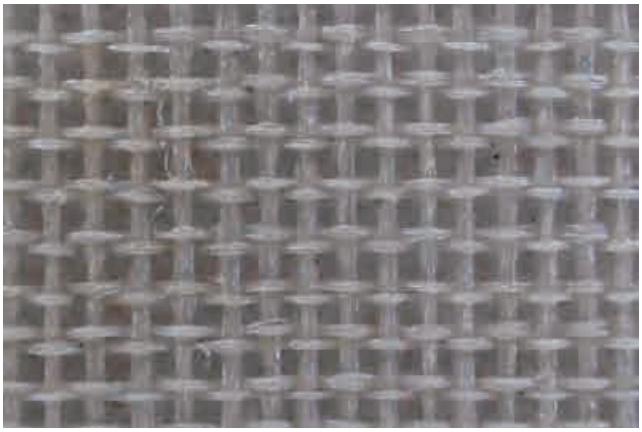

Fig.A.1.3.1　部分写真（1）

Photograph of detail (1)

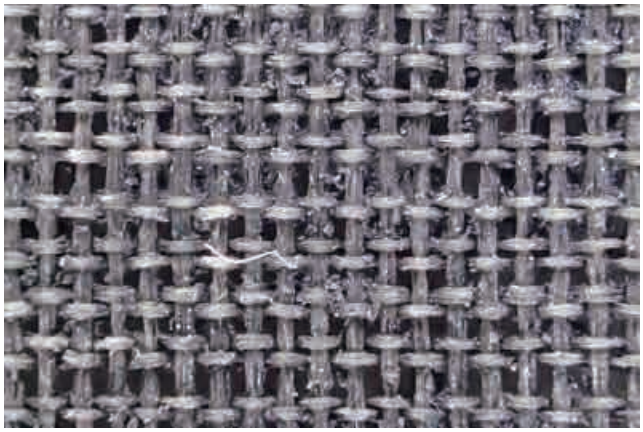

Fig.A.1.3.2　部分写真（2）

Photograph of detail (2)

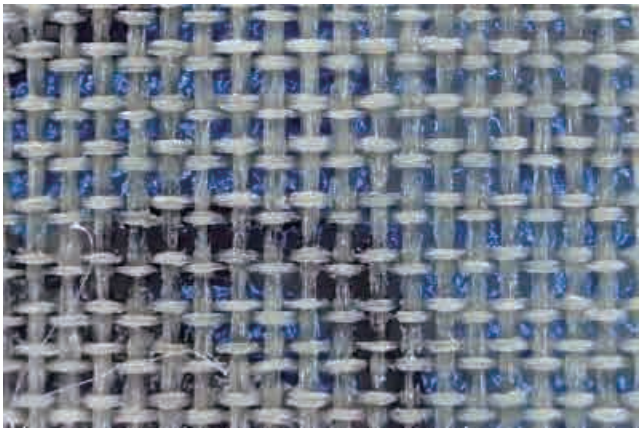

Fig.A.1.3.3　部分写真（3）

Photograph of detail (3)

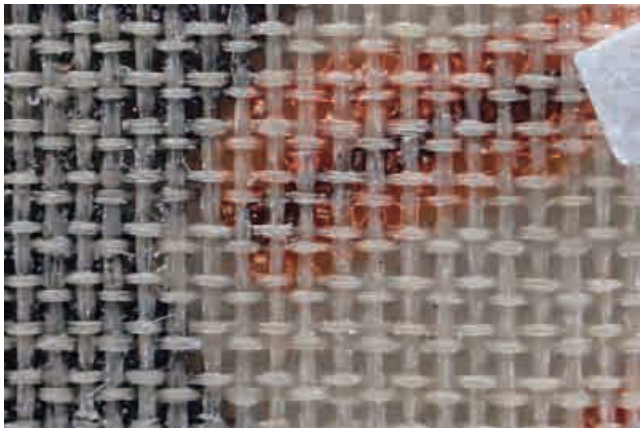

Fig.A.1.3.4　部分写真（4）

Photograph of detail (4)

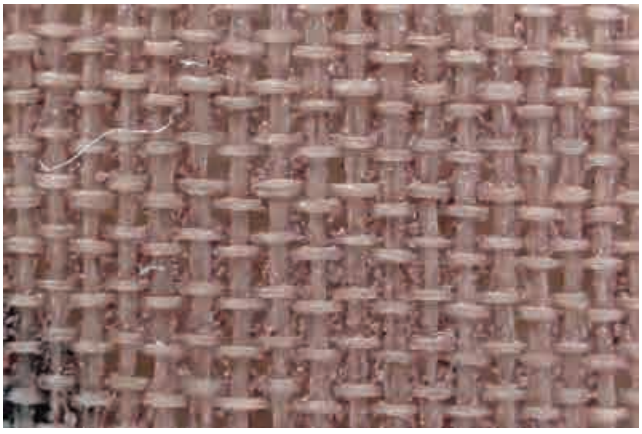

Fig.A.1.3.5　部分写真（5）

Photograph of detail (5)

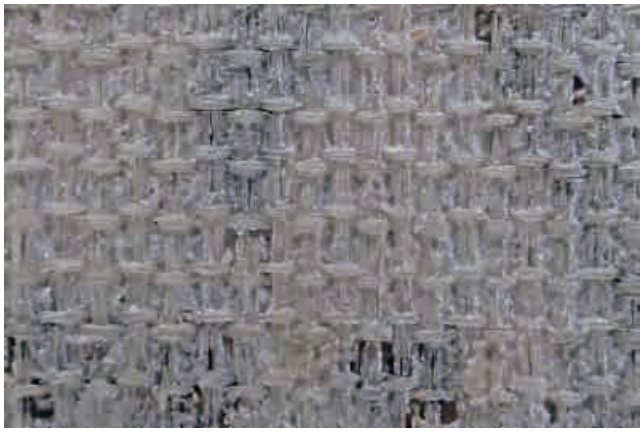

Fig.A.1.3.6　部分写真（6）

Photograph of detail (6)

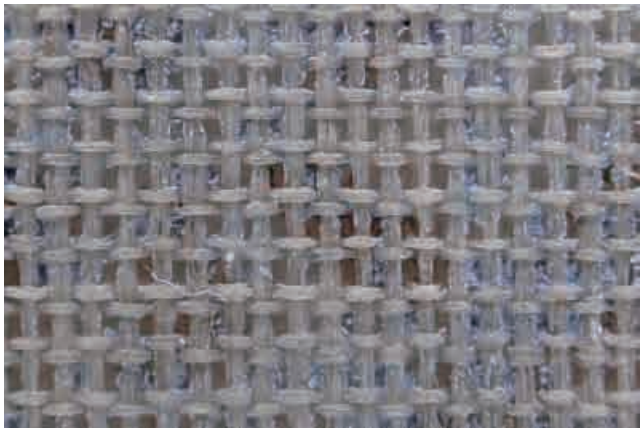

Fig.A.1.3.7　部分写真（7）

Photograph of detail (7)

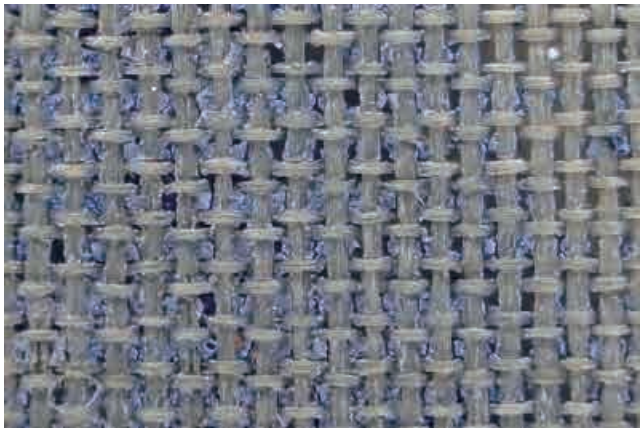

Fig.A.1.3.8　部分写真（8）

Photograph of detail (8)

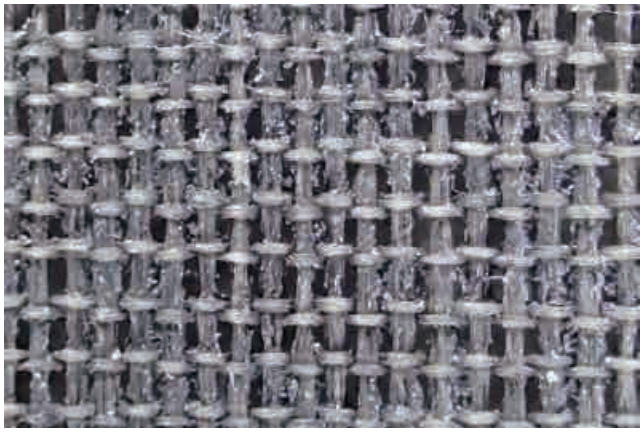

Fig.A.1.3.9　部分写真（9）

Photograph of detail (9)

Fig.A.1.3.10　部分写真（10）

Photograph of detail (10)

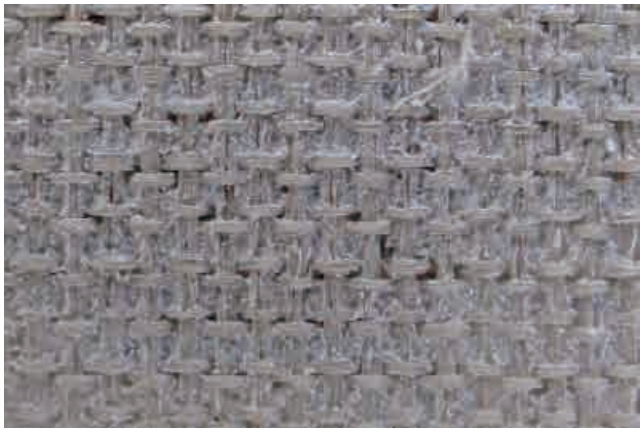

Fig.A.1.3.11　部分写真（11）

Photograph of detail (11)

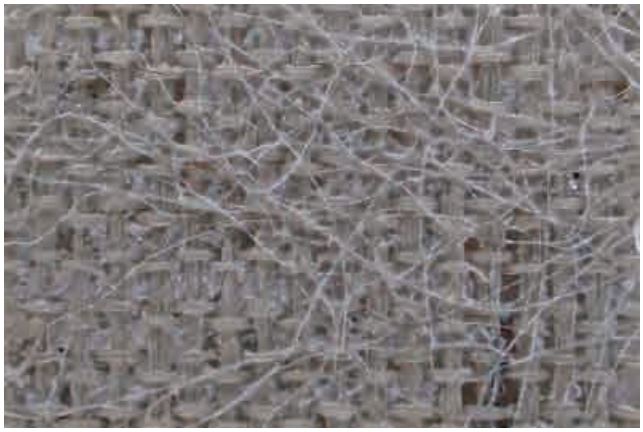

Fig.A.1.3.12　部分写真（12）

Photograph of detail (12)

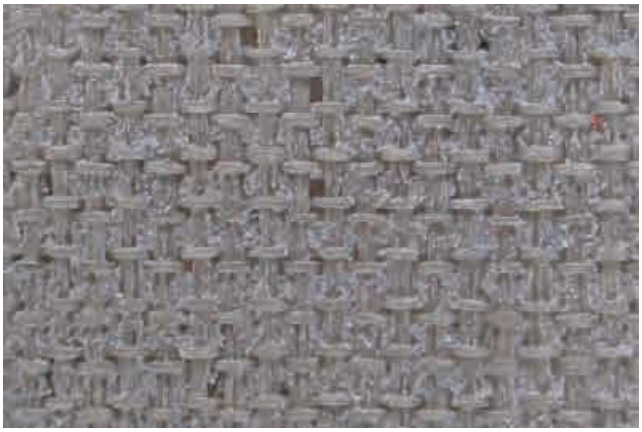

Fig.A.1.3.13　部分写真（13）

Photograph of detail (13)

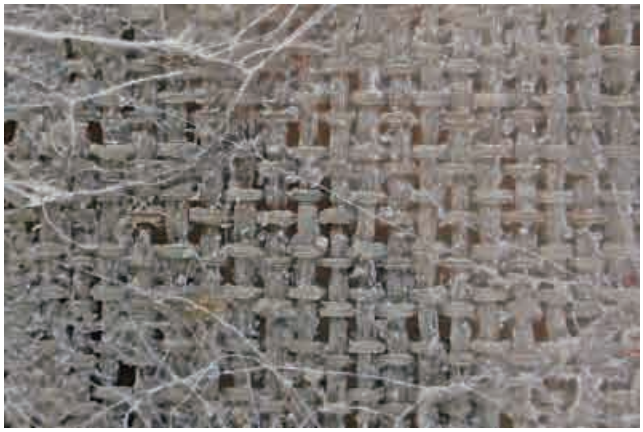

Fig.A.1.3.14　部分写真（14）

Photograph of detail (14)

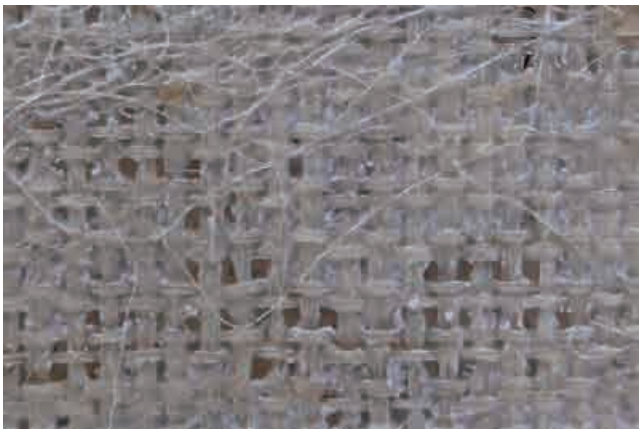

Fig.A.1.3.15　部分写真（15）

Photograph of detail (15)

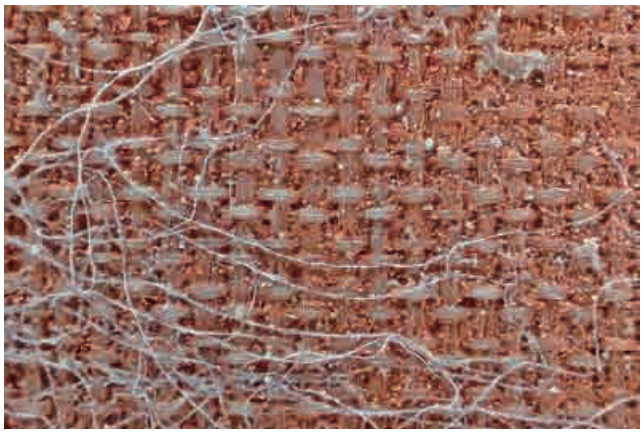

Fig.A.1.3.16　部分写真（16）

Photograph of detail (16)

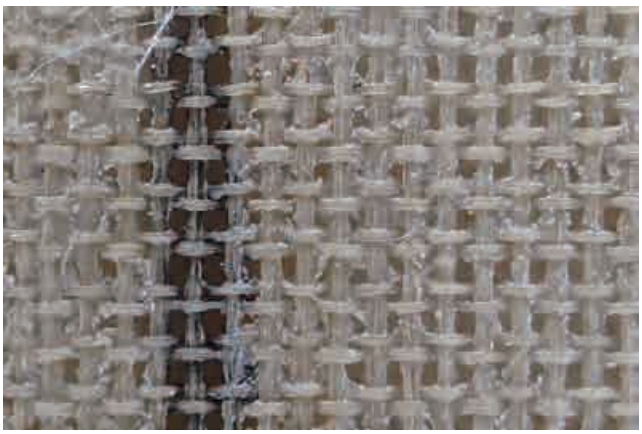

Fig.A.1.3.17　部分写真（17）

Photograph of detail (17)

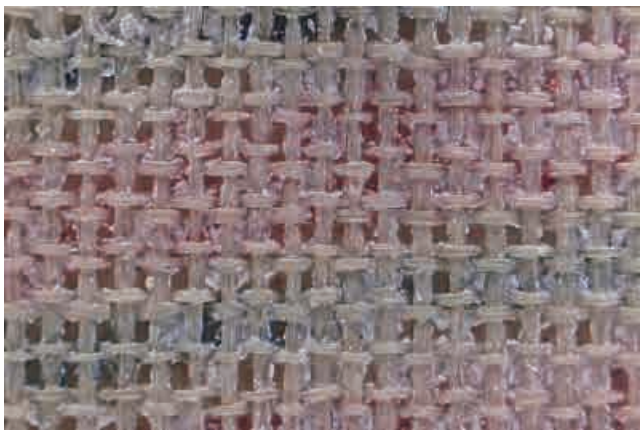

Fig.A.1.3.18　部分写真（18）

Photograph of detail (18)

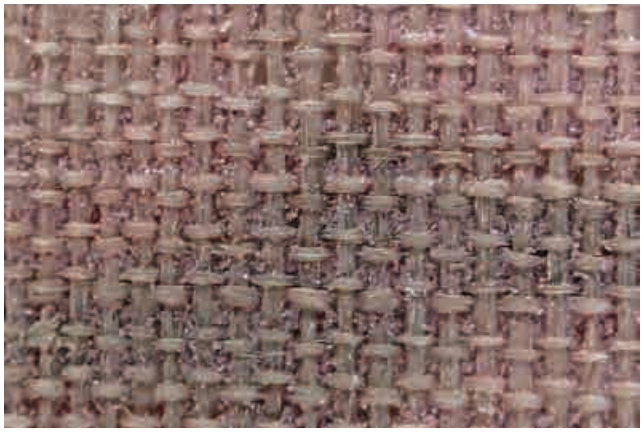

Fig.A.1.3.19　部分写真（19）

Photograph of detail (19)

Fig.A.1.3.20　部分写真（20）

Photograph of detail (20)

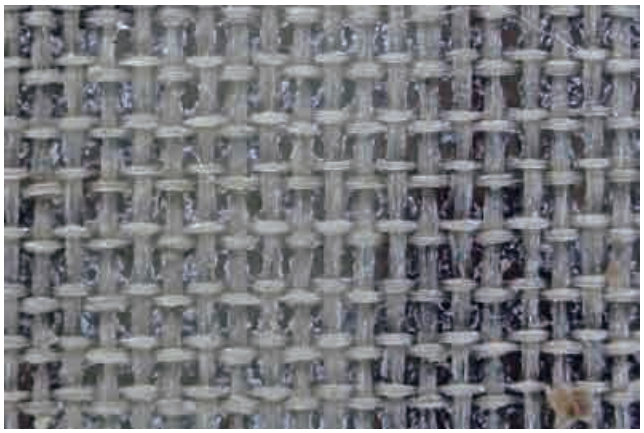

Fig.A.1.3.21　部分写真（21）

Photograph of detail (21)

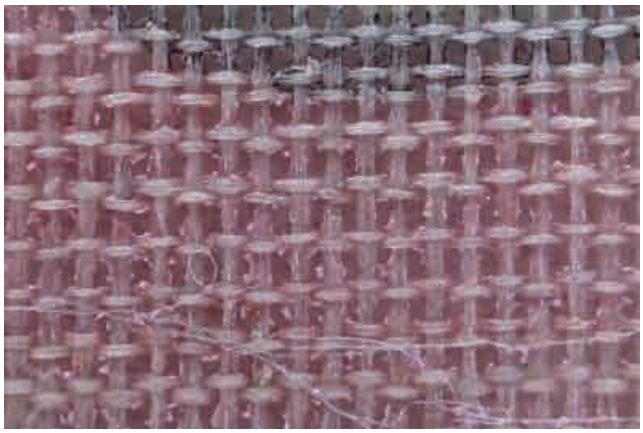

Fig.A.1.3.22　部分写真（22）

Photograph of detail (22)

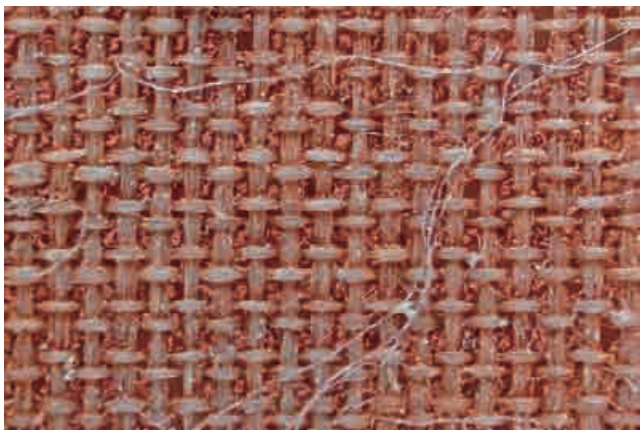

Fig.A.1.3.23　部分写真（23）

Photograph of detail (23)

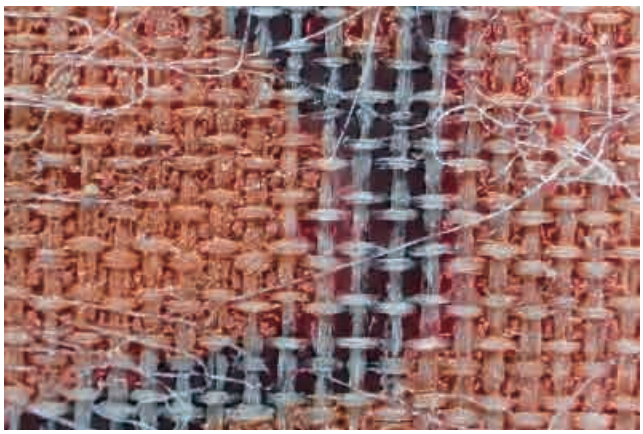

Fig.A.1.3.24　部分写真（24）

Photograph of detail (24)

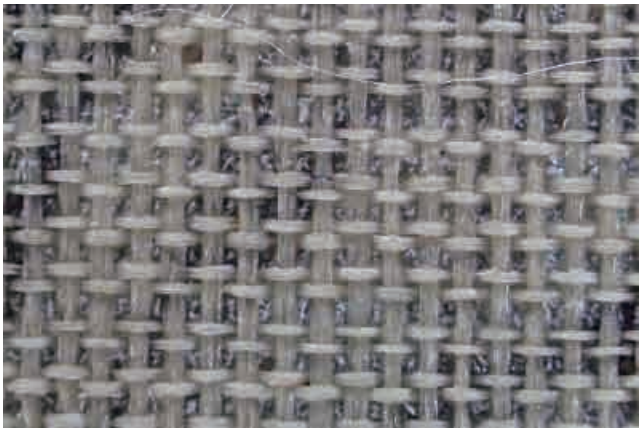

Fig.A.1.3.25　部分写真 (25)

Photograph of detail (25)

Fig.A.1.3.26　部分写真 (26)

Photograph of detail (26)

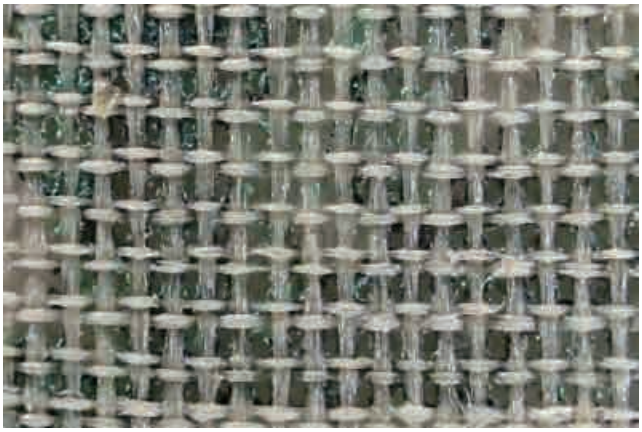

Fig.A.1.3.27　部分写真 (27)

Photograph of detail (27)

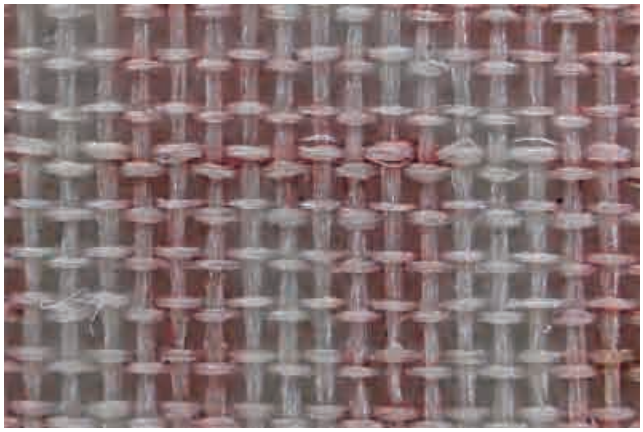

Fig.A.1.3.28　部分写真 (28)

Photograph of detail (28)

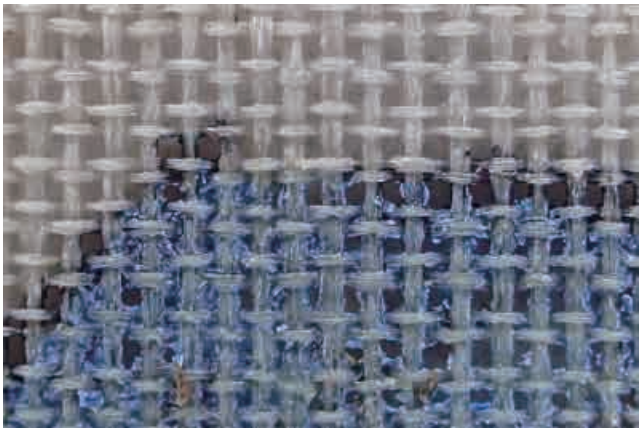

Fig.A.1.3.29　部分写真 (29)

Photograph of detail (29)

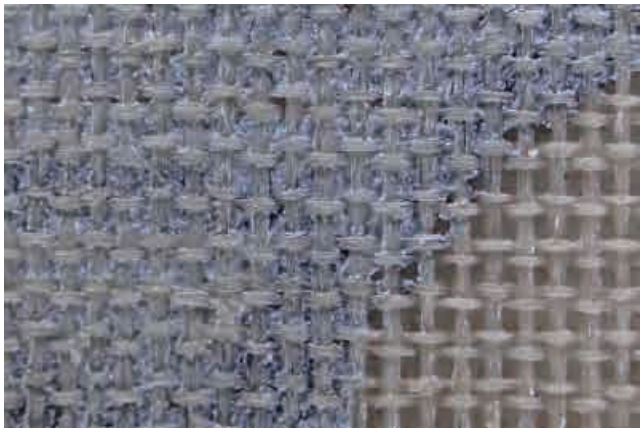

Fig.A.1.3.30　部分写真 (30)

Photograph of detail (30)

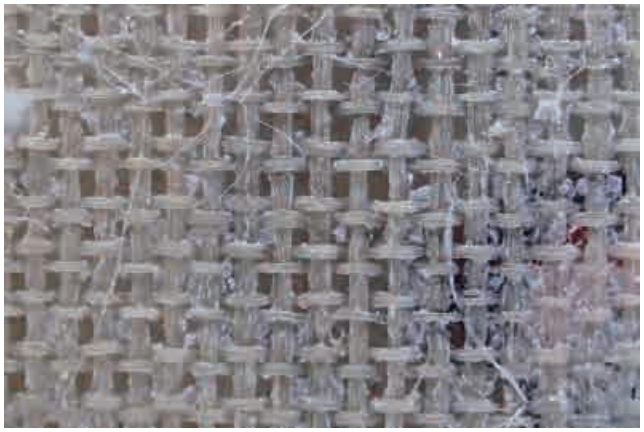

Fig.A.1.3.31　部分写真 (31)

Photograph of detail (31)

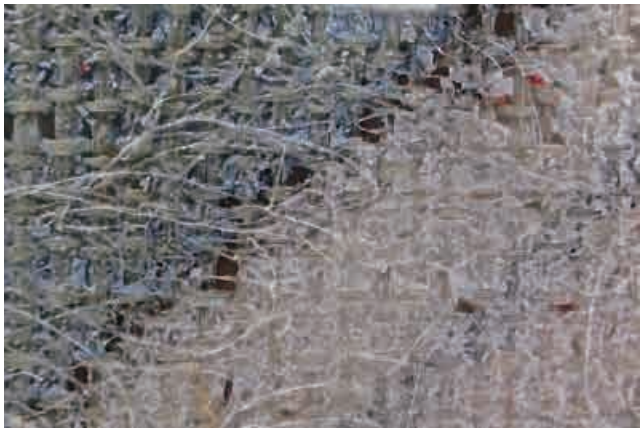

Fig.A.1.3.32　部分写真 (32)

Photograph of detail (32)

Fig.A.1.3.33　部分写真 (33)

Photograph of detail (33)

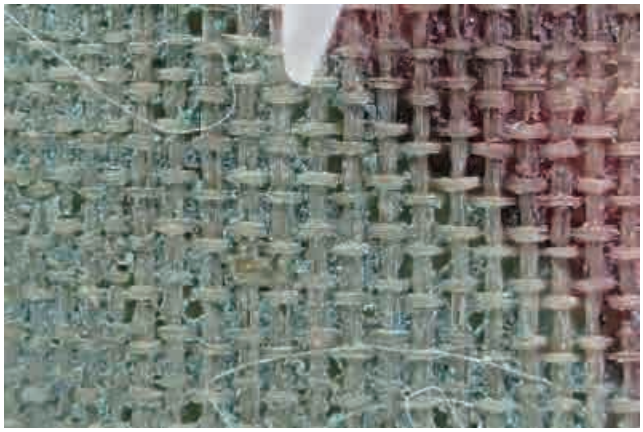

Fig.A.1.3.34　部分写真 (34)

Photograph of detail (34)

Fig.A.1.3.35　部分写真 (35)

Photograph of detail (35)

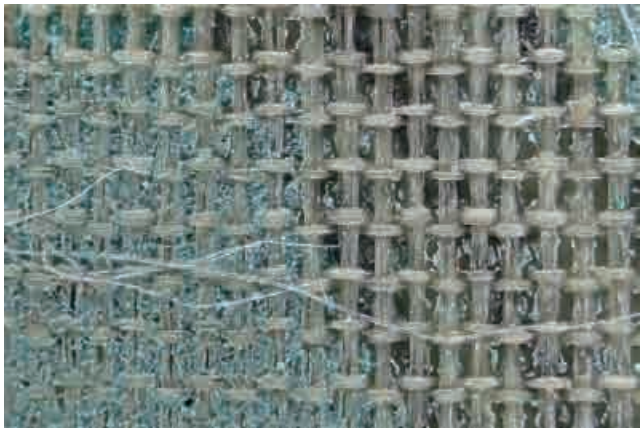

Fig.A.1.3.36　部分写真 (36)

Photograph of detail (36)

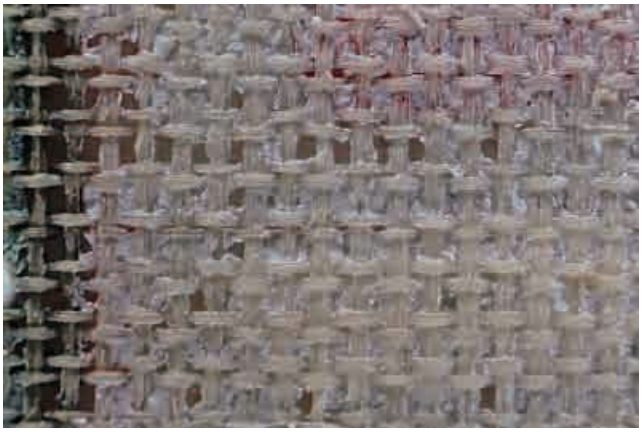

Fig.A.1.3.37　部分写真 (37)

Photograph of detail (37)

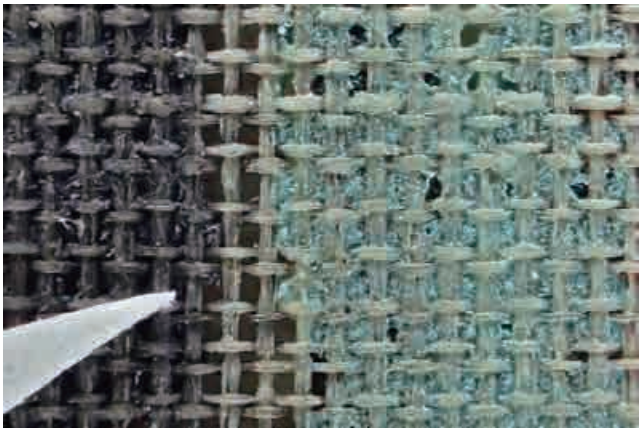

Fig.A.1.3.38　部分写真 (38)

Photograph of detail (38)

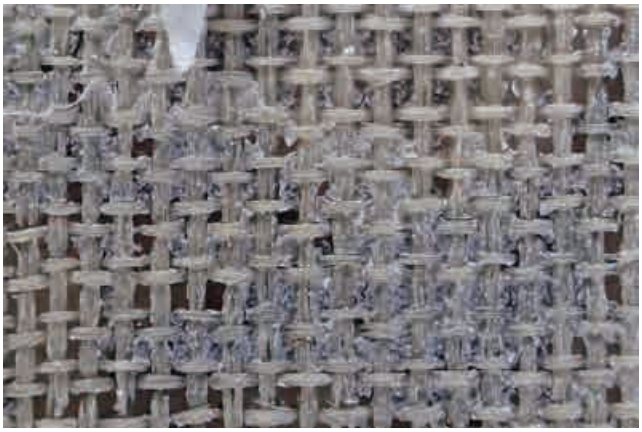

Fig.A.1.3.39　部分写真 (39)

Photograph of detail (39)

Fig.A.1.4　顕微鏡写真撮影箇所（本紙裏面）
Points where micrographs were taken (verso of the artwork)

使用機器	デジタルマイクロスコープ（ShuttlePix P-400R、ニコンインステック社製）
ピクセル数	1600×1200
画像フォーマット	JPEG
Apparatus	Digital microscope (ShuttlePix P-400R, Nikon Instech)
Image	1600×1200
Image format	JPEG

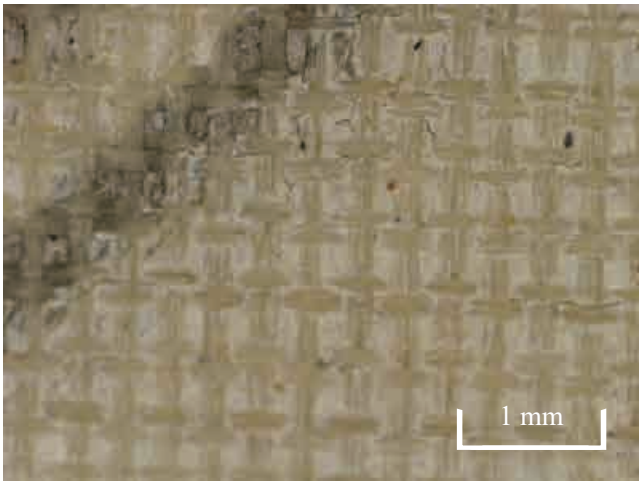

Fig.A.1.4.1　顕微鏡写真（1）

Micrograph (1)

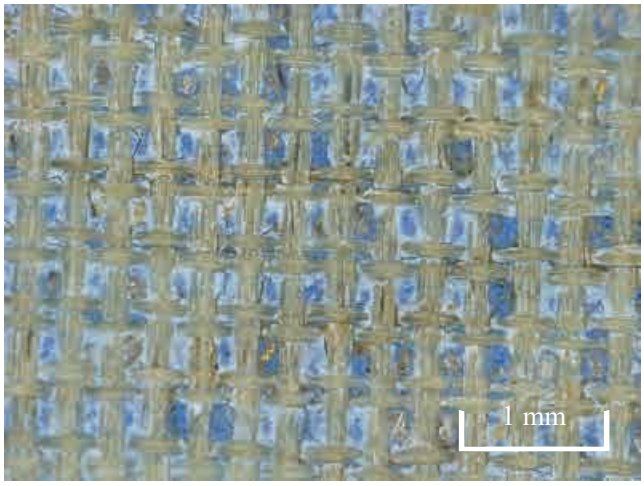

Fig.A.1.4.2　顕微鏡写真（2）

Micrograph (2)

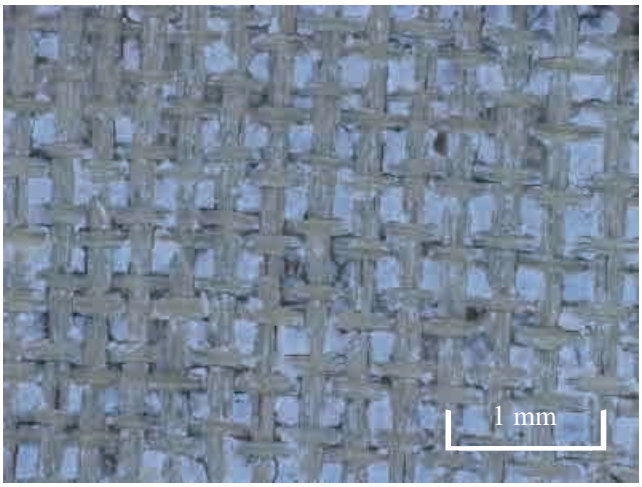

Fig.A.1.4.3　顕微鏡写真（3）

Micrograph (3)

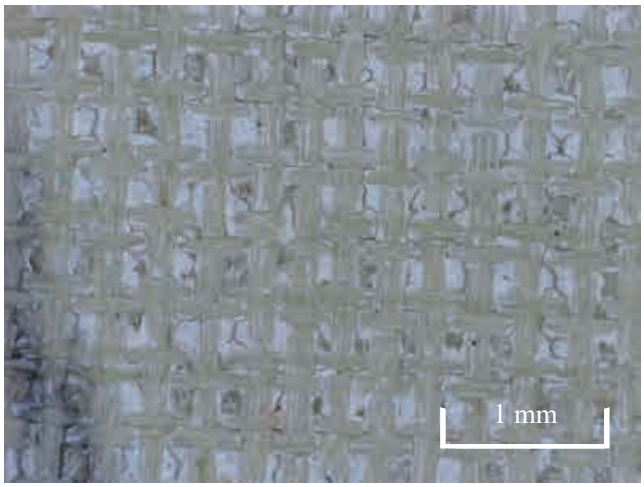

Fig.A.1.4.4　顕微鏡写真（4）

Micrograph (4)

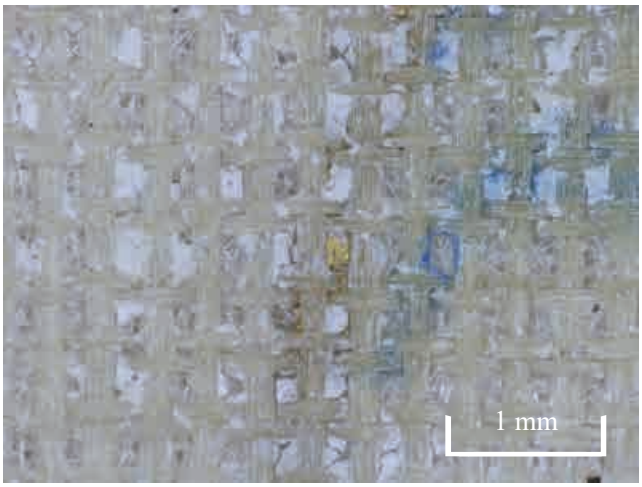

Fig.A.1.4.5　顕微鏡写真（5）

Micrograph (5)

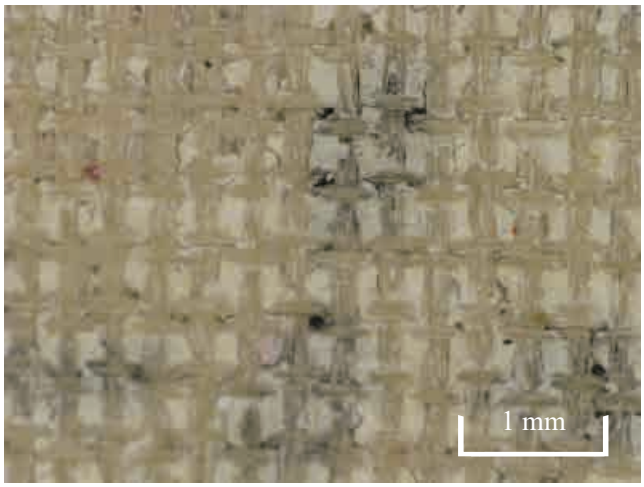

Fig.A.1.4.6　顕微鏡写真（6）

Micrograph (6)

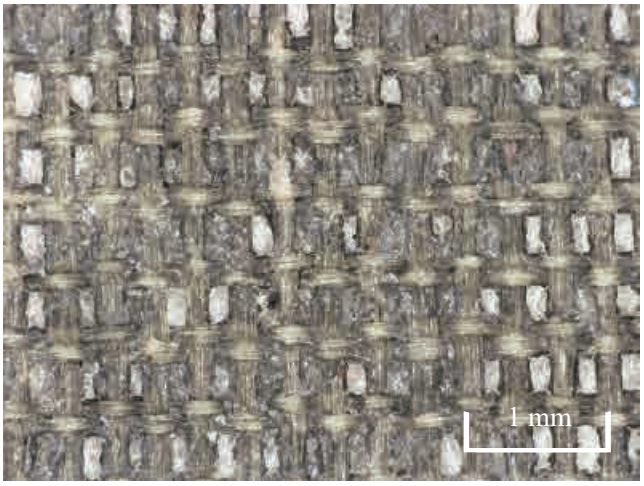

Fig.A.1.4.7　顕微鏡写真（7）

Micrograph (7)

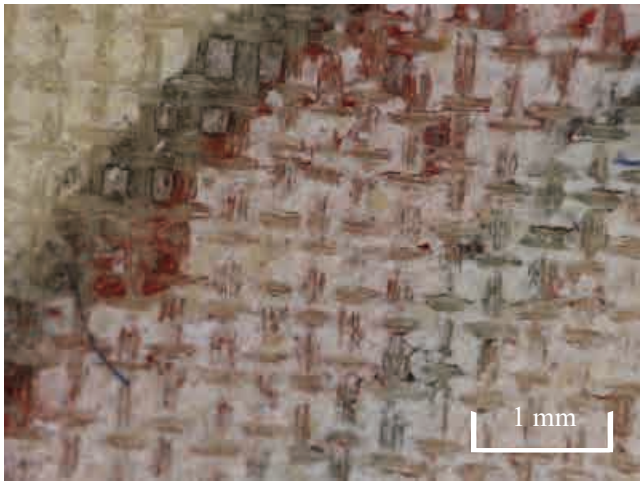

Fig.A.1.4.8　顕微鏡写真（8）

Micrograph (8)

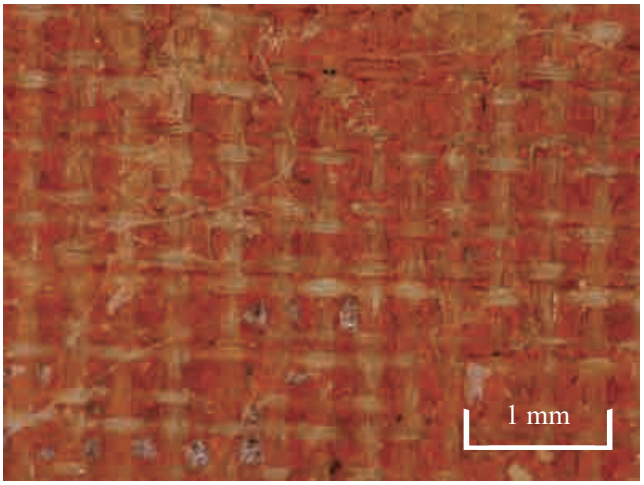

Fig.A.1.4.9　顕微鏡写真（9）

Micrograph (9)

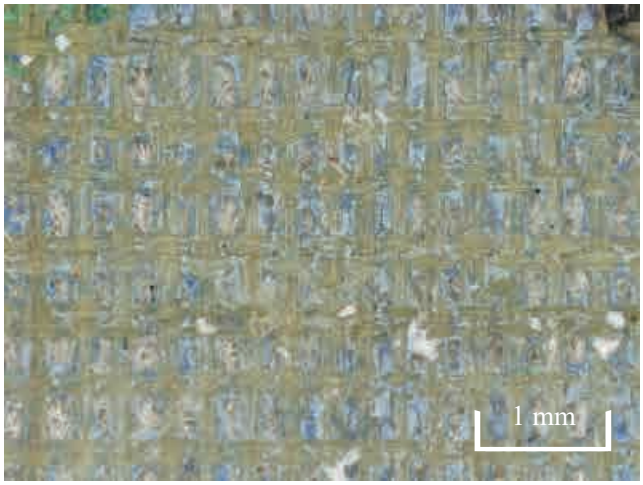

Fig.A.1.4.10　顕微鏡写真（10）

Micrograph (10)

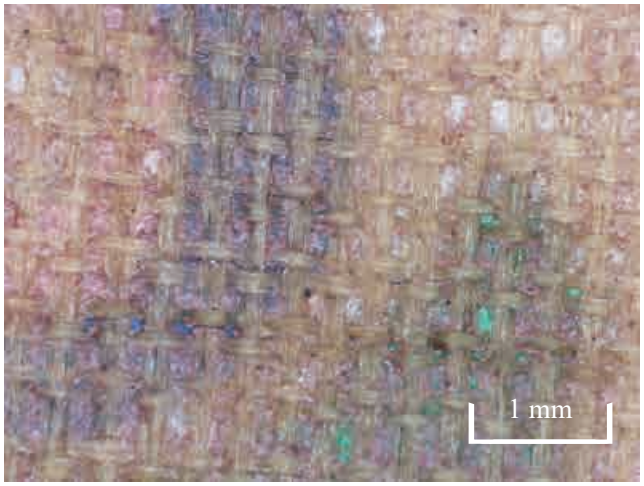

Fig.A.1.4.11　顕微鏡写真（11）

Micrograph (11)

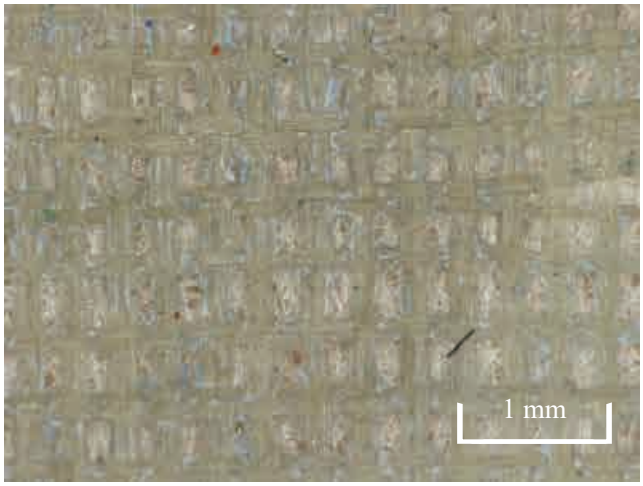

Fig.A.1.4.12　顕微鏡写真（12）

Micrograph (12)

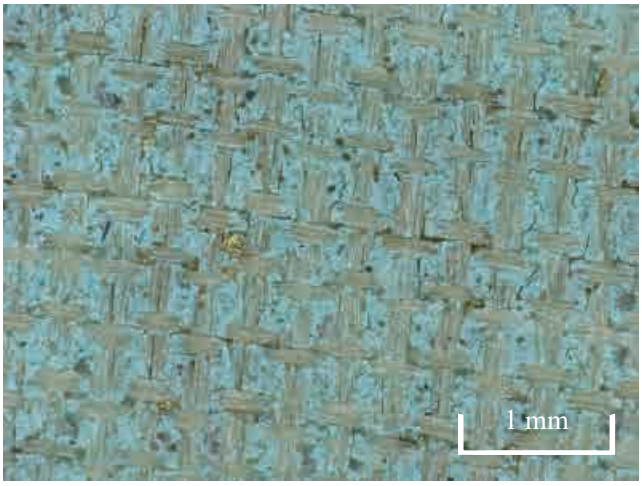

Fig.A.1.4.13　顕微鏡写真（13）

Micrograph (13)

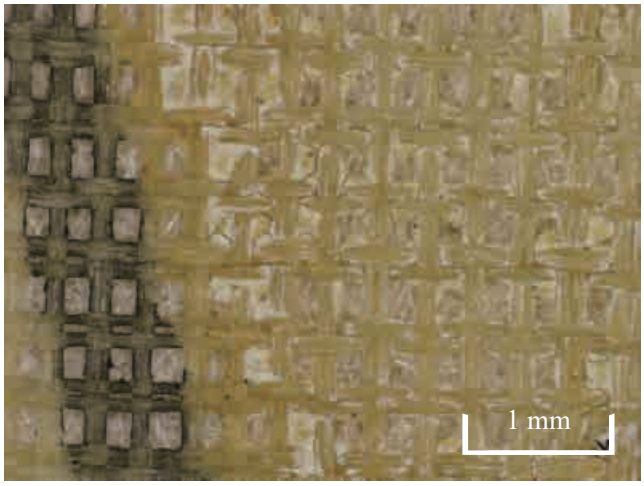

Fig.A.1.4.14　顕微鏡写真（14）

Micrograph (14)

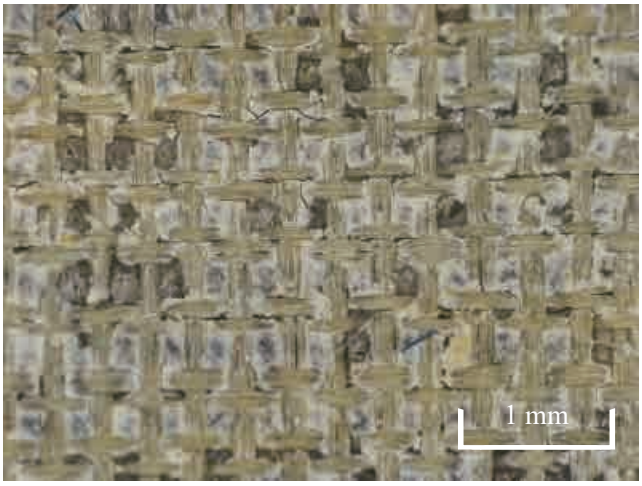

Fig.A.1.4.15　顕微鏡写真（15）

Micrograph (15)

Fig.A.1.4.16　顕微鏡写真（16）

Micrograph (16)

Fig.A.1.5　本紙裏面（肌裏紙除去後）

Verso of the artwork (after removal of the first lining paper)

ピクセル数	16894×12058
画像フォーマット	Tiff
Image	16894×12058
Image format	Tiff

Fig.A.1.6　近赤外線写真（反射光）修復後

Reflected near infrared photograph, after restoration

イメージセンサー	CCD センサー　フルフレーム、感度領域：800 ~ 1100nm（NIR）
ピクセル数	4000×2315
画像フォーマット	Tiff
Image sensor	CCD Sensor, Full-Frame, Sensitivity: 800 ~ 1100nm (NIR)
Image	4000×2315
Image format	Tiff

Fig.A.1.7　近赤外線写真（反射光）本紙裏面

Reflected near infrared photography, verso of the artwork

イメージセンサー	CCD センサー　フルフレーム、感度領域：800 ~ 1100nm（NIR）
ピクセル数	3745×2150
画像フォーマット	Tiff
Image sensor	CCD Sensor, Full-Frame, Sensitivity: 800 ~ 1100nm (NIR)
Image	3745×2150
Image format	Tiff

Fig.A.1.8　補修および補彩を施した箇所（本紙モノクロ画像）
Places infilled and infills with color adjusted (artwork in monochrome)
※該当箇所を赤色で表示　The places are painted in red

付録 2. 蛍光 X 線分析

Appendix 2. X-ray Fluorescence Analysis

測定者：増渕麻里耶
測定補助：橋本広美
監修：加藤雅人、君嶋隆幸、白井啓太、元喜載、小田桃子
分析装置：ハンドヘルド蛍光 X 線分析装置 Oxford X-MET 7500
　　X 線管球（ロジウムターゲット）
　　シリコンドリフトディテクター
　　装置制御用 PDA
測定時間：30 秒
装置ヘッド～試料間距離：約 2 mm
測定範囲：直径約 9 mm
測定位置：Fig.A.2.1

Operator: MASUBUCHI Mariya
Assistant operator: HASHIMOTO Hiromi
Supervisor: KATO Masato, KIMISHIMA Takayuki, SHIRAI Keita, WON Heejae, ODA Momoko
Analytical device: Handheld X-ray Fluorescence Spectrometer Oxford X-MET 7500
　　X-ray tube (rhodium target)
　　Silicon drift detector
　　Controller (PDA)
Measuring time: 30 seconds
Distance between the apparatus and artwork: approximately 2 mm
Measuring area: approximately 9 mm in diameter
Measuring points: Fig.A.2.1

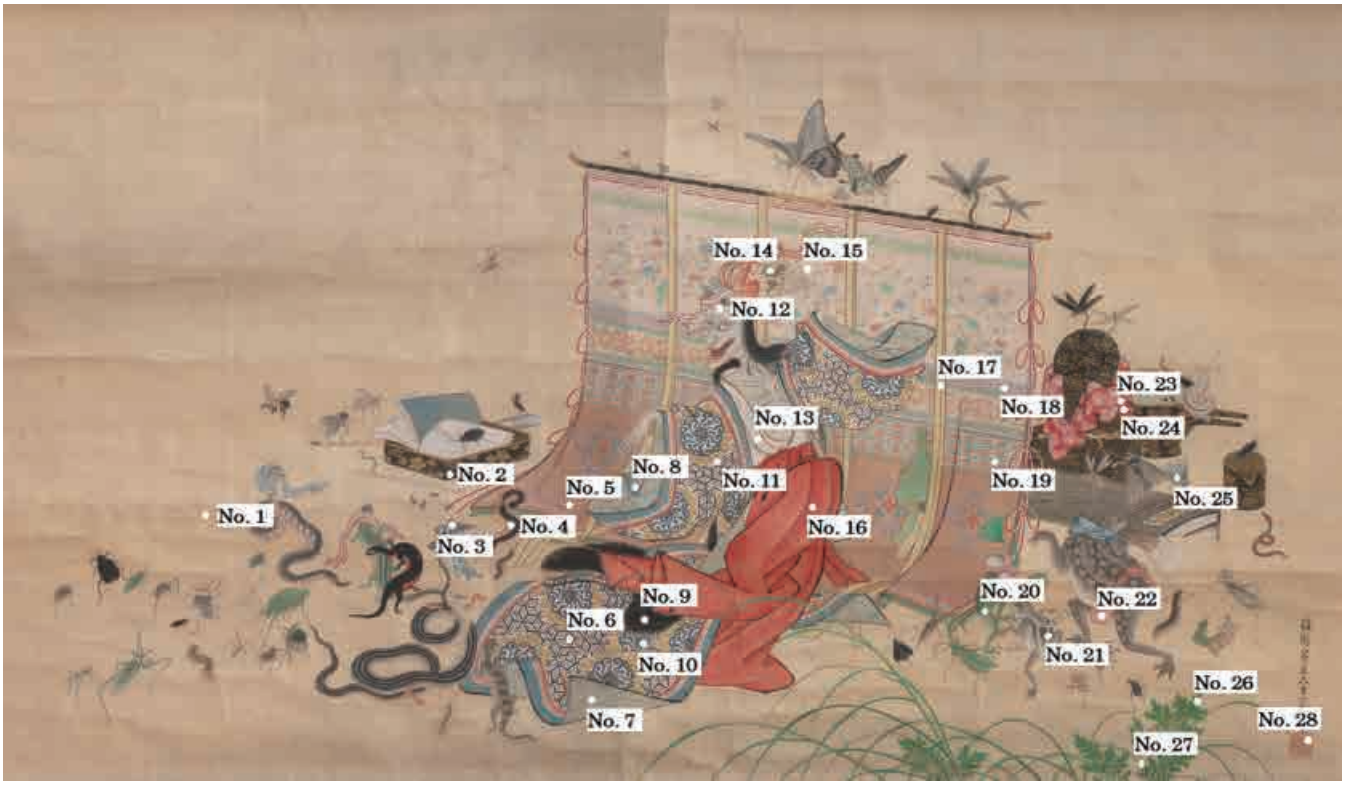

Fig.A.2.1　測定位置
Measuring points

☆: Rh 管球由来のピーク/ Peaks derived from the Rh X-ray tube

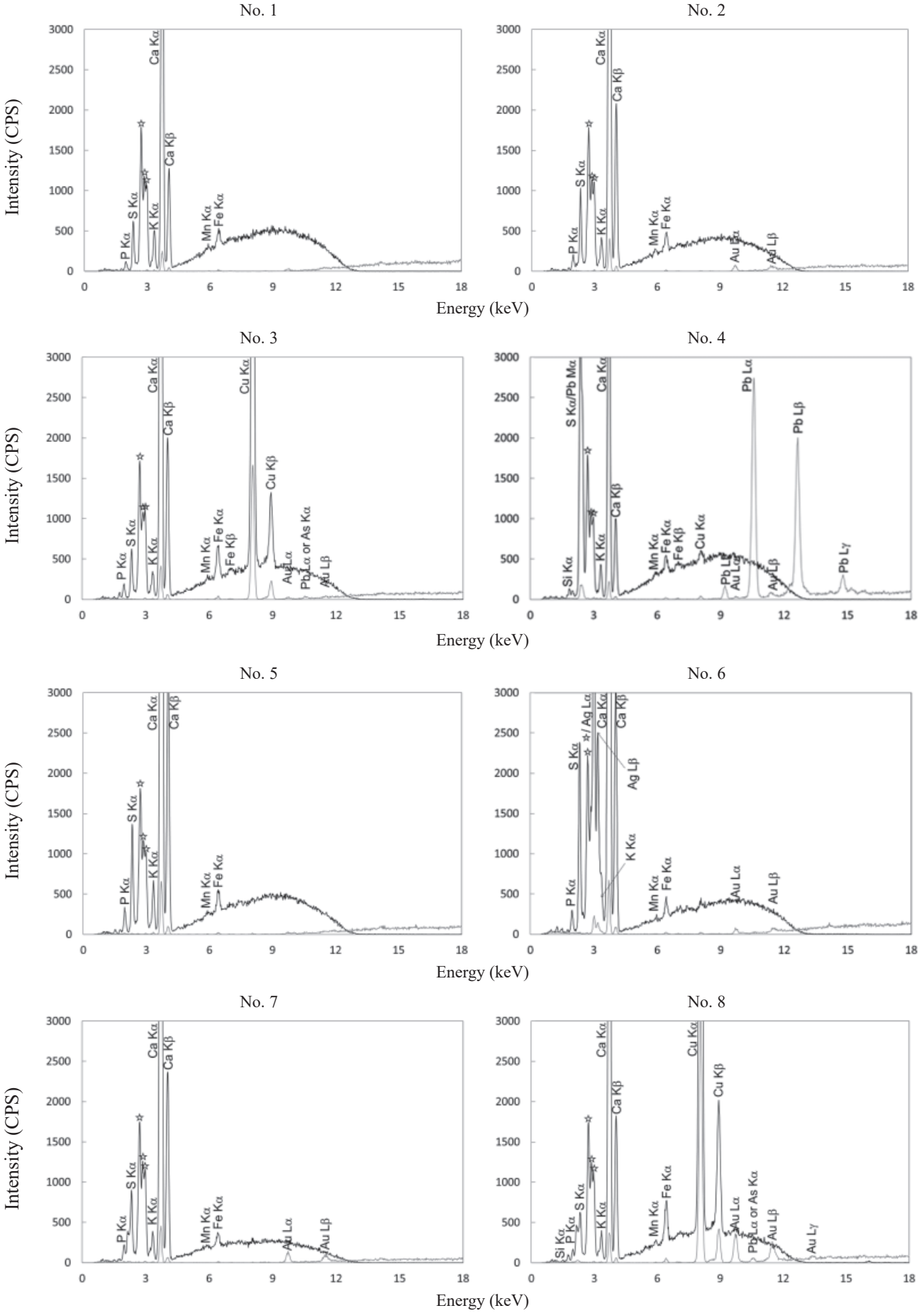

Fig.A.2.2　蛍光 X 線スペクトル　No. 1～No. 8

X-ray Fluorescence Spectra

☆: Rh 管球由来のピーク/ Peaks derived from the Rh X-ray tube

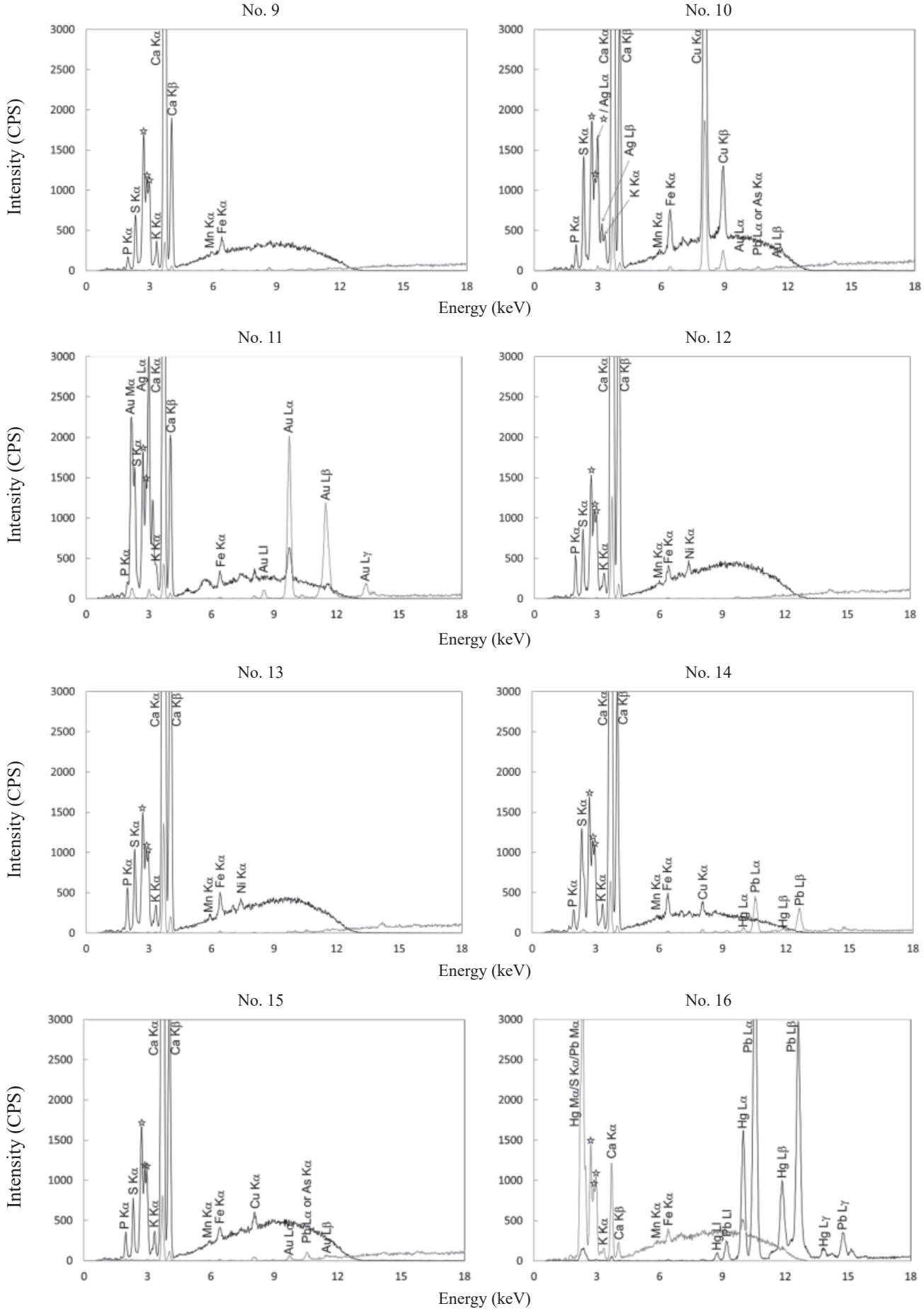

Fig.A.2.3　蛍光 X 線スペクトル　No. 9～No. 16

X-ray Fluorescence Spectra

☆: Rh 管球由来のピーク/ Peaks derived from the Rh X-ray tube

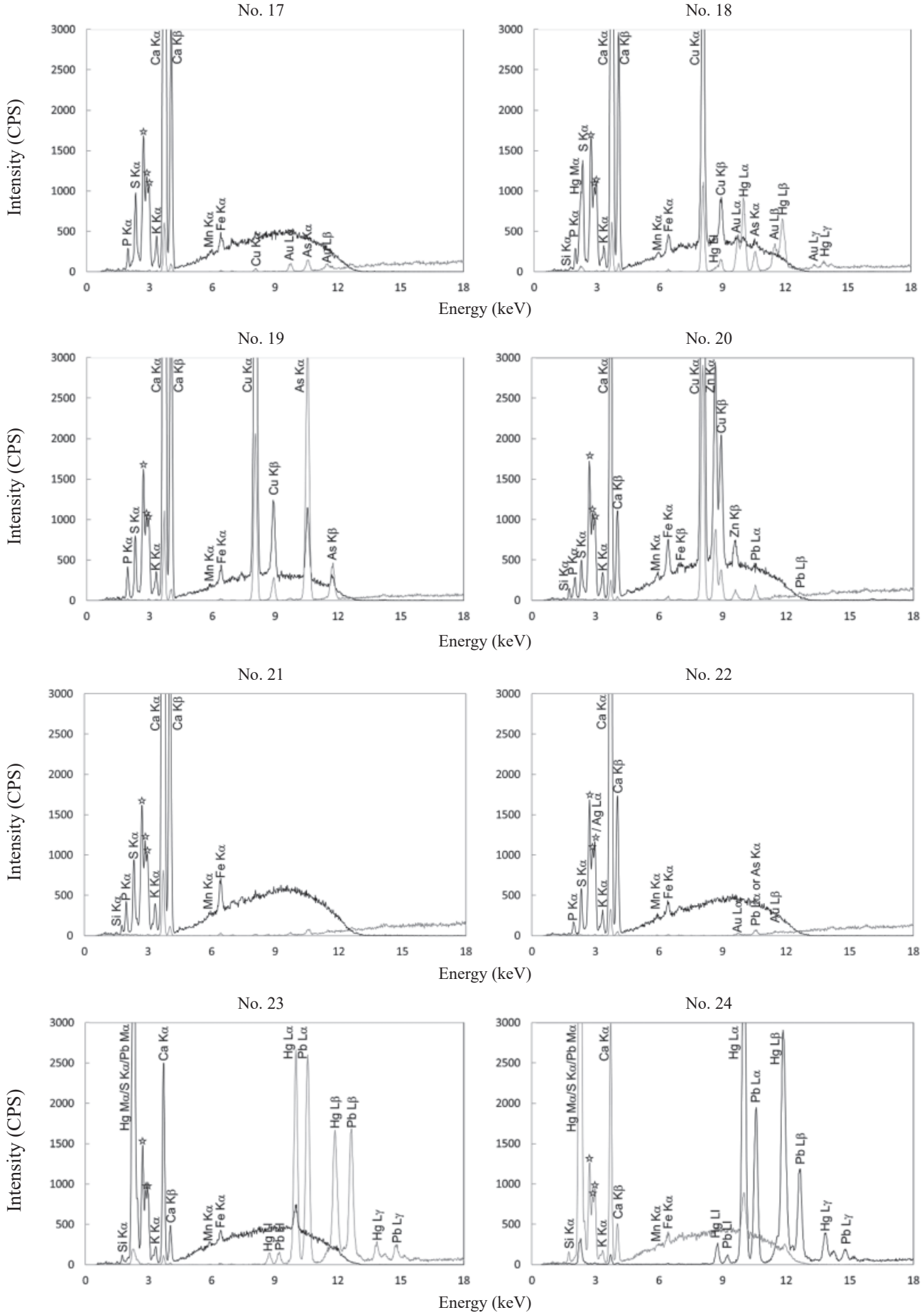

Fig.A.2.4　蛍光 X 線スペクトル　No. 17～No. 24

X-ray Fluorescence Spectra

☆: Rh 管球由来のピーク/ Peaks derived from the Rh X-ray tube

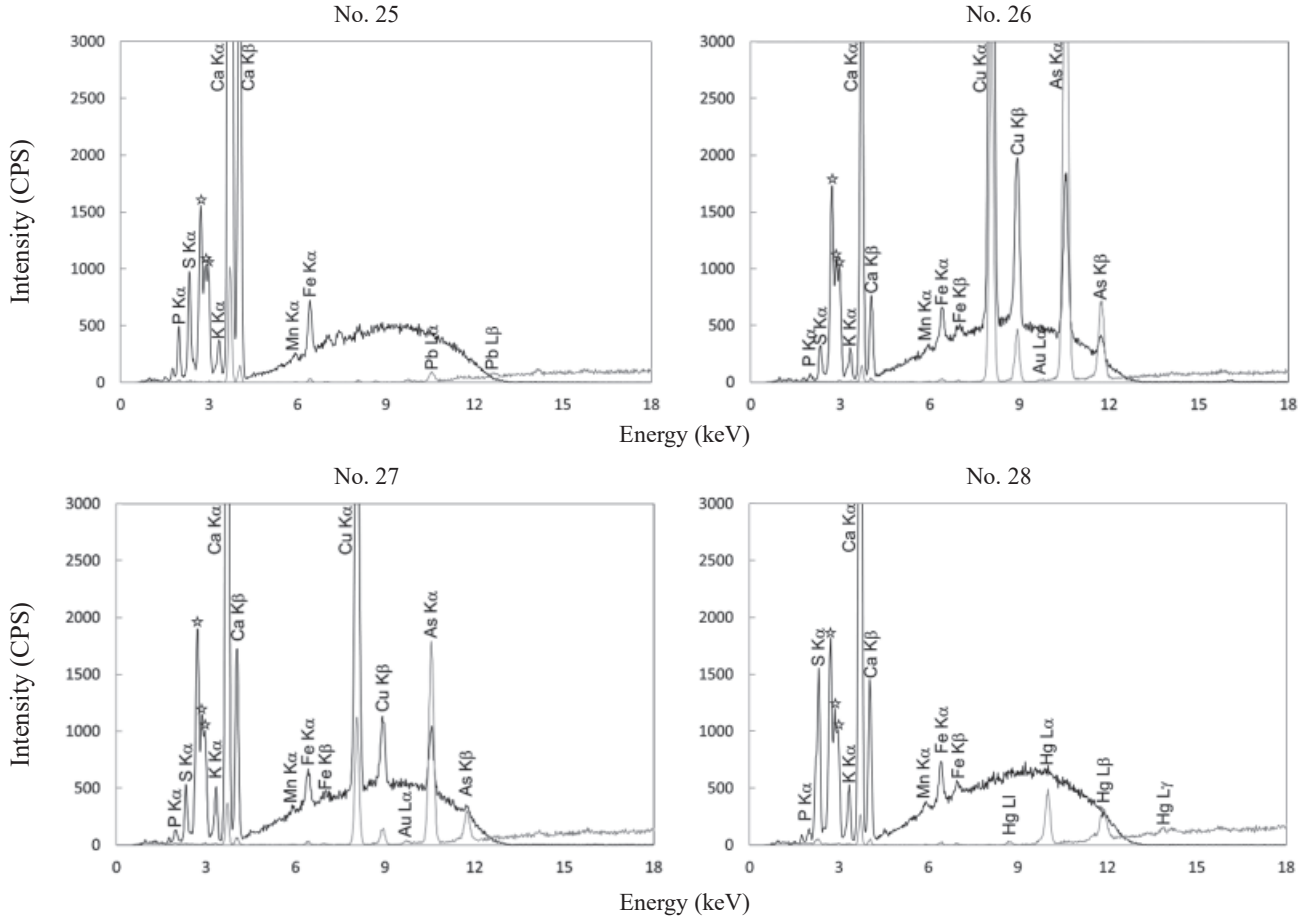

Fig.A.2.5　蛍光 X 線スペクトル　No. 25～No. 28

X-ray Fluorescence Spectra

Table A.2.1　検出された元素および推測される絵具

The detected elements and inferred colorant materials

分析位置 Analysis point	色 Color	検出された元素 Detected elements	推測される絵具* Inferred materials*
No. 1	(本紙料絹) (artwork-silk)	P, S, K, Ca, Mn, Fe	- -
No. 2	黒 Black	P, S, K, Ca*, Mn, Fe, Au	墨 Chinese ink
No. 3	青 Blue	P, S, K, Ca, Mn, Fe, Cu, Au, Pb or As	群青 Azurite
No. 4	黄赤 Yellowish red	Si, S, K, Ca, Mn, Fe, Cu, Au, Pb	鉛丹 Lead pigment
No. 5	薄い紫みの赤 Pale purplish red	P, S, K, Ca, Mn, Fe	染料または胡粉 Natural dye or calcium carbonate (*gofun*)
No. 6	白 White	P, S, K, Ca, Mn, Fe, Ag, Au	胡粉 Calcium carbonate (*gofun*)
No. 7	薄い青 Pale blue	P, S, K, Ca, Mn, Fe, Au	染料 Natural dye
No. 8	青緑 Blue green	Si, P, S, K, Ca, Mn, Fe, Cu, Au, Pb or As	群青 Azurite
No. 9	黒 Black	P, S, K, Ca, Mn, Fe	墨 Chinese ink
No. 10	青緑 Blue green	P, S, K, Ca, Mn, Fe, Cu, Ag, Au, Pb or As	群青 Azurite
No. 11	金 Gold	P, S, K, Ca, Fe, Ag, Au	金泥 Gold paint
No. 12	白 White	P, S, K, Ca, Mn, Fe, Ni	胡粉 Calcium carbonate (*gofun*)
No. 13	白 White	P, S, K, Ca, Mn, Fe, Ni	胡粉 Calcium carbonate (*gofun*)
No. 14	灰みの緑 Grayish green	P, S, K, Ca, Mn, Fe, Cu, Hg, Pb	染料 Natural dye
No. 15	白 White	P, S, K, Ca, Mn, Fe, Cu, Au, Pb or As	胡粉 Calcium carbonate (*gofun*)
No. 16	赤 Red	S, K, Ca, Mn, Fe, Hg, Pb	水銀朱 Vermilion
No. 17	薄い黄 Pale yellow	P, S, K, Ca, Mn, Fe, Cu, As, Au	染料または胡粉 Natural dye or calcium carbonate (*gofun*)
No. 18	桃色 Soft red	Si, P, S, K, Ca, Mn, Fe, Cu, As, Au, Hg	胡粉、水銀朱 Calcium carbonate (*gofun*), vermilion
No. 19	あざやかな緑 Vivid green	P, S, K, Ca, Mn, Fe, Cu, As	緑青 Malachite
No. 20	緑 Green	Si, P, S, K, Ca, Mn, Fe, Cu, Zn, Pb	緑青 Malachite
No. 21	薄い青 Pale blue	Si, P, S, K, Ca, Mn, Fe	染料 Natural dye
No. 22	薄い赤 Pale red	P, S, K, Ca, Mn, Fe, Ag, Au, Pb or As	鉛丹または朱 Lead pigment or vermilion
No. 23	薄い赤 Pale red	Si, S, K, Ca, Mn, Fe, Hg, Pb	水銀朱 Vermilion
No. 24	赤 Red	Si, S, K, Ca, Mn, Fe, Hg, Pb	水銀朱 Vermilion
No. 25	薄い青 Pale blue	P, S, K, Ca, Mn, Fe, Pb	染料 Natural dye
No. 26	あざやかな緑 Vivid green	P, S, K, Ca, Mn, Fe, Cu, As, Au	緑青 Malachite
No. 27	くすんだ緑 Dull green	P, S, K, Ca, Mn, Fe, Cu, As, Au	緑青 Malachite
No. 28	赤 Red	P, S, K, Ca, Mn, Fe, Hg	水銀朱 Vermilion

*「検出された元素」欄内の元素の内、特に下線を引いた元素をもとに絵具を推定した。

* Estimated especially based on the elements underlined in the column of “Detected elements”.

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