

Culture & Trade through the Prism of Technical Art History – a study of Chinese export paintings

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The aim of the project is to better understand the painting techniques and materials of Chinese export paintings in the Victoria & Albert Museum and Royal Horticultural Society collections, to develop an effective method of using a range of non-invasive imaging and spectroscopic techniques to examine paper-based works of art and address art history and conservation issues, to explore trade and cultural exchanges between China and Europe in the 18th and 19th centuries through insights from technical art history, to contribute to the new emerging field of technical art history of East Asian paintings and to demonstrate the effectiveness of non-invasive scientific examination for the understanding, enjoyment and preservation of paper-based objects.

Introduction

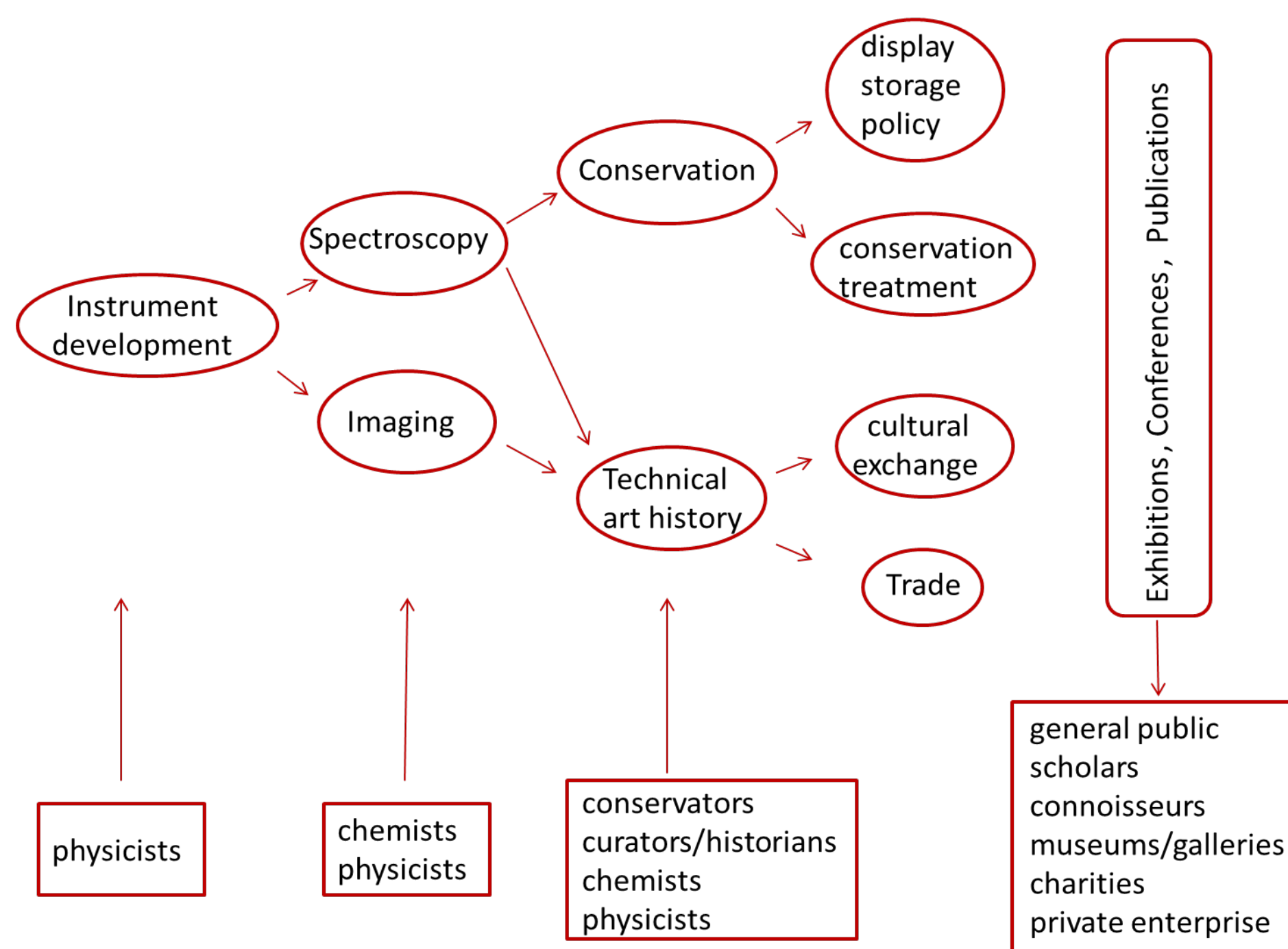


The Victoria and Albert Museum (V&A) has a large collection of Chinese export paintings from the 18th and 19th century painted by artisans from Canton or other Chinese ports. These paintings were often sold as souvenirs to Europeans. They typically depict contemporary life in China, illustrating the various trades, costumes, boats, birds, insects and plants, aimed at satisfying foreign clients and their perception and curiosity about China. These paintings are valuable for the study of trade and cultural exchange between Britain and China in the 18th and 19th century. A number of museums, libraries and charities in the UK and around the world have similar collections.



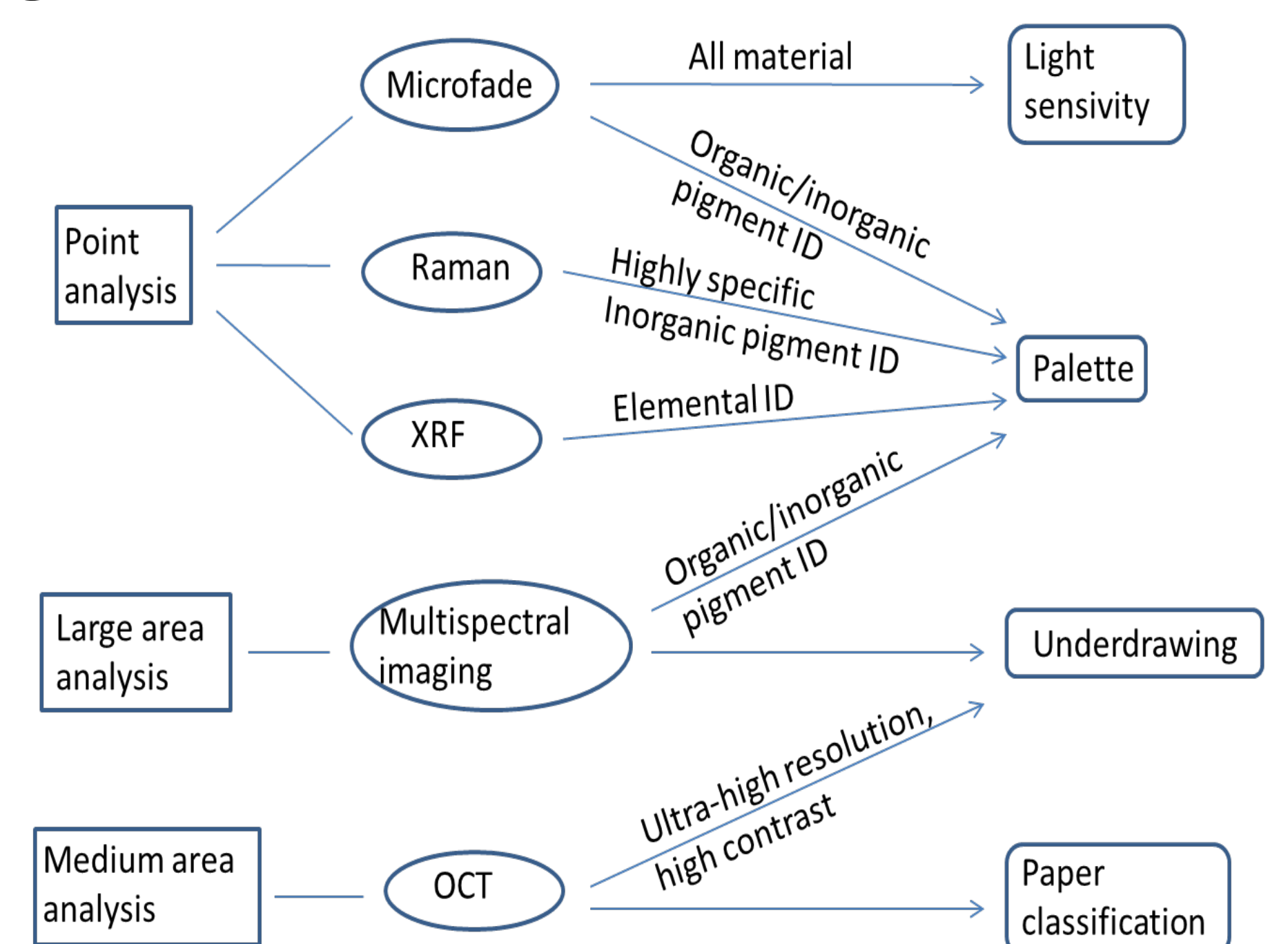
While the majority were painted as souvenirs for tourists, some were painted for scientific research. The Royal Horticultural Society (RHS) owns a large collection of early 19th century Chinese watercolour paintings of plants. These were commissioned by the RHS and the Chinese artisans in Canton and Macau were supervised by the RHS representative John Reeves to accurately illustrate plant species to serve as a catalogue. This collection is different from most Chinese export paintings in that they were scientific drawings and well documented by both the RHS's minutes and Reeves' diary. Many of the paintings are, therefore, confidently dated.

Interdisciplinary research



A holistic approach to non-invasive investigation

While there is considerable curatorial interest in the historical study of Chinese export paintings, there have been relatively few studies involving scientific analysis. Most institutions do not allow samples to be taken from paper-based objects for ethical reasons. Consequently, conventional scientific analysis (often destructive) is usually restricted to detached pigment particles. These studies are therefore inherently limited; the results may not even be representative of the paintings as a whole. A significant problem has been the lack of a wide range of non-invasive instruments to systematically study a large collection of materials. In this project, we address art historical and conservation research questions relating to these paintings through the application of a suite of novel non-invasive imaging and spectroscopic techniques.



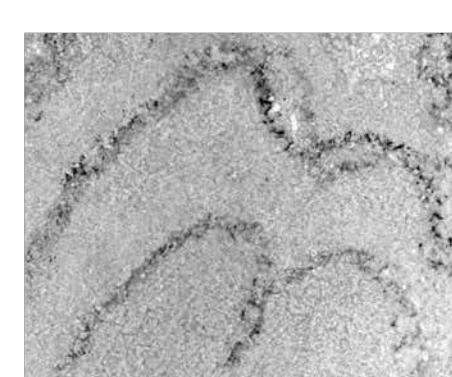
Painting materials – globalisation in the 19th century



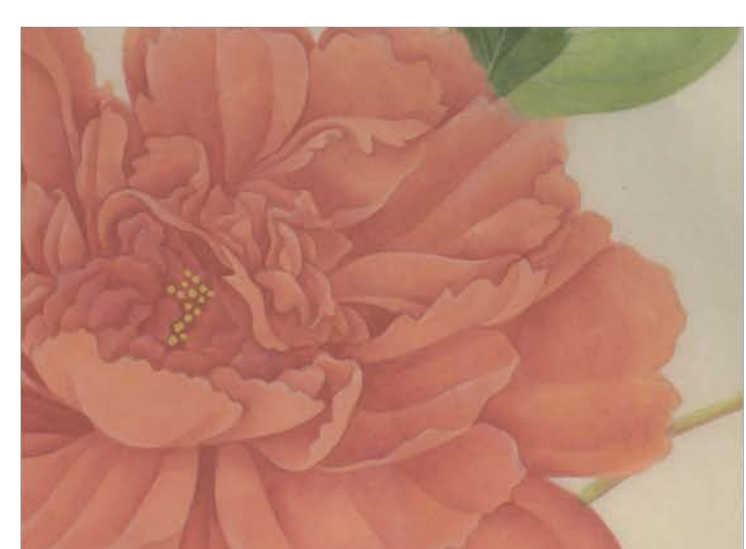
Royal Horticultural Society's Reeves collection Lib0002299 (stem 36)



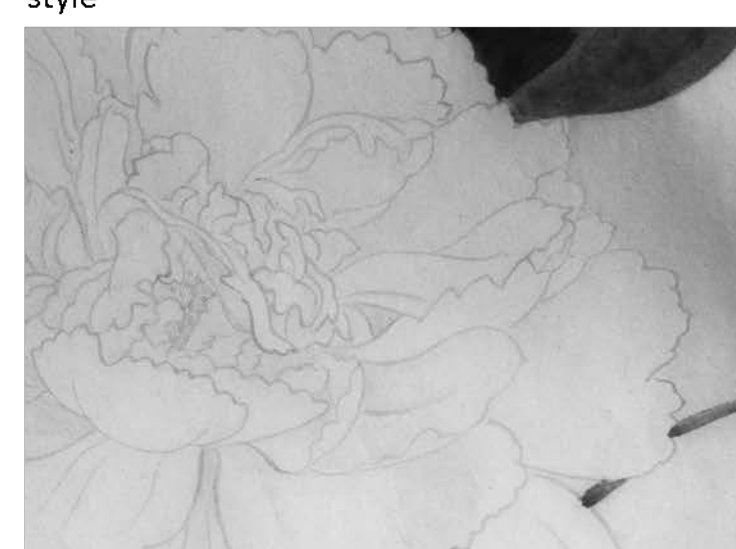
Multispectral imaging near infrared band image revealing elaborate underdrawing drawn with a solid material in the European style



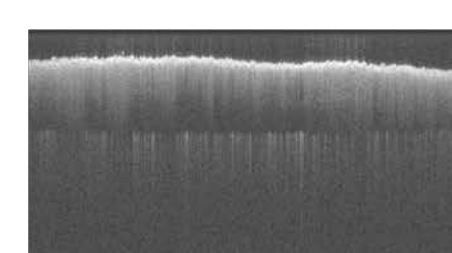
Ultra-high resolution image obtained with OCT of a small region showing unambiguously that the drawing is of a solid material such as a pencil style



Detail of RHS Reeves Collection Reeves Large Vol3_29



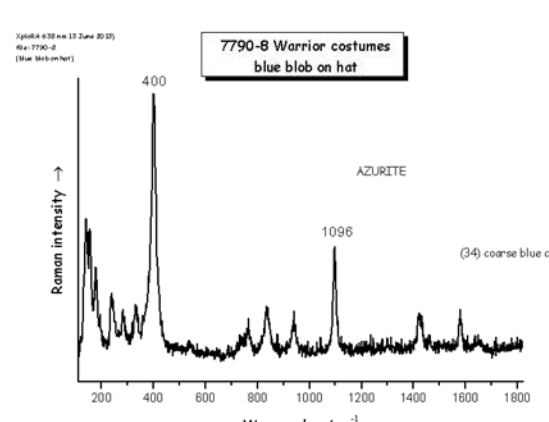
Multispectral imaging near infrared band image revealing elaborate underdrawing drawn with ink



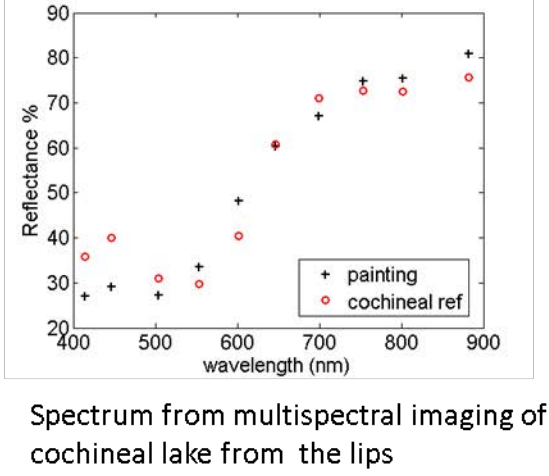
OCT virtual cross-section (10mm wide by 1.6mm deep) of the painting on the left showing the thickness of the paper to be ~0.4mm resting on a support



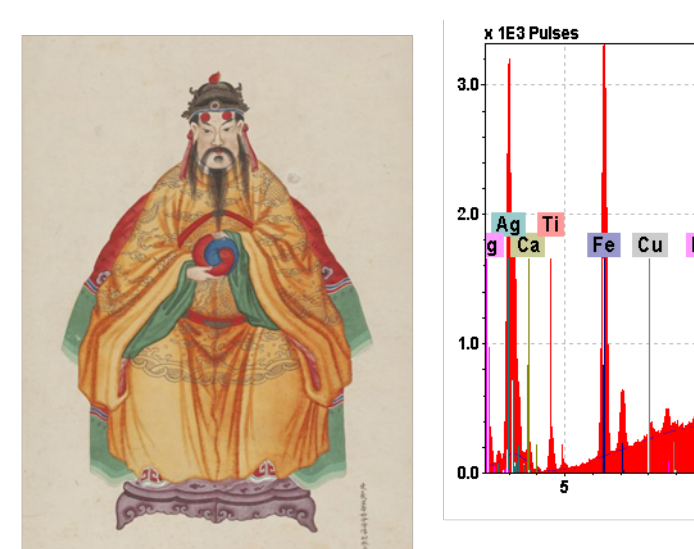
The warriors, accession no. 7790-8



Raman spectrum of azurite from the hat



Spectrum from multispectral imaging of cochineal lake from the lips



XRF spectrum from the silver tracing on the headdress

The legendary emperor Fu-hsi (accession no. D.1293-1886)

The analysis of pigments on the watercolours by Raman microscopy has revealed that traditional artists' materials are usually used on the objects. These include natural minerals, such as azurite and malachite, but also manufactured pigments such as lead white and red lead. Interestingly, the usage of blue pigments and dyes varies with time: older watercolours contain only indigo and azurite, later ones also contain Prussian blue. The materials identified comprise of vermilion, red lead, hematite, orpiment, ultramarine blue, Prussian blue, azurite, indigo, malachite, carbon black, lead white, realgar, pararealgar and their intermediate phase. Spectral reflectance measurements in the visible and near infrared using multispectral imaging show that the identification to be representative over large areas. One limitation of Raman spectroscopy is the inability to identify highly fluorescent material such as organic colorants and binders. The visible spectral reflectance from the initial microfade spectra and multispectral imaging shows many of the red colorants are red lake pigments extracted from scale insects such as cochineal. A few of the details on the watercolours were painted using shell gold and shell silver identified by XRF. Visually the pigments appear to be still in pristine condition, with the exception of silver and lead white which have darkened in a few places.

Imports to China of Prussian blue from Europe and cochineal from North America peaked at the turn of the 18th/19th century judging by the private trade records of the East Indian Company.

Light sensitivity of the material



A survey of the light sensitivity of the colorants and the paper substrate using an in-house built microfade spectrometer found colours tested were more stable or as stable as the Blue wool 3 standard except for a yellow colour identified with realgar in some of the V&A paintings which degraded very fast.

Acknowledgements

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