



BOOK AND PAPER

CONFERENCE

**CONSERVATION
UNCOVERED**

**INVESTIGATION AND
DISCOVERY IN TREATMENT
AND ANALYSIS**

POSTERS

A Technical Study of Some Watercolours by Dante Gabriel Rossetti and Elizabeth Eleanor Siddal in Context

Technical research in advance of the Tate Britain exhibition *The Rossettis* in 20243 included technical examination of ten watercolours by Dante Gabriel Rossetti and Elizabeth Eleanor Siddal; microfading of several Rossetti watercolours from the 1850s and 1860s, coloured papers and iron-gall inks used for drawings; and technical imaging and materials analysis of eight of Tate's oil paintings by Rossetti. For the watercolours, hand-held X-ray fluorescence was used for pigment characterisation, and painting techniques and original supports were investigated. This enabled materials comparisons to be made between Rossetti, Siddal who shared his studio while Rossetti provided most of the materials for Siddal, and other artists in his circle, including Edward Coley Burne-Jones. Common materials featured in Rossetti's practice and materials used in watercolour and oil in the 1850s to 1860s. Both Siddal and Rossetti used densely-applied watercolours on complex paper supports, while Rossetti's heavily coloured watercolours in particular exhibit recurring efflorescence which may imply that both were mainly using tube watercolours rather than watercolour blocks. The efflorescence is being analysed at RCE, Amsterdam, Netherlands, using a MOMS sampling technique to collect samples from the watercolour least recently treated to remove the efflorescence, for analysis using atmospheric solid analysis probe-high resolution mass spectrometry (ASAP-HRMS), a technique still under development. It is hoped this will characterise the efflorescent material and shed light on the ageing of these watercolour paints. (The analysis will be interpreted in summer 2025.)

A comparison will be made between Rossetti's choice of pigments for painting in oil and watercolour, and the degree of colour change that may have taken place, given that he was advised not to use fugitive materials by the influential John Ruskin, yet persisted in doing so, according to his contemporaries. The two artists did indeed use common materials, and Rossetti was found to have used a similar range of pigments across watercolour and oil media.



Dr. Joyce Townsend FIIC ACR is Senior Conservation Scientist at Tate. Her principal research interests are the identification and deterioration of artists' materials, through technical studies of particular groups of artists, and the interpretation of artists' techniques. She has supervised several doctoral research projects and has led and participated in many Tate technical art history projects. Her analytical skills include optical and electron microscopy, X-ray fluorescence, and microfading. Working with Tate conservators, she has carried out technical studies in the oil paintings and watercolours of Dante Gabriel Rossetti and his circle, for the recent Tate exhibition The Rossettis.

Sophie Sarkodie ACR is the lead paper conservator for Tate Britain. She works on exhibitions and displays; documenting, condition checking, researching and conserving Tate's British art collection, library and archive material, and loans-in. She studied paper conservation at Camberwell College of Art. She has worked at the Metropolitan Museum of Art, National Museum of Ireland, Museum Conservation Services and the British Library. Whilst at the library she gained an MA in Arts Management and ICON accreditation. She has been working for Tate since 2012, first working at Tate Modern on exhibitions and displays.

Wim Genuit is a guest researcher at the Cultural Heritage Agency of the Netherlands (RCE). His main interest is in the development and application of analytical methods involving mass spectrometry for the chemical characterization of paints and other materials applied by artists. Before his retirement, Wim has worked for almost 35 years as a mass spectrometrists in the analytical department of the Shell Laboratory in Amsterdam (now called Energy Transition Campus Amsterdam). In addition to his regular work for Shell, he has been involved in many Shell-sponsored collaborations with (predecessors of) the RCE and with museums in the Netherlands and abroad.

Art Ness Proño Gaibor is a full-time researcher at the Cultural Heritage Agency of the Netherlands (RCE), specialising in organics analysis and the development of improved analytical methods for investigating works of art.

Exploring Sustainable Viscosity Agents for Traditional Japanese Papermaking in Conservation

Traditional Japanese paper (washi) is widely recognized as an important material in the conservation of cultural heritage. One of the essential components in washi is the viscosity agent (neri), which promotes even fiber dispersion during sheet formation. Tororo-aoi (*Abelmoschus manihot*), a traditional plant-based neri, is widely used in the nagashizuki technique, a traditional Japanese sheet-forming method. However, its tendency to decay rapidly in summer necessitates the use of chemical preservatives such as formalin or cresol, which may pose risks to human health, the environment, and the long-term stability of the paper itself. This study evaluates alternative viscosity agents from the perspective of sustainable conservation practices, particularly focusing on natural polysaccharide such as cactus mucilage and konjac-based formulations. Four types of viscosity agents were tested: Tororo-aoi (preservative-free), Cactus mucilage, Konjac paste, Acrylic-based synthetic agent. The evaluation consisted of two main aspects:

1. Effects on long-term paper stability: Using artificially aged samples, we measured mechanical properties (folding endurance, tensile strength), discolouration, pH, and organic acids to assess whether degradation products from the viscosity agents contribute to the paper's deterioration.
2. Effectiveness in fiber dispersion and sheet formation: Visual and microscopic assessments were conducted to examine uniformity and fiber aggregation patterns.

Konjac produced the highest mechanical strength but showed the most severe discolouration after ageing, suggesting potential acidic degradation. Acrylic-based paper had the weakest physical properties but least discoloration. Tororo-aoi and cactus showed intermediate results, with tororo-aoi offering the best balance between durability and fiber dispersion. Cactus mucilage showed promise in durability but resulted in poor fiber dispersion, possibly due to residual fleshy materials affecting sheet formation quality. Future directions include standardizing the concentration of each viscosity agent to ensure reproducible fiber dispersion, as differences in the current results may be attributed to inconsistent concentration settings. We plan to determine appropriate concentration levels through controlled laboratory experiments and repeat the paper-forming process under these conditions. This will help establish more reliable usage parameters for each formulation and contribute to the development of safe and sustainable alternatives to traditional neri in washi.

Dr. Kang Lee is a junior associate professor in conservation science at Tokyo Gakugei University. He received his MA and PhD from Tokyo University of the Arts, where he specialized in paper conservation science. He later conducted postdoctoral research at the University of Tsukuba. Dr. Lee's research centers on the improvement of predictive methods for estimating the lifespan of various types of historic paper used in books and documents. He also investigates the complex deterioration behaviour of Japanese hanging scroll paintings (kakejiku).



Dr. Kang Lee

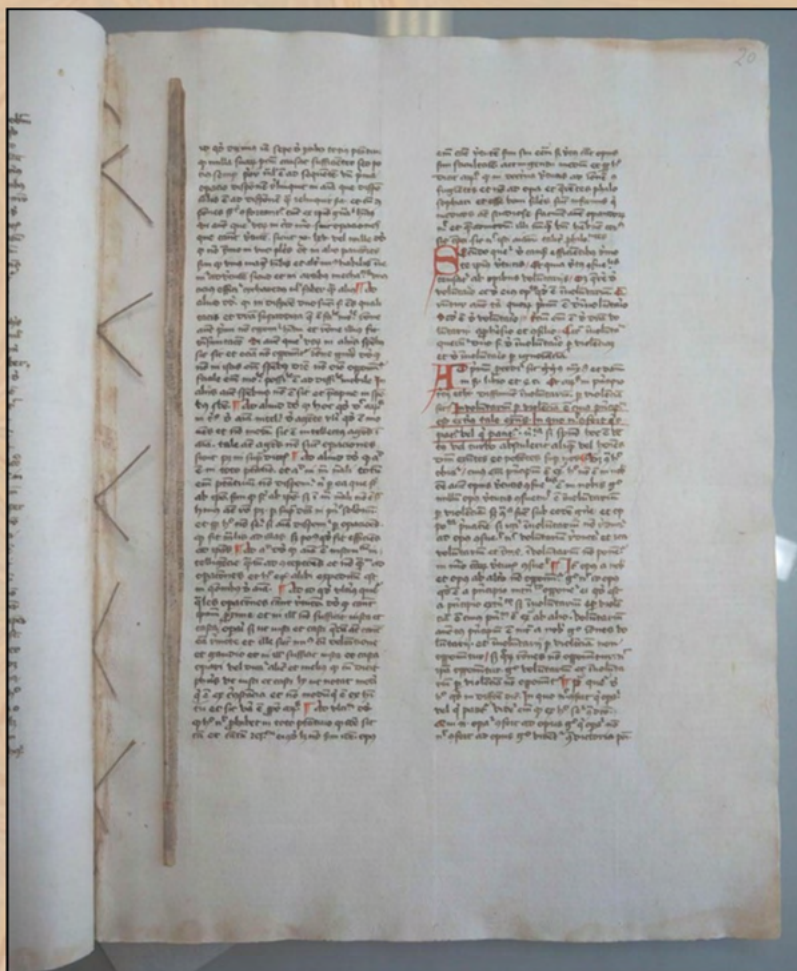
His current work includes scientific analyses to evaluate and improve the durability of conservation papers made from various types of washi currently used in Japan and abroad. He is also exploring the development of visual diagnostic methods to assess the physical deterioration of paper-based cultural assets. Dr. Lee actively collaborates with museums and conservation laboratories and leads initiatives that link academic research with community-based heritage preservation in Japan, South Korea and France.

Hiroko Tanino is a traditional washi papermaker and the founder of Tanino Handmade Washi Studio. She began her career in papermaking in her 30s and is now a certified artisan of Hosokawa-shi, a UNESCO Intangible Cultural Heritage since 2014. Recognized as a Saitama Traditional Craftsman and an Excellent Skilled Worker of Saitama, she produces high-quality handmade washi for calligraphy, interiors, and art. In addition to managing her studio, she conducts workshops and lectures at schools, museums, and international venues, sharing her expertise in traditional papermaking techniques.

Text Between the Threads: Balancing Access to Information and Preservation

Manuscript 77-78 in the Royal Library of Belgium has been known to contain fragments of a Middle Dutch text by Jacob van Maerlant, reused as binder's waste. It contains 23 pieces of parchment used as lining in the centrefolds of the gatherings. The manuscript seemed to have been rebound in the 20th century and in its state was too tightly bound to be able to read more than just a few pieces of the fragments. Until recently, only five of the fragments could be partially deciphered, by Herman Mulder in 2003, offering confirmation of their origin. Following a request from PHD-candidate, Sofie Moors, the conservation atelier was consulted to assess whether any intervention could improve the legibility of these fragments. A preliminary assessment concluded the binding to be 20th-century. The relative good condition of the manuscript and binding, the value of the 20th-century cover, and the potential philological value of the fragments, informed the conservation strategy: it was decided to remove the cover while retaining the sewing structure by carefully reducing spine adhesive to increase the opening angle and expose the hidden text. While removing the 20th-century covering, it became clear that the underlying structure was likely original and could be dated to the 15th century. This validated the decision to retain the sewing structure. This first intervention allowed Sofie Moors to confirm not only the authorship but also the identity of the fragments: a rare text by van Maerlant that had been attested in seventeen known copies. The 23 pieces of parchment turned out to constitute two bifolios of text, making them the eighteenth known witness of the text that. However, many of the 23 parchment fragments remained partially obscured by sewing threads and because they were folded into the centre-folds of the gatherings. This raised a further conservation dilemma: whether unbinding the manuscript would be justified in order to fully access the fragments. Ultimately, a decision was made to unbind the manuscript while preserving its original sewing structure as much as possible. The sewing structure was recreated on a cardboard shaped spine, reflecting the original form, and detailed documentation preserved the precise placement of the parchment fragments and original structure. Sofie Moors is reconstructing the original bifolio with the now removed fragments. After the reconstruction, we will propose to keep the fragments in their reconstituted form, accompanied by clear indications of their original use in the manuscript. The manuscript, the sewing structure and the reconstructed bifolios would all be held together in a made to size box.

This case study illustrates how conservation—driven by material analysis, historical research, and interdisciplinary collaboration—can contribute to the rediscovery of literary heritage. It also highlights the ethical and practical challenges of balancing access to information with preservation.



July Van Malderen is a book and paper conservator at the Royal Library of Belgium (KBR). She holds a master's degree in Eastern Languages and Cultures from the University of Ghent and a degree in Conservation and Restoration from SyntraWest. She is currently furthering her expertise through additional studies in Conservation and Restoration at the University of Antwerp. She has worked on the Mmmonk (Medieval Monastic Manuscripts Open Network Knowledge) project for the Public Library of Bruges and for #Tomorrow's Research and Google Books at the University of Louvain. Her main interests lie in the material history of bookbinding, with a focus on how conservation practice can inform historical understanding.

Sofie Moors

Reductive and Oxidative Bleaching of Aged Lignocellulosic Papers: A Comparative Study

Aged wood pulp papers are abundantly present in cultural heritage collections and represent a major conservation challenge. They tend to acidify, become yellow and very fragile over time. Bleaching is a remediation strategy primarily used to improve the aesthetics of cultural heritage papers, thereby enabling access to their historical or artistic content. Literature on conservation dedicated to paper bleaching focuses mainly on cellulosic papers, and not on lignin-rich ones. Moreover, the diversity of the bleaching protocols – in terms of concentration, solvent, and immersion time – makes it difficult to compare results from different authors, and even more so to apply them to lignin-rich papers. Above all, there are very few comparative studies on cellulosic papers [1], and even fewer on wood pulp ones. This study is part of a broad project on paper deacidification and mechanical strengthening using aminoalkylalkoxysilanes (AAAS)[2]. It investigated the advantages and drawbacks of several bleaching protocols using different reactive agents employed in conservation workshops: the reductive agents sodium borohydride (NaBH_4) and tertbutylamine-borane complex (TBAB), and the oxidative agents hydrogen peroxide (H_2O_2) and UV-filtered sunlight exposure. The bleaching protocols were applied to one laboratory-made paper and two naturally aged early 20th century wood pulp newsprint papers. The papers composition – including pulp type, filler and sizing – was first characterized by histological analysis and Fourier transform infrared micro-spectroscopy (μFTIR). The bleaching conditions were derived from various protocols previously established for cellulosic papers and were applied following the multi-step methodology usually employed in conservation practice [3]. Reductive and oxidative treatments were evaluated in terms of bleaching and deacidification efficiency, through color and aqueous extract pH measurements. Mechanical testing – uniaxial and zero-span tensile strength, and folding endurance – was performed to assess how the bleaching conditions affected the lignocellulosic papers depending on their state of degradation. This comparative study provided updated insight into various bleaching protocols available to conservators for the treatment of degraded lignocellulosic papers. Under the experimental conditions used, reductive bleaching agents outperformed oxidative ones by diminishing the natural yellowing of the degraded papers and improving their brightness. All the treatments tested efficiently deacidified the papers. However, oxidative bleaching caused degradation in one of the newsprint papers in terms of uniaxial tensile strength, while improving the folding endurance of the laboratory-made paper and the other newsprint. TBAB weakened both aged lignocellulosic newsprint papers by lowering their zero-span tensile strength values. In contrast, although it caused a decrease in the uniaxial tensile strength of one of the papers, sodium borohydride improved the folding endurance of all three, thereby demonstrating its potential as an optimal bleaching agent able to stabilize degraded lignocellulosic papers.



Camille Jallu is a junior conservator-restorer specializing in graphic arts. She graduated from the École nationale supérieure des Arts Visuels de La Cambre (Brussels). In 2025, as part of her master's degree, she conducted research on the deacidification and mechanical strengthening of aged lignocellulosic papers using aminoalkylalkoxysilanes (AAAS), in collaboration with the Royal Institute for Cultural Heritage (KIK-IRPA – Brussels) and the Conservation Research Center (CRC – Paris).

Her comparative study, supervised by Dr. Nathan Ferrandin-SchoVel, Dr. Anne-Laurence Dupont, Prof. Estelle Van Geyts, and Dr. Francisco Mederos-Henry, focused on reductive and oxidative bleaching methods. With a strong interest in heritage science, Camille has gained practical experience in museums, archives, and research laboratories and has also tutored first-year students in conservation chemistry at La Cambre.

Nathan Ferrandin-Schoffel, Anne-Laurence Dupont, Estelle Van Geyts, Francisco Mederos-Henry

Mounting Large-Scale Works on Paper: Integrating Eastern Painting Mounting with Modern Aluminum Honeycomb Boards for Frameless Display

This presentation outlines two large-scale mounting projects on paper completed by the SJAC team for artist Tong Yang-Tze's exhibition at the Metropolitan Museum of Art's Great Hall in New York in 2025. Each installation consists of eight individual panels, with overall dimensions of approximately 360 x 725 x 2 cm per piece. By combining traditional East Asian mounting techniques with modern materials, the artworks were applied to aluminum honeycomb panels.



Custom-designed prefabricated connectors were developed to seamlessly join the panels, resulting in a frameless, lightweight, and structurally stable configuration. This innovative approach greatly simplifies the on-site installation and suspension of large-scale works, while also reducing the risks associated with international transport—offering a practical, reversible alternative to traditional wooden mounting systems. Through the experience and principles established in this project, the use of traditional adhesives to bond paper with contemporary materials demonstrates strong potential for broader applications. This method supports the evolving exhibition and conservation needs of contemporary Eastern works on paper on an increasingly scale.



Ting-Fu Fan [范定甫] worked as a Chinese painting conservator at the National Palace Museum in Taipei and the Hirayama Studio at the British Museum in London. He later established San-Jian Art & Conservation, leading a professional team specializing in conservation. Based in Taipei, he has completed many conservation and collection care projects and collaborated with international institutions. His work focuses on integrating traditional Chinese painting conservation with modern materials and mounting methods, supported by rigorous cross-cultural and material research.

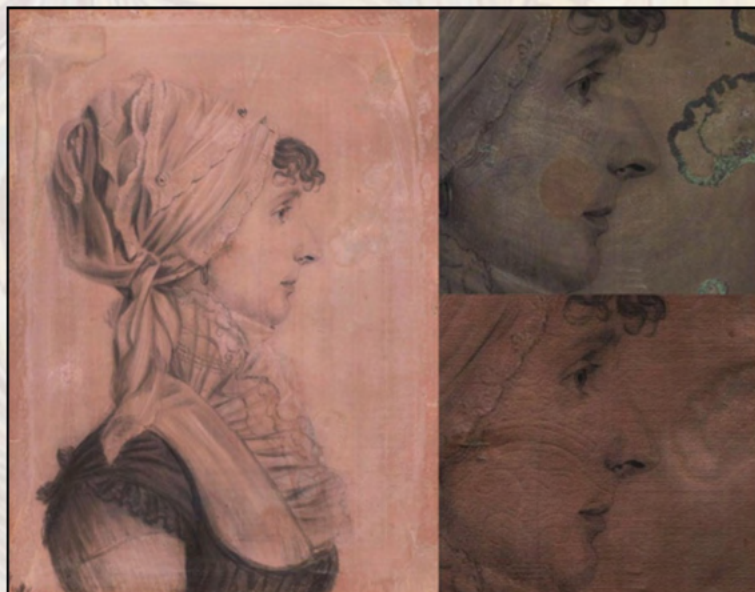


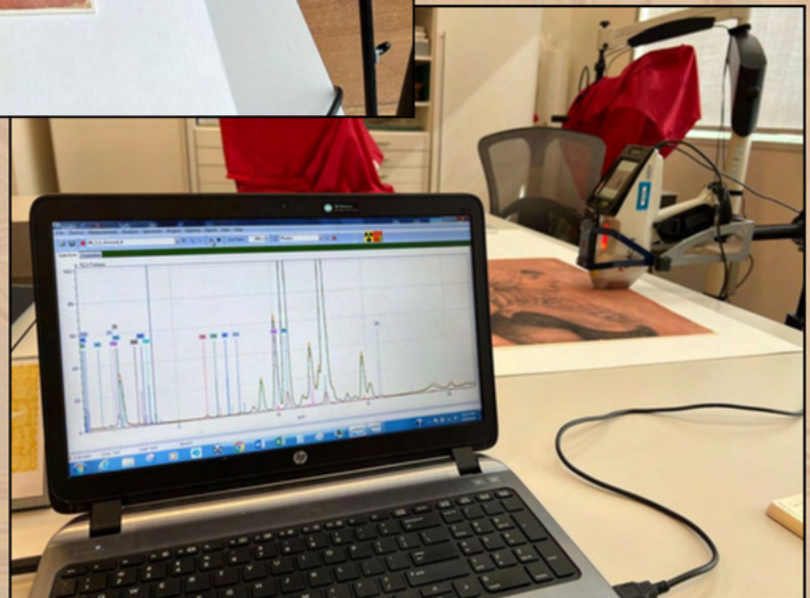
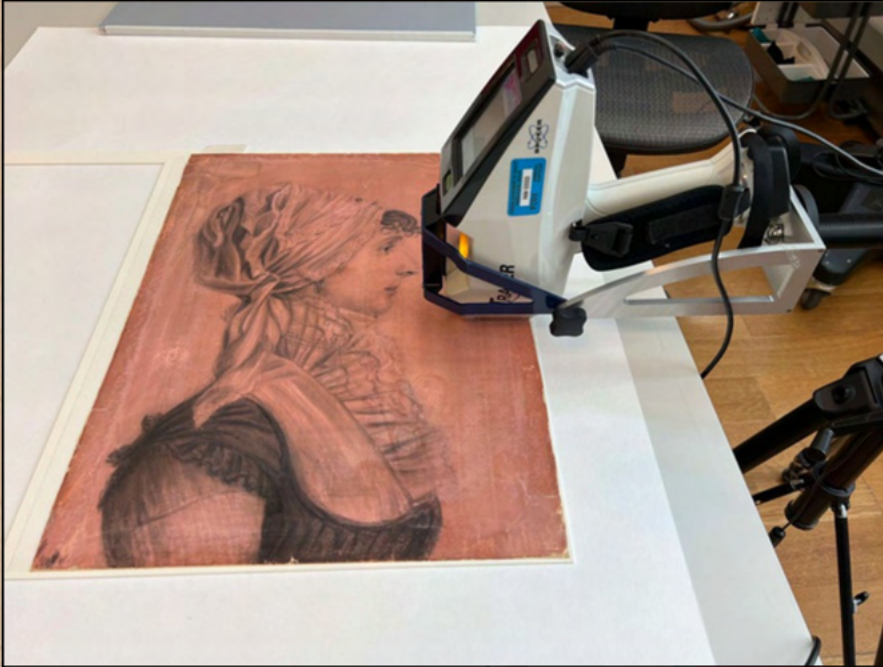
Ting-Fu Fan [范定甫]

Yi-Chiung Lin [林怡瓊] is a manager at San-Jian Art & Conservation. She is mainly responsible for studio operations and the coordination of international projects to ensure that the projects proceed smoothly.

Analysis and Treatment of Three Saint-Mémin Chalk Portraits

The early 19th century profile portraits by Charles Balthazar Julien Fevret de Saint-Mémin are known for their pink toned ground, delicate use of black and white chalks, and crisp graphite profiles created using a physiognotrace. Saint-Mémin was a prolific self-taught profile portrait artist and engraver in the United States during the late 18th and early 19th century who travelled to major cities offering affordable drawings and copper plate engravings. From July 1807 through what is believed to be the early spring of 1808, Saint-Mémin set up shop in Richmond, Virginia. During this period, three portraits from 1808 of the Greenhow family, a father, mother, and young son, were completed. These portraits were later acquired by the Virginia Museum of Fine arts in 1998 from a descendent of the sitters. Though all three were created at the same time with the same materials, each presented unique damages and histories of treatment which required customized approaches. Amazingly, previous treatment records accompanied the works and provided vital information about materials and techniques used prior to the museum's acquisition. These details informed both the limitations and extent of the conservation treatment recently undertaken. In some cases, the early treatment methods stabilized the media and created opportunities for interventions that would normally not be possible with friable media. All three works exhibited varying degrees of damage including tears, support losses, and significant water damage which had been addressed through multiple campaigns of overpainting. Through the use of multimodal imaging techniques and scanning XRF, areas of damage were mapped and different campaigns of treatment were identified to help guide treatment decisions.





Jenni Krchak holds an M.A./M.S. in Conservation of Art and Cultural Heritage and Conservation Science and Imaging from SUNY Buffalo State University with a specialization in works on paper. Previous conservation experience includes hurricane recovery work at Vizcaya Museum and Gardens in Miami, wall painting conservation at a medieval church in England, and book and paper conservation at the Georgia Archives and the American Philosophical Society in Philadelphia. She is the current Assistant Paper Conservator and NEH Fellow at the Virginia Museum of Fine Arts in Richmond and is also serving as the Programs Chair for the Virginia Conservation Association.