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Technical Study of Paint Materials in Buddhist Polychrome Wood Sculptures Made in 19th-Century Japan: Summary of Case Studies in Yamagata Prefecture.

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The production of Buddhist sculptures, which were mostly limited to Kyoto, expanded to local regions in the late Edo period. Many of them have been painted over, but there are only a few case studies of painting techniques and materials. These techniques and materials used for Buddhist sculptures in Yamagata Prefecture were investigated. All sculptures were made of wood and painted in the 19th century by sculptors in Kyoto or Yamagata, who belonged to the same school.

The preliminary investigation consisted of three case studies: the first group's sculptures were made in the early 19th century, and the other two groups' sculptures were made in the Meiji period. Synthetic colorants were used only in the latter two groups. In this study, we elucidate the colorants used in nine groups of Buddhist sculptures that were made between the middle and the end of the 19th century. In addition, we discuss the types of colorants and when they were imported. The green and blue areas of the sculptures made during the Meiji period differed from those in the Edo period. Green was used as Iwa-rokusho (mineral green; usually malachite), and it replaced emerald green (copper aceto-arsenate (III)). An indigo-based colorant was used as shade of blue, and synthetic ultramarine blue was replaced. In contrast, the dark green colorant did not change after the Meiji period, which is a mixture of orpiment and indigo-hue colorants. In addition, warm colors such as red and yellow stayed in use in the 19th century. In the second half of the 19th century, Japanese ports reopened and trade with foreign countries began. There was also a major social change when the Edo period ended and Meiji began. These changes must have influenced the colorants used, while not all colorants, which had already been introduced in Japan, were found in the sculptures. For instance, Prussian blue was found only in a certain mixture of pigments and not independently. This paper provides an overview of the colorants, including the seemingly traditional ones used in the Buddhist polychrome sculptures of the 19th century.

Key words: Polychrome Buddhist Sculptures, 19th Century, Yamagata Prefecture, Synthetic ultramarine blue, Emerald green