

## Scientific analysis of paper and studies of European paper history

Julius Wiesner's microscopic analysis of Arabic and European paper and Central Asian paper at the end of the 19th century results in real data about the fiber materials and technology used of importance for the history of paper. Filigranology - a new scientific paper historical field - is in the same period started by Aurelio and Augusto Zonghi and Charles Moïse Briquet with studies of watermarked paper and registration of the watermarks as a tool for dating and provenance of European paper. Watermarks are, however, not to be found in numerous sheets of papers in manuscripts, books, prints and drawings because of cuttings in various formats of the paper. These papers have to be studied as well, because valuable paper historical information about the technology and fiber materials used is to be found here, and registration of chain lines and laid lines of the metal wire is of importance for the possible connection to paper with watermarks of known provenance and date.

## Workshop

### Quality of Paper and the Rank of Books : Case Study of Chinese and Japanese Manuscripts and Books

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Paper of Book is an important element of Codicology. The speaker shows that it is possible to prove the rank of books by analyzing papers by a digital microscope, in the case study of Chinese and Japanese manuscripts and books.

#### 1. The Court Manuscripts of the Early Tang period (Official manuscripts)

Directly made of hemp fiber, one of the finest paper in history, bamboo screen was 11 lines /1 cm, 40 items

[Slide 1] Myoho Rengekyo 妙法蓮華經, vol. 3, (675 transcription), × 500, hemp fiber.

measuring the bamboo screen

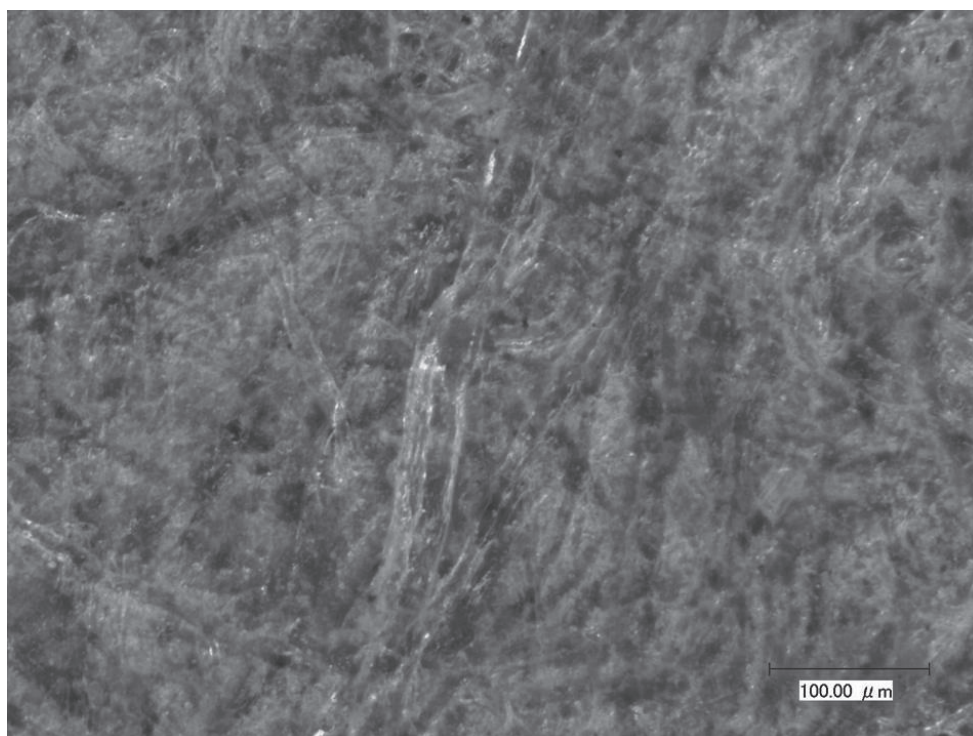
It shows the complete forms of Kai-shu 楷書 and the glyphic standards of Kai-shu, variant ratio=variant occurrences / total-singleton × 100 is 0.81% (all of variant ratios of these court manuscripts are under 1% ➡ HNG (<http://www.chise.org/hng-ids-find/>))

Cf. [Slide 2] Moshi 毛詩, early Tang, × 100, tamesuki 溜漉, made of Kaji 構 (梶) (Broussonetia papyrifera) fiber.

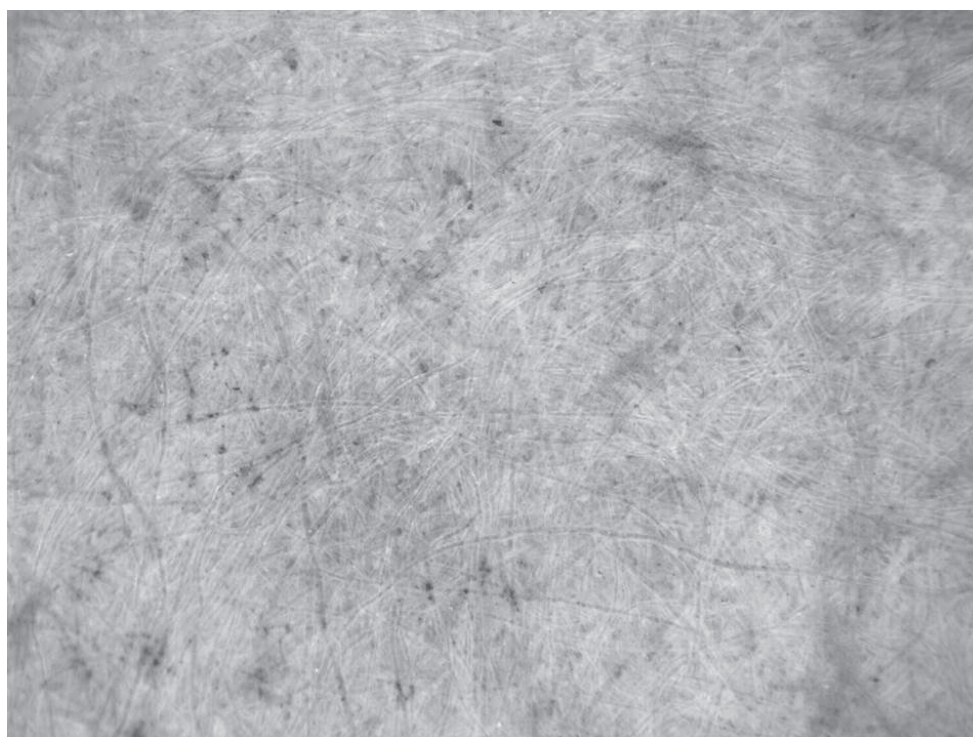
Private manuscripts of early Tang were transcribed on Broussonetia papyrifera paper. Variant ratios of private manuscripts were rather high, for example the variant ratio of S. 2577 妙法蓮華經卷八 transcribed in early Tang is 2.03%

Cf. [Slide 3] Monzen Shuchu 文選集註, vol. 88, Japanese Manuscript, early 11c, × 500, nagashisuki 流漉, Japanese Kouzo 楮 paper.

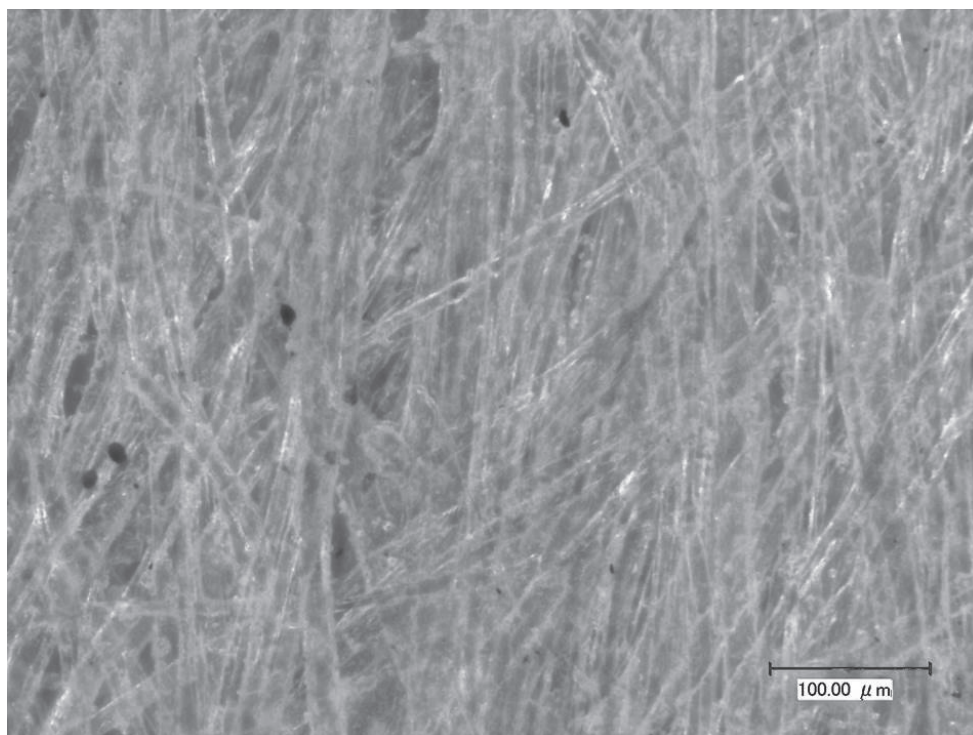
It is possible to distinguish Chinese or Japanese paper from the fiber and the method of making paper.



[Slide 1] Myoho Rengekyo, vol. 3, (675 transcription), × 500, hemp fiber.



[Slide 2] Moshi, early Tang, × 100, tamesuki, made of *Broussonetia papyrifera* fiber.

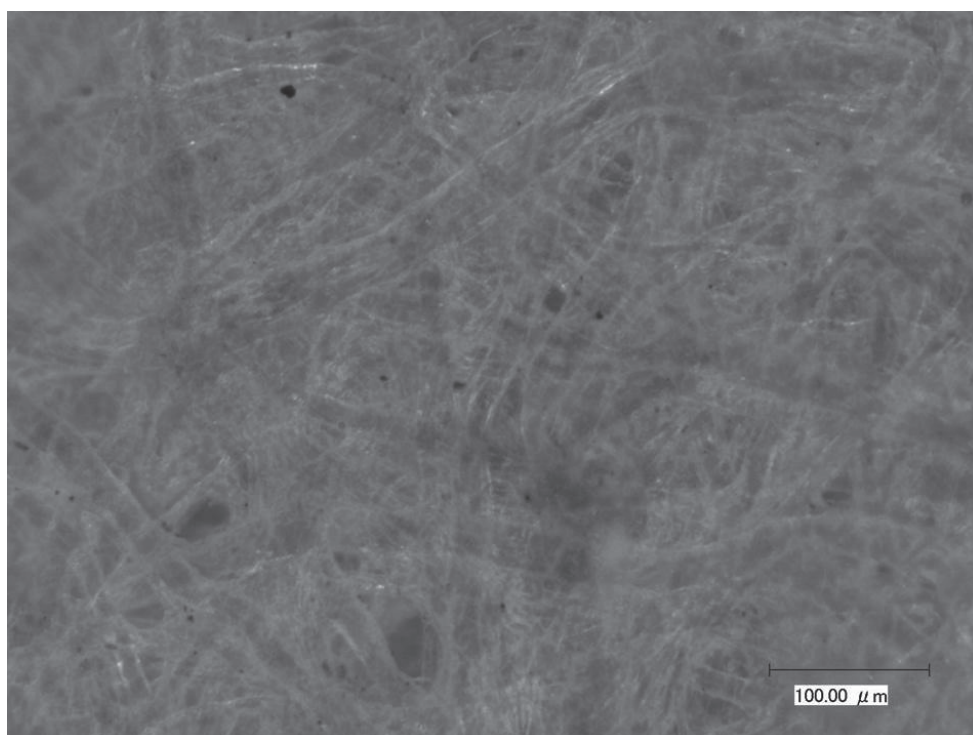


[Slide 3] Monzen Shuchu, vol. 88, Japanese Manuscript, early 11c, × 500, nagashisuki, Japanese Kouzo paper.

## 2. Japanese May 1st Sutra (Official manuscripts)

Directly made of hemp fiber, Emperor Shomu and Empress Komyo used hemp paper

[Slide 4] Zoku Kosoden 続高僧伝, property of Kyoto National Museum, 740, × 500, hemp fiber.

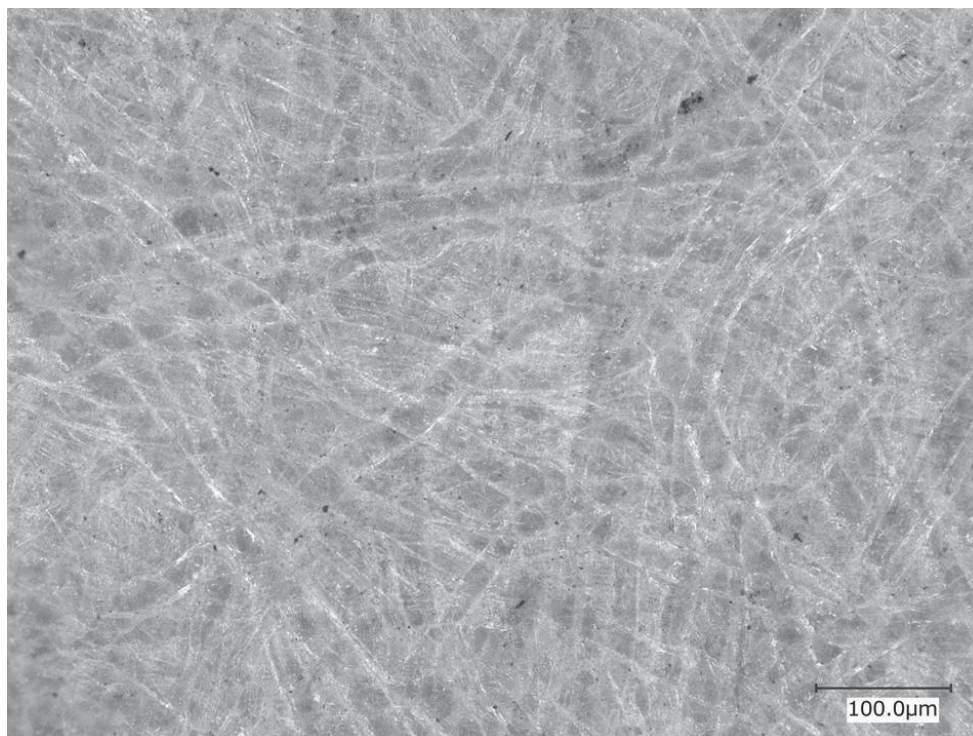


[Slide 4] Zoku Kosoden, property of Kyoto National Museum, 740, × 500, hemp fiber.



Cf. [Slide 5] Miroku Joshokyo 弥勒上生經, property of Kosanji-Temple, 738, × 500, Kouzo fiber.

Hemp paper were used only in the case of official manuscripts, and private or usual manuscripts were transcribed on Kouzo paper in the Nara period 8c.



[Slide 5] Miroku Joshokyo, property of Kosanji-Temple, 738, × 500, Kouzo fiber.

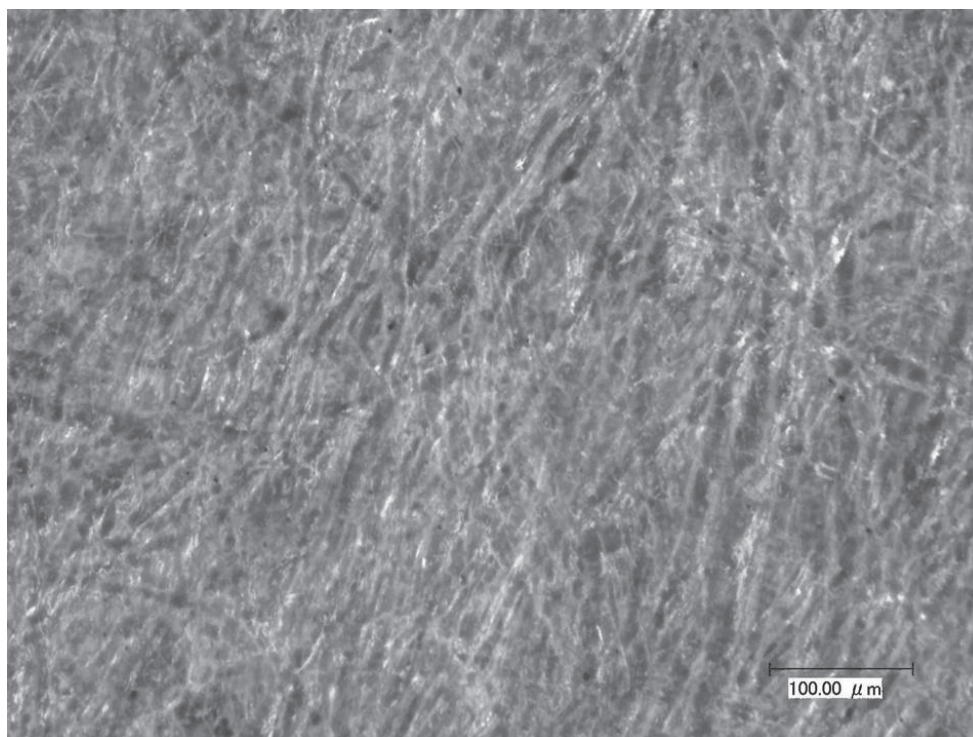
### 3. Chinese change in the Song period

It has changed paper of official manuscripts into Seidan 青檀 (Blue Sandal wood) paper from hemp paper in the Song period.

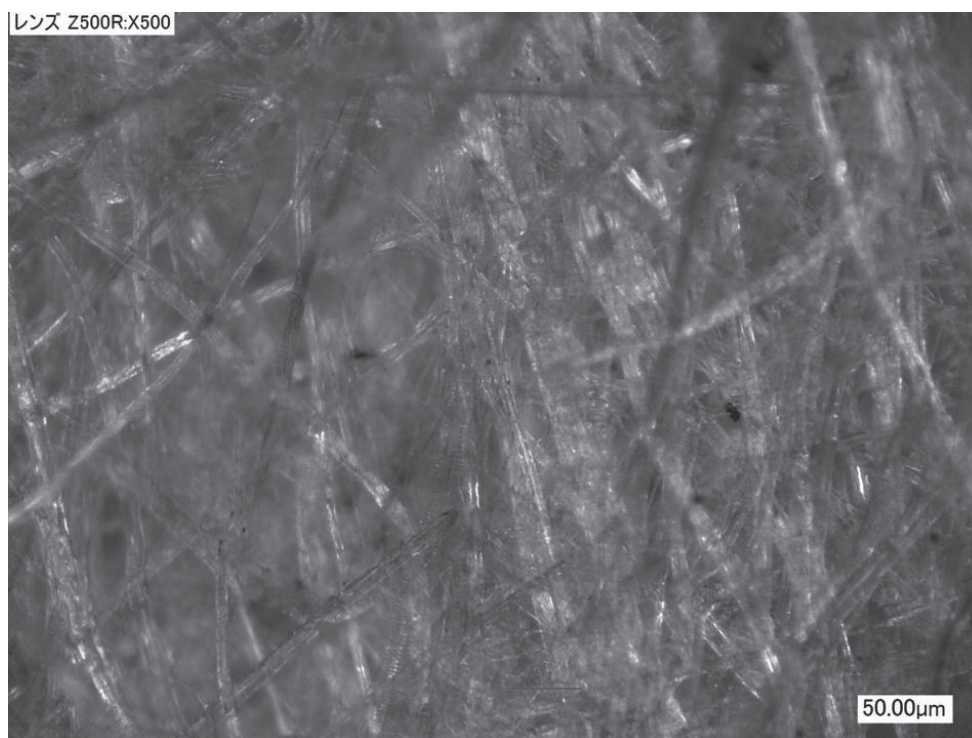
[Slide 6] Naiten Zuikan Onsho 内典随函音疏, vol. 307, property of Kyoto National Museum, 11c, × 450, Blue Sandal wood fiber. Narrow fiber and the very narrow double tubed construction.

Cf. [Slide 7] Abidatsuma Hocchiron 阿毘達磨毘婆沙論, later Sixi 思溪 edition, vol. 14, property of Toyo-Bunko, Song period × 500, bamboo paper.

In the Song period usual books were printed on Bamboo paper, and most of Song printings Tripitaca were printed on Bamboo paper except Kaibao-zang 開寶藏 (Imperial printing).



[Slide 6] Naiten Zuikan Onsho, vol. 307, property of Kyoto National Museum, 11c, × 450, Blue Sandal wood fiber.



[Slide 7] Abidatsuma Hocchiron, later Sixi edition, vol. 14, property of Toyo-Bunko, Song period × 500, bamboo paper.

#### 4. Japanese change in the Heian and Kamakura period, 9–13c

It has changed paper of official manuscripts into Gampi 雁皮 paper from hemp paper in the Heian period.

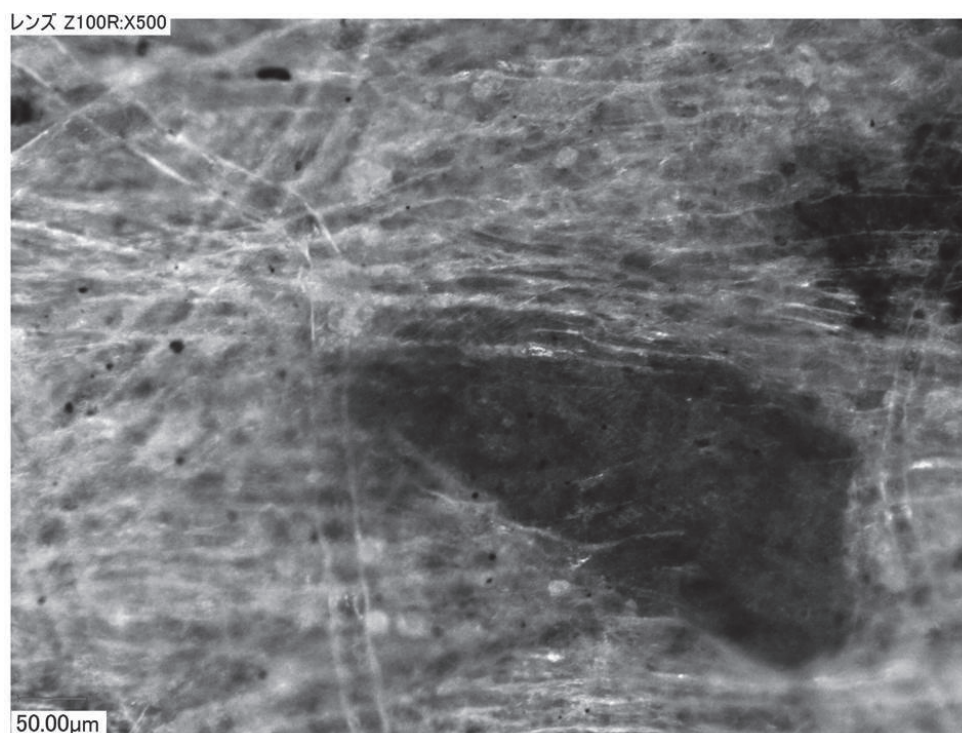
[Slide 8] Tenrei Bansho Meigi 篆隸万象名義 dictionary, property of Kosanji-Temple, 12c, × 500, Gampi fiber, bark.

Cf. [Slide 9] Nihon Shoki 日本書記, hand-written by Yoshida Kanekata 吉田兼方, property of Kyoto National Museum, 13c, × 450, Kouzo fiber, specially made of Kouzo paper looked like Gampi paper.

The transcriber intended it like as an official manuscript. The variant ratio is 0.55%.

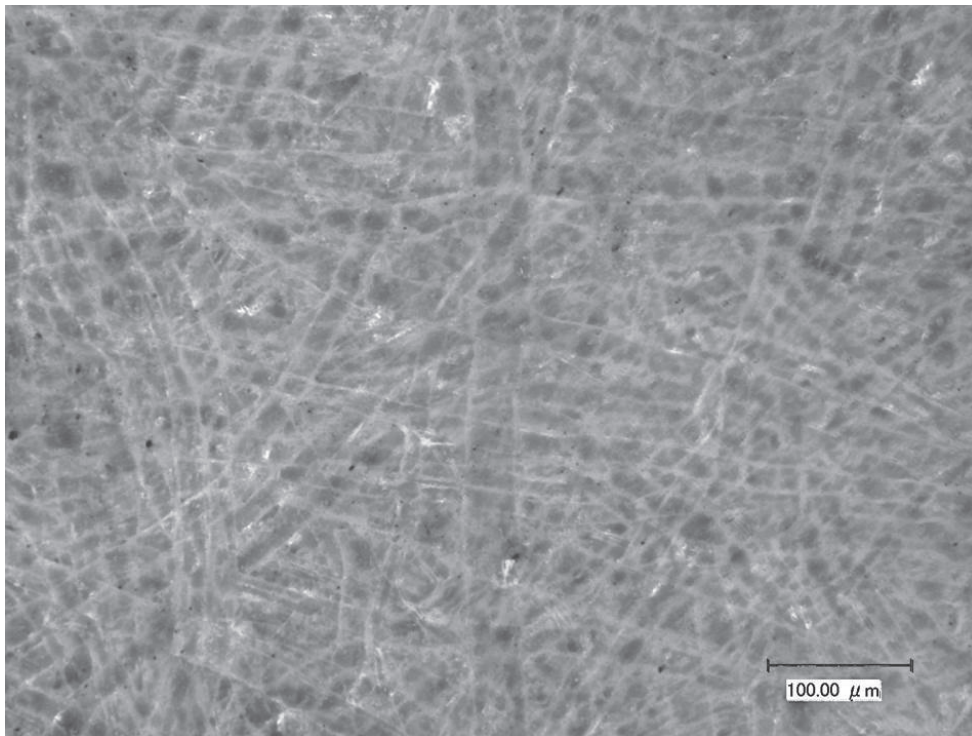
Cf. [Slide 10] Shunju Keiden Shukai 春秋経伝集解, property of Toyo-Bunko, 1139, × 200, Tamesuki, bark Blue Sandal wood fiber.

When Kiyohara Raigou 清原頼業 established the family study in 1139, he used the fine paper made in the Song China. It is Blue Sandal wood paper, and it proves his sense of value.

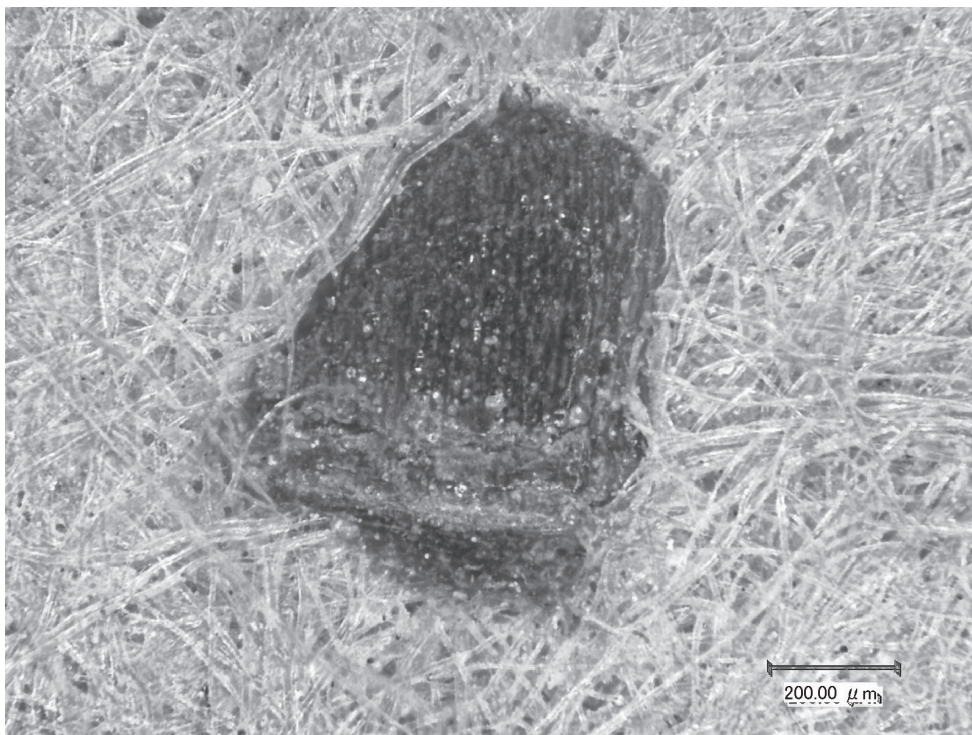


[Slide 8] Tenrei Bansho Meigi dictionary, property of Kosanji-Temple, 12c, × 500, Gampi fiber, bark.





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