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in art and cultural heritage
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BOOK OF ABSTRACTS

TECHNICAL INFORMATION

TECHNART2023 BOOK OF ABSTRACTS

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Non-destructive and Microanalytical Techniques in Art and Cultural Heritage. Book of Abstracts

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NOTE

Authors are responsible for the text included in the abstracts, for the reliability and truthfulness of the information and for the rights to publish any material included in the text

SESSION G - EASEL PAINTINGS | CHAIRED BY ANA LUÍSA SILVA

11h30	2875	Anna Mazzinghi, Chiara Ruberto, <u>Lisa Castelli</u> , Pier Andrea Mandò, Lorenzo Giuntini and Francesco Taccetti <i>The Portrait of Leo X by Raffaello: characterisation of the painting materials and techniques by means of MA-XRF</i>
11h45	2936	<u>Guusje Harteveld</u> , Francesca Gabrieli, Kathrin Pilz, Muriel Geldof, Inez van der Werf, Luc Megens, Maarten van Bommel, Lars Maxfield, Dominique van Berkum, Anna Vilanova and Ana Martins <i>Multi-scale and multi-technical survey of Van Gogh's Small Pear Tree in Blossom to create a digital twin</i>
12h00	3468	<u>Frederik Vanmeert</u> , Elke Oberthaler, Sabine Penot, Katharina Uhler, Annelies van Loon, Anna Krekeler, Ige Verslype, Abbie Vandiver, Carol Pottash, Katrien Keune and Koen Janssens <i>An investigation into the materials of Vermeer's The Art of Painting using MA-XRF and MA-XRPD</i>
12h15	4550	<u>Elvira Scialla</u> , Jessica Brocchieri, Marianna Merolle, Palma Maria Recchia, Roberto Della Rocca, Antonio D'Onofrio and Carlo Sabbarese <i>Study of the 'Adoration of the Magi' by Artemisia Gentileschi with multispectral imaging and XRF analysis</i>
12h30	6842	<u>Raphael Moreau</u> , Svetlana Gasanova, Nikolas Bakirtzis and Sorin Hermon <i>New insights on Titian's Ecce Homo materiality by coupled MA-XRF, RIS and LIS scanning</i>
12h45	7402	<u>Dafne Cimino</u> , Angelo Agostino, Paola Artoni, Claudia Daffara and Monica Molteni <i>Beyond the youth smile: investigating techniques and materials in Caroto's paintings</i>
13h00		Lunch break (Building C7)

SESSION G - EASEL PAINTINGS | CHAIRED BY SOFIA PESSANHA

15h00	7633	<u>Steven De Meyer</u> , Victor Gonzalez, Letizia Monico, Iryn Bijker, Sara Carboni Marri, Francesca Gabrieli, Mathieu Thoury, Roald Tagle, Michele Girona, Loïc Bertrand and Koen Janssens <i>Casting light on Robert Delaunay's palette: a multimodal approach using MA-XRPD/XRF</i>
15h15	7660	<u>Marcia de Almeida Rizzutto</u> , Renata D.F.M. Rocco, Julia Schenatto, Juliana Bittencourt Bovolenta, Wanda Gabriel Pereira Engel, Marcia Sampaio Barbosa and Ana G. Magalhães <i>Massimo Campigli, an Italian painter, studied with non-invasive and portable analytical techniques</i>
15h30	7844	<u>Ana Machado</u> , Sara Valadas, Peter Vandenabeele, António Candeias, Ana Teresa Caldeira, Luís Piorro and Teresa Reis <i>Combining in situ Elemental and Molecular Analysis: the Vice-Roys Portraits in Old Goa, India</i>
15h45	8384	<u>Frédérique Broers</u> , Annelies van Loon, Victor Gonzalez, Francesca Gabrieli, Jorien Duivenvoorden, Jan Garrevoet, Petria Noble, Koen Janssens, Florian Meirer and Katrien Keune <i>Correlative X-ray Fluorescence and Ptychography Tomography at the Nanoscale Elucidate Different Small Mixtures used in The Night Watch</i>
16h00	8765	<u>Kostas Hatzigiannakis</u> , Kristalia Melessanaki, Anna Moutsatsou, Agni Terlizi, Elina Kavalieratou, Kalliopi Tsampa, Effrossyni Androulakaki, Panagiotis Assiouras, Demetrios Anglos and Andreas Germanos Karydas <i>Evaluation of the combined application of elemental and imaging spectroscopies for the non-invasive analytical characterization of 19th century paintings</i>
16h15	6635	<u>Francesca Gabrieli</u> , Annelies Van Loon, Anna Krekeler, Ige Verslype and Katrien Keune <i>Johannes Vermeer under different wavelengths</i>
16h30		Coffee break
17h00		Poster session 1
18h30		

TUESDAY 9TH | BUILDING C3 - AUDITORIUM 3.2.14

SESSION H - TEXTILES | CHAIRED BY PAULA NABAIS

09h00		Diego Tamburini <i>From Europe to Asia: on the introduction of early synthetic dyes in traditional dyeing practice</i>
09h30	1288	<u>Ludovico Geminiani</u> , Cristina Corti, Moira Luraschi, Sila Motella and Laura Rampazzi <i>Analytical investigation into cellulosic materials from traditional Japanese samurai armours</i>
09h45	1470	<u>Alessia Melelli</u> , Camille Goudenhooff, Loren Morgillo, Sylvie Durand, Johnny Beaugrand, Anita Quiles, Timm Weitkamp, Mario Scheel, Frédéric Jamme and Alain Bourmaud <i>Cutting-edge techniques for the investigation of ancient flax textiles</i>
10h00	1682	<u>Constantina Vlachou-Mogire</u> , Moira Bertasa, John R Gilchrist, Jon Danskin and Kathryn Hallett <i>Historic tapestry dye analysis with hyperspectral imaging</i>
10h15	3848	<u>Hortense de La Codre</u> , Rémy Chapoulie, Laurent Servant and Aurélie Mounier <i>A comprehensive methodology for the characterisation of 18th-century tapestry dyeing materials: between point analyses and hyperspectral imaging</i>
10h30	5773	<u>Pauline Claisse</u> , Francesca Galluzzi, Floréal Daniel, Rémy Chapoulie, Mohamed Dallel and Aurélie Mounier <i>SWIR hyperspectral imaging to unveil the numerous restorations of the Lady and the Unicorn tapestry (15th C, Musée de Cluny)</i>

Analytical investigation into cellulosic materials from traditional Japanese samurai armours

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(4) Laboratorio di Archeobiologia, Musei Civici di Como, Piazza Medaglie d'Oro 1, 22100 Como, Italy;

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The presentation aims to show limits and possibilities of ATR-FTIR spectroscopy applied to the study of cellulosic textiles collections. The work discusses some common issues and offers some hints for the interpretation of ATR-FTIR spectra from cellulosic textiles collections.

The spectral differences derived from the plant composition were reviewed and discussed in light of new experimental data, to propose diagnostic bands able to discriminate fibres coming from different plants. Similarly, the influence of the environmental humidity uptake was studied through water absorption tests and peak fitting analysis [1,2]. The contribution of ageing [3] was also considered and replicated through accelerated ageing tests, demonstrating that sometimes aged fibres cannot be reliably recognized. Thus, the visual inspection through SEM, which is relatively non-invasive, is still often decisive in recognizing natural fibres. The proposed protocol was tested on microsamples of various materials coming from traditional Japanese samurai armours dating back from 16th to 20th century (Morigi Collection, Museo delle Culture, Lugano, Switzerland). A part of the work was devoted to the study of metallic threads, a complex and unique multimaterial with specific characteristics in Japanese tradition (*kinran*) which has been characterized for the first time.

The results permitted to get a complete characterization of the materials and demonstrated that the protocol can be useful for the study of a wide variety of cellulosic materials, including fibres, and paper. It was found that it is possible to discriminate natural and regenerated cellulosic fibres, thanks to the OH stretching region, which is the most diagnostic. The method is micro-invasive, quick and simple to use during an analytical campaign on a textile collection and it permits to identify both ancient natural and recent regenerated fibres. The information is of a great help to find out past restoration materials and to reconstruct the history of the work of art. As modified cellulose fibres appeared in 20th century, the recognition of chemical modifications operated on the fibre gives a certain *terminus post quem* for dating or a clear sign of a recent restoration. Eventually, the knowledge could help to find out the best conditions to display objects and to stabilise them for long-term storage.

[1] Olsson AM, Salmén L. The association of water to cellulose and hemicellulose in paper examined by FTIR spectroscopy, "Carbohydr Res.", 339, 2004, pp. 813–8.

[2] Fengel D. Influence of Water on the OH Valency Range in Deconvoluted FTIR Spectra of Cellulose, "Holzforschung", 47, 1993, pp. 103–8.

[3] Małachowska E, Dubowik M, Boruszewski P, Przybysz P. Accelerated ageing of paper: effect of lignin content and humidity on tensile properties, "Herit Sci.", 9, 2021, pp. 1–8.