

出國報告

(出國類別：國際會議)

「非破壞暨顯微分析技術在藝術與文化遺產之應用」(TECHNART 2017)國際研討會

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派赴國家：西班牙
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公務出國報告提要

出國報告名稱：「非破壞暨顯微分析技術在藝術與文化遺產之應用」(TECHNART2017)
國際研討會

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摘要：

TECHNART「非破壞暨顯微分析技術在藝術與文化遺產之應用」會議為目前有關藝術與文化遺產科學檢測領域最重要的國際會議之一，過去曾在里斯本、雅典、柏林、阿姆斯特丹及卡塔尼亞舉行，2017年的TECHNART則於西班牙畢爾包(Bilbao)舉辦，有來自全世界各博物館、大學、研究機構和文物保存中心的文物科學分析及文物保存相關專家學者及學生出席盛會，發表了共約330篇論文。此次本院出席會議共發表包括乾隆轉心瓶研究與郎世寧繪畫顏料研究等共2篇論文。出席會議之目的除了發表論文外，主要能與各國專家學者面對面討論交流，了解文物科學分析技術和應用之最前沿的發展和相關議題，吸收相關知識，同時也讓其他國家了解本院在此一領域的研究成果，並建立交流網絡。

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一、 目的

TECHNART「非破壞暨顯微分析技術在藝術與文化遺產之應用」會議為目前有關藝術與文化遺產科學檢測領域最重要的國際會議之一，過去曾在里斯本、雅典、柏林、阿姆斯特丹及義大利的卡塔尼亞（2015）舉辦，其中 2015 年會議聚集了全世界各博物館、大學、研究機構和文物保存中心的文物科學分析及文物保存相關專家學者及學生近千人，發表了共近 500 篇論文，為此領域有史以來最大規模的國際會議。2017 年 TECHNART 2017 則於 2017 年 5 月 2-6 日在西班牙畢爾包（Bilbao）舉行，有來自歐亞美澳等各國重要博物館、大學、研究機構與保存中心等之專家學者超過 500 名出席盛會，發表論文共約 330 篇（附件）。本院作為世界重要博物館之一，近年來因執行「文物高精密科學檢測技術研發應用暨實驗室建置計畫」之科發計畫，在文物科學實驗室硬體建置與實際的應用方面，皆已有初步成果。為在國際上展現本院既有成果，積極參與國際上文物保存社群之活動，同時扮演重要一份子，乃有必要出席國際上重要之文物科學保存或文物分析研究之相關會議，因此，自然不能錯過此一重要發表成果及與各國專家交流之機會。本次出席會議，除發表有關乾隆轉心瓶研究與郎世寧繪畫顏料研究等 2 篇論文外，也與會各國專家學者面對面廣泛交流，了解文物科學分析技術和應用之最前沿的發展和相關議題，吸收相關知識，同時也讓其他國家了解本院在此一領域的研究成果，並建立交流網絡。

此外，藉此赴西班牙出席會議之機會，亦將與畢爾包古根漢美術館保存部門、馬德里西班牙國立文化資產保存修復中心、普拉多博物館(Prado Museum)、巴塞隆納加泰隆尼亞國家 美術館和其他重要博物館之保存部門 參訪交流。西班牙文化資產保存修復中心是西班牙最重要的國家文化資產保存中心，不論在專業人員、保存技術、分析設備及實務工作上皆能提供本院文保科技發展之參考。又馬德里及巴塞隆納是西班牙文化重鎮，普拉多博物館(Prado Museum)、加泰隆尼亞國家 美術館和其他重要博物館皆設有保存及修復實驗室，相關的工作與專業技術和行政運作皆值本院借鏡。

二、 過程

(一) 行程表

日期	地點	工作內容
4/30(日)	台北	台北出發飛往畢爾包(由巴黎轉機)
5/1(一)	巴黎 畢爾包	飛抵巴黎，轉機赴畢爾包
5/2(二) – 5/6(六)	畢爾包	出席「非破壞暨顯微分析技術在藝術與文化遺產之應用」(TECHNART 2017)國際研討會並發表論文
5/7(日) – 5/8(一)	畢爾包	赴畢爾包美術館及古根漢美術館參訪，並與古根漢美術館保存部門交流。
5/8(一) – 5/10(三)	馬德里	赴馬德里西班牙國立文化資產保存中心參訪交流，參訪普拉多博物館(Prado Museum)和索菲亞藝術中心並蒐集顏料、玻璃與琺瑯研究等相關資料
5/11(四) – 5/14(六)	巴塞隆納	赴巴塞隆納加泰隆尼亞美術館及其他博物館之保存部門進行參訪交流，並蒐集文物科學研究相關資料
5/14(日) – 5/15(一)	巴黎	5/14 赴巴黎轉機(需過夜，因適逢歐洲部份地區連續假期，5/15 上午已無適當班機飛往巴黎轉機) 5/15 搭機返台北
5/16(二)	返回台北	返回台北

(二)會議內容簡述

TECHNART 「非破壞暨顯微分析技術在藝術與文化遺產之應用」(Non-destructive and microanalytical techniques in art and cultural heritage)國際研討會，過去曾在里斯本(2007)、雅典(2009)、柏林(2011)、阿姆斯特丹(2013)舉行，卡塔尼亞(Catania, 2015)舉辦，與會者皆是全世界各博物館、大學、研究機構和文物保存中心的文物科學分析及文物保存相關專家學者。由於科技日新月異，不論在影像、化學或結構分析技術，皆有長足的進步，過去無法獲取的隱藏於藝術作品中的影像或材料訊息，現在透過各類技術的綜合應用，都可以一一取得，對藝術品的保存、修復、定年、真偽鑑定、來源、工藝史研究等，皆有直接或間接的幫助。TECHNART 2017 於 2017 年 5 月 2-6 日於西班牙畢爾包舉行，會議內容包含以下主題:

- X 光顯微分析(XRF, PIXE, XRD, SED-EDX)
- 共軛焦 X 光顯微術 (3D micro-XRF, 3D micro-PIXE)
- 基於同步輻射、離子束及中子之分析技術
- FT-IR 及拉曼光譜術
- 紫外光-可見光及近紅外光吸收/反射及螢光光譜
- 基於雷射之分析技術
- 磁共振技術
- 色譜儀及質譜儀分析技術
- 光學影像及同調技術
- 可移動光譜術及遙測技術

上述主題在技術層面涵蓋了目前使用於文化資產領域所使用的分析技術；在應用層面則包含顏料、染料、玉石、金屬、玻璃、陶瓷、紙類及織品纖維、墨水、樹脂等各類有機及無機文物材料。會議議程共四天，除了大會演講外，其餘論文依各類不同主題同時利用三個場地進行口頭報告，此外，亦安排三場海報論文展示。詳細會議資料件附件 2-1。

此次本人代表本院出席會議，共發表 2 篇論文，其中一篇為口頭論文: Investigation of 18th-century Chinese double-walled vases in yangcai painted enamel，於 5 月 4 日週四

上午 10:30-10:50 發表，論文主要討論本院乾隆時期轉心瓶的工藝技術之研究結果，包括利用 X 光斷層掃描檢視及 XRF 檢測之成果；另外一篇則為海報論文: *Pigments and colouration in the 18th century Chinese court paintings of Giuseppe Castiglione (1688-1766)*，介紹利用 X 光、紅外線、XRF、Raman 及 FT-IR 等非破壞檢測技術交叉分析郎世寧畫作之成果。

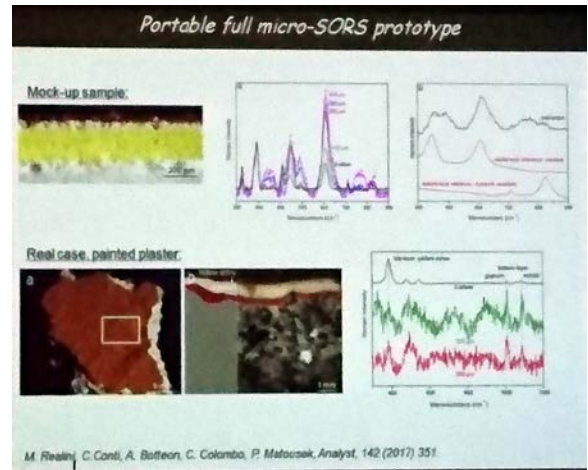
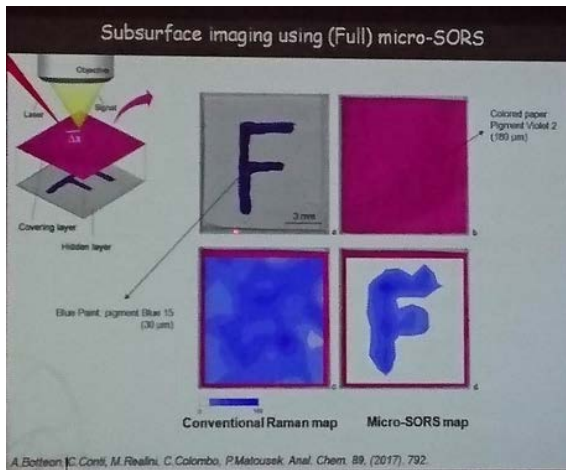
以下為會議部分內容介紹

1. 5 月 2 日(週二)

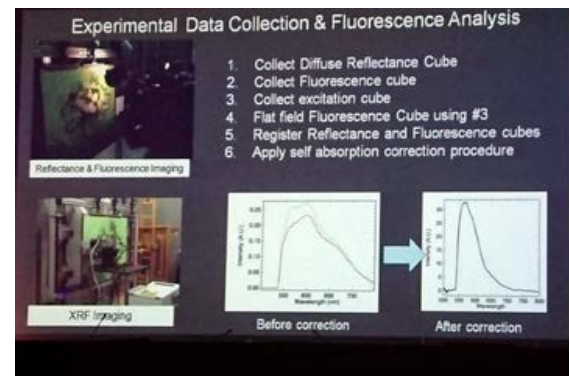
5 月 2 日上午的主題演講主要由位於米蘭的義大利國家研究委員會文化遺產保存研究所的 Claudia Conti 教授介紹顯微空間偏移拉曼光譜在文化遺產應用之潛力(Potential of Micro-SORS for Cultural Heritage)。傳統拉曼光譜主要是表面分析工具，顯微 SORS 技術則可以用來偵測一般樣品表面下數微米的物質之分子結構，因此可以允許分析如油畫、壁畫、雕塑彩繪及其他類型之繪畫等不同層的顏料或相關材料特性，提供保存與繪畫技法研究之用。

下午場次的主題演講則由西班牙 Jaén 大學物理與分析化學系 María José Ayora-Cañada 教授介紹利用拉曼光譜、XRF、SEM-EDS、FT-IR 等技術交叉分析研究西班牙格拉那達著名文化遺產阿蘭布拉宮(Alhambra)裝飾護層，主要是石膏、大理石柱、磚牆及木質天花板之多彩顏料層，對保存及相關工藝技術的研究提供重要的訊息。

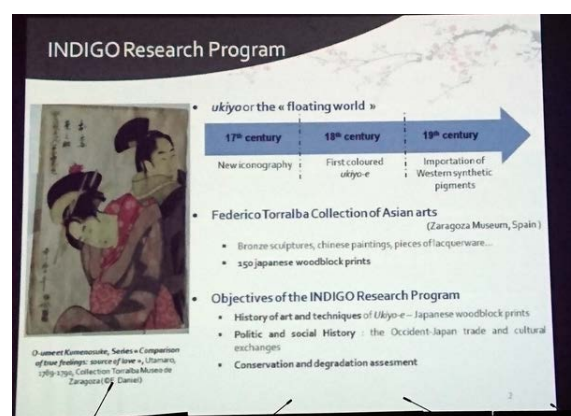
此外，華盛頓特區 National Gallery of Art 的 John K. Delaney 博士發表利用影像技術分析梵谷畫作中退色有機顏料之分佈之論文；波爾多大學考古物理學研究中心 Carole Biron 女士發表日本浮世繪中有機染料與顏料的分析結果。其他尚有 36 篇口頭演講和 59 餘篇海報論文發表，觸及的議題包括大面積元素影像分佈掃描技術(Macro-XRF)的發展與應用、顏料與染料鑑識分析、顏料與染料老化、變質與退色問題、光學同調斷層掃描技術(OCT)的應用、同步輻射技術的使用、高光譜技術的應用、XRD-XRF 等耦合分析技術的開發、羊皮紙的保存議題、漆及凡尼斯的分析與保存...等。



Claudia Conti 教授介紹 Micro-SORS 技術在文化遺產之應用 (筆者攝影)



華盛頓 DC National Gallery of Art 的 John K. Delaney 博士發表利用影像技術分析梵谷畫作中退色有機顏料之分佈



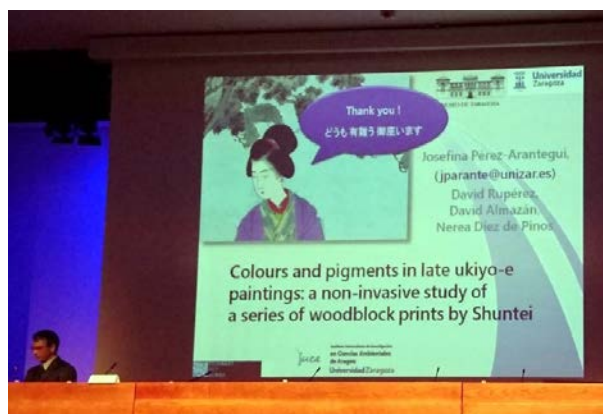
波爾多大學考古物理學研究中心 Carole Biron 女士發表日本浮世繪中有機染料與顏料的分析

2. 5月3日(週三)

5月3日上午開場舉行圓桌論壇，主要討論有關歐洲文化遺產科學分析資源共享與合作機制的現況與未來發展。另外，共有口頭報告37篇、海報論文52篇發表。主題內容方面，除了延續第一日的相關議題外，在應用方面，還包括岩畫、洞窟壁畫、金屬和陶瓷等的分析研究。由於TECHNART會議在歐洲舉行，參加者仍以歐洲各大博物館、大學和研究單位之專家學者居多，技術發展的介紹是一重點，在應用分析方面，繪畫—特別是油畫，向來是關注研究的核心。不過也有東方繪畫分析的案例發表，例如除了5月2日Carole Biron關於浮世繪的研究外，西班牙Zaragoza大學的J. Pérez-Arantegu女士也討論了日本畫家宮川春汀浮世繪顏料分析之結果。

另外，筆者也發表郎世寧繪畫檢視與顏料分析之結果 (Pigments and colouration in the 18th century Chinese court paintings of Giuseppe Castiglione)，介紹利用X光、紅外線、XRF、Raman及FT-IR等各種非破壞檢測技術交叉分析郎世寧畫作所獲取知訊息。由於在郎世寧十八世紀上半葉的繪畫中發現了普魯士藍，是目前所知東亞最早使用普魯士藍的案例，引起不少學者的關注，並就普魯士藍在十八世紀的使用情形和筆者討論交流。

前面提到日本浮世繪上顏料分析的論文，雖然也發現了普魯士藍，但畫作的年代為十九世紀，而此時普魯士藍已廣泛流傳，包括中國、日本等亞洲國家，皆使用於繪畫上，因此並不足以為奇。



西班牙 Zaragoza 大學 J. Pérez-Arantegu 女士發表日本畫家宮川春汀浮世繪顏料分析結果



左圖: 筆者發表關於郎世寧繪畫顏料分析研究之海報論文；右圖: 與德國學者討論交流。

3. 5月4日(週四)

5月4日的口頭報告共51篇，海報論文55篇。主題演講包括義大利國家研究委員會文化資產保存研究所所長 Maria Perla Colombini 介紹使用質譜儀分析考古有機材料及有機殘留物的最新發展情形；另一場則由希臘 Meropi Mari 教授介紹非線性影像顯微技術在文化遺產應用研究的發展。其他的論文主題涵蓋包括離子束、時間解析 ATR-FTIR、Macro-XRF 等技術發展介紹；在應用對象方面，繪畫顏料之外，也包括玻璃、琺瑯、陶瓷、古籍文獻、紙張、染料、墨水...等之分析、鑑識、工藝史或保存議題。其中繪畫分析包括法國法國索本大學(巴黎第六大學) 分子與結構考古學實驗室(LAMS)團隊所發表的使用各類自行設計研發的 XRF、XRD、高光譜影像技術研究普桑(Nicolas Pussin)畫作之顏料與繪畫技巧論文。

筆者亦發表一篇有關本院乾隆時期轉心瓶的工藝技術之研究論文。此一研究除了文獻方面，主要利用了本院自行設計建造的 X 光電腦斷層掃描結構，掃描揭開轉新瓶的內部構造，進而探究其如何結合如此複雜之結構。由於西方少見同類型之陶瓷或琺瑯作品，因此也引起不少學者的興趣，提出不少問題。



法國索本大學(巴黎第六大學) L.de Viguerie 博士發表普桑繪畫技巧之分析研究



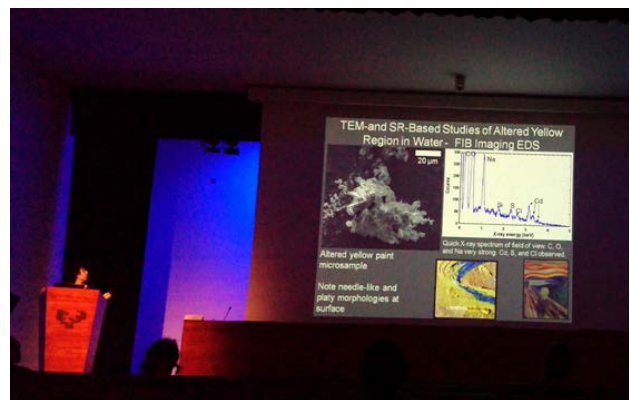
筆者與發表十八世紀轉心瓶工藝技術研究之論文

4. 5月5日(週五)

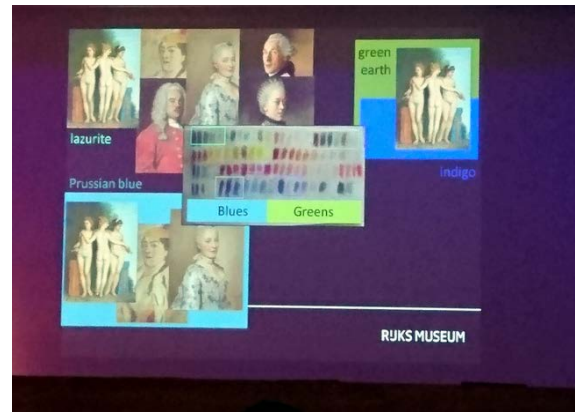
5月5日的議程包括40篇口頭論文，55篇海報論文。主題演講由 Jennifer L. Mass 博士討論印象主義到表現主義畫家畫作上顏料質變與退色的問題。在其他論文方面，繪畫與顏料的研究仍是大宗，其他的議題包括奈米材料與膠體材料於保存上之應用、修復材料的開發、有機分析技術的發展與應用，如 NMR、MALDI-MS、GC-MS、HPLC 等，以及銅與金等金屬材質的分析研究等。

繪畫方面，荷蘭 Rijksmuseum 國家博物館的 Leila Sauvage 女士發表關於該館粉彩畫之研究成果；另一篇論文是該館團隊利用新的影像技術研究林布蘭的畫。台灣奇

美博物館李文元女士此次也發表一篇利用 Macro-XRF 技術發現該館所藏一幅 Jan Steen 畫作底下所隱藏的秘密。香港大學顧繼東教授則發表其與日本團隊合作利用新的技術分析柬埔寨吳哥窟寺廟遺址微生物之論文。



Jennifer L. Mass 博士主講表現主義畫作中的顏料分析研究



荷蘭 Rijksmuseum 國家博物館 Leila Sauvage 女士發表關於該館粉彩畫之研究成果

會議議程於 5 月 5 日結束，由本屆會議主席 Juan Manuel Madariaga 教授宣布下次 TECHNART 會議在比利時安特衛普舉辦，接著由下屆主席安特衛普大學 Koen Janssens 介紹 2019 年會議的相關訊息。

(三)參訪交流

1. 畢爾包古根漢美術館

TECHNART 2017 會議的場所鄰近古根漢美術館與畢爾包美術館，除了參觀展覽外，主要與古根漢美術館保存部門人員交流。參訪由保存部門 Ainhoa Sanz 主任及同事 Aitziber Velasco 女士接待，參觀了修護工作室與庫房等，並說明其工作內容。由於古根漢美術館的收藏以現代/當代藝術為主，媒材相當複雜，保存工作上也有許多挑戰，因此經常需要與其他研究單位或實驗室合作，分析相關的材料及研究其劣化機制與保存對策等問題。



畢爾包古根漢美術館：建築外觀與室內一景（筆者攝）



左圖：筆者與古根漢美術館保存部門同仁 Ainhoa Sanz、Aitziber Velasco 及奇美博物館李文元女士攝於古根漢美術館保存工作室；右圖：古根漢美術館 Aitziber Velasco 女士介紹現代複合媒材的保存問題

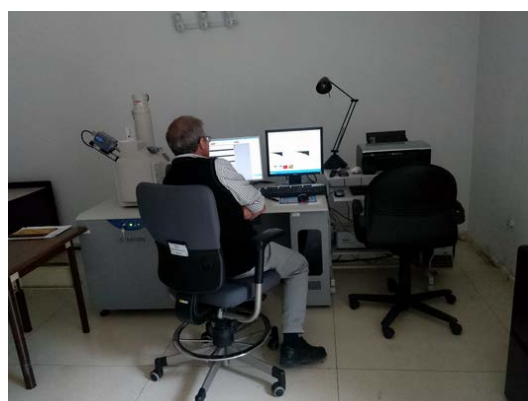
2. 馬德里西班牙文化資產研究所

西班牙文化資產研究所位於馬德里，隸屬於西班牙教育、文化與體育部，是西班牙文化資產保存核心機構，其科學實驗室、各類修復工作室建置完整，專業人員眾多，此次參訪由科學實驗室負責人 **Maria Martin Gil** 博士接待，說明其工作內容，並與該實驗室的科學家討論交流有關顏料分析研究的經驗。

該研究所主要與西班牙各博物館、考古工作團隊與文化遺產相關研究單位合作，進行文化遺產的分析、預防性保存和修護等工作。此外，一個很重要的任務是人才的培訓。該研究所實驗室設備齊全，由於集中在一建築內，因此運作使用相當有效率。值得一提的是，由於經常需要拍攝大型雕塑或建築構件的 X 光影片，因此該實驗室使用了大型 IP 板進行 X 光檢視工作。此一作法或可提供國內未來拍攝大型文物 X 光之參考。



西班牙文化資產研究所。左圖：大廳中庭；右圖：研究圖書館。(筆者攝)



西班牙文化資產研究所科學實驗室 (筆者攝)



西班牙文化資產研究所科學實驗室拍攝之大型 X 光影像 (筆者攝)

3. 普拉多國立美術館(Museo Nacional Del Prado)

普拉多是西班牙最重要的博物館之一，典藏許多重要藝術家的藏品。除了參觀展廳外，主要與科學與保存部門人員廣泛交流。參訪由實驗室負責人 Maria Dolores Gayo 女士接待，介紹了實驗室的相關設施，以及工作內容。由於該館最主要的藏品是油畫，因此實驗室的研究分析內容便以油畫相關材料為主，包括顏料、相關有機材料如膠、油、樹脂等。實驗室之外，Gayo 女士也帶領參觀油畫修復工作室，並和修復師有短暫的交流。



馬德里普拉多(Prado)國立美術館分析實驗室

4. 巴塞隆納加泰隆尼亞國立美術館

巴塞隆納為西班牙文化重鎮，此次主要赴巴塞隆納加泰隆尼亞美術館參訪，並與科學研究人員交流及蒐集文物科學研究相關資料。

三、心得

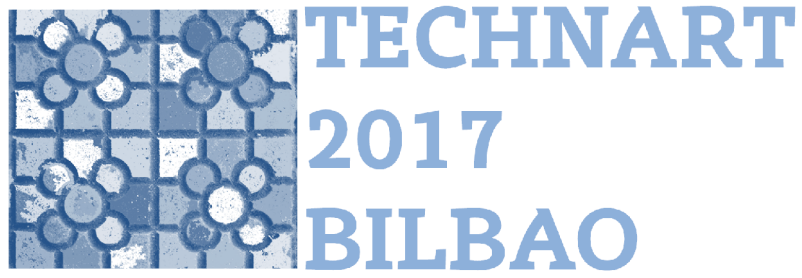
由於科技日新月異，不論在影像技術、化學或結構分析技術，皆有長足的進步，過去無法獲取的隱藏於藝術作品中的影像或材料訊息，現在透過各類技術的應用，都可以一一取得，對藝術品的保存、修復、定年、真偽鑑定、來源、工藝史研究等，皆有直接或間接的幫助。TECHNART 國際會議聚集了全世界各博物館、大學、研究機構和文物保存中心的文物科學分析及文物保存之專家學者，發表有關文化資產及藝術品的各類檢測技術和應用相關的論文，而能直接與許多專家面對面交流，同時了解文物科學分析領域最前沿的發展和相關議題，吸收有關的知識，對本院正在發展中的相關研究與技術有提升作用。另一方面，更重要的是，本院乃世界重要博物館之一，因此，透過出席此一國際會議，發表論文，與各國專家學者討論交流，也可讓其他國家了解本院在此一領域的研究成果，此乃建立交流網絡重要的一環，也是國際化很重要的部分。

四、建議

1. 本院如欲真正走向國際化，除了借展和邀請專家來台外，必須要能在各個專業領域扮演重要的角色，不僅僅有專業輸入，更應有輸出，能參與國際上的專業領域活動並能有所貢獻，換句話說，要在國際間立足，除了有好的文物外，我們的專業也要走出去。此類型的國際研討會，是展現博物館重要專業硬實力的地方，同時可以面對面和各大博物館、研究單位和保存中心人員直接交流討論，較諸於到各國考察更能掌握實際整體專業的發展脈動，效能亦較高。當各大博物館都積極參與並發表結果，若本院因為大幅刪除出席國際會議預算或其他因素而缺席此類會議，則不利於本院在國際上的專業參與。

2. 目前在歐美國家的博物館中，有關文物科學分析研究的成果，特別是許多突破性的發現，多列為重要的績效指標。相對於歐美，台灣在文化遺產及文物科學分析研究領域所投入的人力和技術發展資源都相當有限，整體而言，不論在質或量方面，皆有許多努力的空間。本院作為世界級的博物館，在展覽、圖錄出版、文創行銷、數位多媒體教育展示等，皆有豐碩的成績。在文物保存方面，預防性保存及文物修復也累積了多年的成果。而有關於文物科學分析領域，雖然近幾年因為建置文物科學實驗室計畫而

逐步提昇，惟在制度和人才進用方面，受限於政府既有的規定和現有的博物館制度，乃跟不上計畫發展的節奏，以致專業人力仍明顯不足。因此，若要整體提昇我們的實力，除了設備和經費外，更重要的是在人力(包括人才培育)和制度層面作一結構性的調整，才有辦法迎頭趕上，真正躋身世界級的博物館之林。



**Scientific Programme
& Daily Schedule**

TECHNART 2017

SCHEDULE OF THE CONFERENCE

1. Tuesday, May 2

8:00-9:00	Registration
9:00-9:20	Opening
9:20-10:10	Plenary Lecture 1: Potential of Micro-SORS for Cultural Heritage by Claudia Conti.
Parallel session A (Mitxelena Hall)	
10:10-10:30	MA-XRF scanning as tool in authentication studies of paintings. S. Saverwyns, E. Lamas-Delgado, C. Currie and M. Van Bos
10:30-10:50	Moisture transport and sorption in oil-painted linen canvas documented by X-ray and neutron imaging. D. Derome, R. Hendrickx, S. Carl, G. Desmarais, D. Mannes, A. Kaestner, E. S.B. Ferreira
10:50-11:10	A novel mobile X-ray scanner integrating MA-XRF, μ XRF and confocal-XRF for a real-time elemental imaging of painted artworks- F.P. Romano, C. Caliri, P. Nicotra, S. Di Martino, L. Pappalardo, F. Rizzo, H.C. Santos
Parallel session B (Baroja Hall)	
10:10-10:30	A novel methodological approach for the assessment of surface cleaning of acrylic emulsion paints. T. Fardi, V. Pintus, E. Kampasakali, E. Pavlidou, K. G. Papaspyropoulos, M. Schreiner, G. Kyriakou
10:30-10:50	Insight on colour change and chemical alteration of green copper-based organometallic painting pigments. M. Alter, A.-S. Le Hô, C. Doublet, D. Gourier, L. Binet, N. Touati, F. Mirambet, N. Lubin-Germain
10:50-11:10	Elucidating Daguerreotype Degradation By Surface Species Formation Using Surface Plasmon Resonance Scattering Spectroscopy. A. E. Schlather, S. A. Centeno
Parallel session C (Oteiza Gallery)	
10:10-10:30	Advanced extraction and analytical methods applied to discrimination of different lichen species used for orcein dyed yarns. I. Serafini, L. Lombardi, M. Aceto, E. Calà, A. Idone, F. Sciubba, M. Guiso, A. Bianco
10:30-10:50	Identification and classification of textile fibres using ATR-FT-IR spectroscopy with chemometric methods. P. Peets, S. Vahur, I. Leito
10:50-11:10	Surface Enhanced Raman Spectroscopy of Antraquinone-aluminum complexes on Dyed Fibers. T. Aguayo

11:10-11:50	Coffee Break
Parallel session A (Mitxelena Hall)	
11:50-12:10	Removal of absorption artefacts in the macro-XRF imaging of paintings. P. M. Wrobel, P. Fraczek, M. Lankosz
12:10-12:30	Macro XRF scanning: New opportunities for non-destructive analysis of two episcopal mitres, attributed to bishop Jacques de Vitry (12-13 th c. AD). I. Vanden Berghe, M. Van Bos
12:30-12:50	Scanning X-ray fluorescence imaging for evaluation of platinum prints and other 19 th -20 th century photographs. L. Smieska, A. Lundgren, N. Kennedy, S. A. Centeno
12:50-13:10	Use of Macro-scale Tri-Modal Imaging Spectroscopy To Map and Identify Faded Organic Red Lakes in Van Gogh Paintings J. K. Delaney, K. Dooley, C. Miliani, K. Janssens
13:10-13:30	Spatially resolved X-ray fluorescence: State of the ART. R. Tagle, M. Bügler, F. Reinhardt, U. Waldschläger
Parallel session B (Baroja Hall)	
11:50-12:10	Analytical challenges in studying degradation processes in paintings: ultramarine disease. A. A. Gambardella, K. Schnetz, R. van Elsas, P. Iedema, K. Keune
12:10-12:30	Combining synchrotron photoluminescence imaging and microspectroscopy to study zinc white degradation in oil paint. S. Hageraats, K. Keune, A. van Loon, B. Berrie, M. Thoury
12:30-12:50	Influence of lead white and cobalt blue on the degradation of Eosin lakes. A. Álvarez-Martín, K. Janssens
12:50-13:10	Blanching of paint and varnish layers: from the characterization to the development of conservation treatments. A. Genty-Vincent, M. Eveno, W. Nowik, G. Bastian, E. Ravaud, J. Uziel, R. Giorgi, P. Baglioni, N. Lubin-Germain, M. Menu
13:10-13:30	Role of defects in the reactivity of Cd-yellow. L. Giacometti, A. Satta, A. Nevin, D. Comelli, G. Valentini
Parallel session C (Oteiza Gallery)	
11:50-12:10	An Innovative Method for the Non-invasive Proteomic Analysis of Cultural Heritage Objects. M. Manfredi, E. Barberis, E. Conte, F. Gosetti, S. Baiocco, P.G. Righetti, E. Marengo
12:10-12:30	A non-invasive methodology for stratigraphy investigation of historical violins using reflection IR spectroscopy and UV induced fluorescence technique. C. Invernizzi, T. Rovetta, M. Licchelli, M. Malagodi

12:30-12:50	Complementary use of Optical Coherence Tomography (OCT) and Reflection mid-FTIR spectroscopy for in situ monitoring of varnish removal from easel paintings. M. Iwanicka, P. Moretti, S. van Oudheusden, M. Sylwestrzak, L. Cartechini, K. J. van den Berg, P. Targowski, C. Miliani
12:50-13:10	A non-Invasive Study of Surface Coatings of Electric Guitars. A. Michelin, S. Vaiedelich, C. Andraud, A. Tournié, P. Bruguière
13:10-13:30	Fluorination technique to identify the type of resin in aged vanishes and lacquers using infrared spectroscopy S. Zumbühl, A. Hochuli, N. C. Scherrer, B. Soulier
13:30-15:00	Lunch
15:00-15:50	Plenary Lecture 2: Multimodal analytical approach for characterization of decorative revetments in the Alhambra monument by Maria José Ayora.
Parallel session A (Mitxelena Hall)	
15:50-16:10	An integrate use of Raman and Time Resolved Laser Induced Fluorescence spectroscopy to identify ancient and contemporary painted materials. M. Romani, S. Almaviva, F. Colao, R. Fantoni, M. Marinelli, A. Pasqualucci, G. Verona-Rinati
16:10-16:30	Portable Raman Spectroscopy for Cultural Heritage Objects. K. Frano, D. Yang, J. Mass
16:30-16:50	A Technological Investigation of Grounds in Paintings by a Group of Italian 17 th Century Artists with links to Roman and Neapolitan Practice. D. Buti, T. Filtenborg, L. Ludvigsen, A. Vila
16:50-17:10	In-situ and laboratory spectroscopic study of the mural painting of Ribera de Valderejo (Álava, Basque Country). I. Costantini, M. Veneranda, M. Irazola, J. Aramendia, K. Castro, J. M. Madariaga
17:10-17:30	Identification of organic dyes and pigments in ukiyo-e Japanese woodblock prints by non-invasive and mobile techniques. C. Biron, G. Le Bourdon, A. Mounier, J. Pérez-Arantegui, L. Servant, R. Chapoulie, F. Daniel
Parallel session B (Baroja Hall)	
15:50-16:10	Design of Experiments – Investigating the effect of paint formulation on degradation rates of TiO ₂ -based oil paints. B.A. van Driel, K.J. van den Berg, M. Smout, N. Dekker, J. Dik
16:10-16:30	Portable non-destructive handheld Mid-infrared FT-IR analysis of three diverse antiquities for spectral analysis combined with multivariate chemometric analysis and assessment of potential benefits in art cultural heritage studies. P. Leung Tang
16:30-16:50	

16:50-17:10	Characterization and provenance study of Pompeian red and yellow ochre pigments. I. Marcaida, M. Maguregui, S. Fdez-Ortiz de Vallejuelo, H. Morillas, K. Castro, N. Prieto-Taboada, M. Veneranda, J. M. Madariaga
17:10-17:30	Real-time diagnosis of collagen-based artworks by thermal shrinkage imaging. E. Badea, C. Carşote, O. A. Miu, I. Bornoiu, D. Ichim
Parallel session C (Oteiza Gallery)	
15:50-16:10	Readability recovery in damaged ancient parchment artefacts: a comparative study among multispectral imaging techniques. A. Pasqualucci, C. Cicero, M. Marinelli, F. Mercuri, N. Orazi, S. Paoloni, M. Romani, A. Terrei, G. Verona-Rinati, U. Zammit
16:10-16:30	Usability of spectroscopic, diffraction and microscopic analytical tools to recognize old Moroccan Jewish parchments L. Hajji, J. Assouik, A. Lhassani, A. Ainane, M. El Kouali, Y. Samia, M. Talbi, M. Manso, M. L. Carvalho
16:30-16:50	Mappa Mundi of Albi – Scientific study of the oldest map. L. Robinet, J. Deschaux, A. Tournié, S. Vaiedelich, G. Latour, A. Michelin, S. Thao, C. Andraud, M.-C. Schanne-Klein, B. Lavédrine
16:50-17:10	A multi-analytical study of the 'Hay Cookbook' Coptic magical manuscripts on leather reveal their mysteries. L.-A. Skinner, R. Stacey, B. Wills, L. Spindler, E. O'Connell
17:10-17:30	Non-invasive in-situ and SR-based imaging techniques for recovering the text from a recycled parchment. E. Pouyet, L. Smieska, A. Woll, A. Katsaggelos, O. Cossairt, J. Salvant, M. Walton
17:30-19:00	Coffee Break, Poster session 1

2. Wednesday, May 3

8:30-10:30	Round Table E-RIHS
Parallel session A (Mitxelena Hall)	
10:30-10:50	Identification of inorganic mordants from liquid extracts of madder lakes by laser induced breakdown spectroscopy. B. Campanella, I. Degano, E. Grifoni, S. Legnaioli, G. Lorenzetti, S. Pagnotta, F. Poggialini, V. Palleschi
10:50-11:10	Differentiating natural and amorphous arsenic sulfide in painted artifacts by means of Raman spectroscopy. M. Vermeulen, J. Sanyova, K. Janssens
Parallel session B (Baroja Hall)	
10:30-10:50	Micro-spectroscopy of rock art paintings from the Cueva Mayor of the Atapuerca site (Burgos, Spain). A. Hernanz, D. Paredes-Roibás, J.M. Gavira-Vallejo, J.J. Fernández, B. García, M. Iriarte
10:50-11:10	Non-destructive analysis of Still Bay (>70 ka) pointed artefacts from Sibudu Cave, South Africa. M. Wojcieszak, L. Wadley
Parallel session C (Oteiza Gallery)	
10:30-10:50	3D Imaging of artefacts by EDXRF- SCANNING. R. Cesareo, S. Ridolfi, A. Brunetti, G. E. Gigante
10:50-11:10	The processional cross of Santa Maria Maggiore at Guardiagrele: materials and techniques of Nicola da Guardiagrele investigated by X-ray fluorescence. A. Esposito, M. Ferretti, A. Gorghinian
11:10-11:50	Coffee Break
Parallel session A (Mitxelena Hall)	
11:50-12:10	Colours and pigments in late ukiyo-e paintings: a non-invasive study of a series of woodblock prints by Shuntei. J. Pérez-Arategui, D. Rupérez, D. Almazán, N. Díez de Pinos
12:10-12:30	Non destructive study of the pigments and the watermarks of engravings in North European Chiaroscuro. K. Laclavetine, C. Boust, L. Clivet, A. de La Chapelle, A. S. Le Hô, E. Laval, R. Mathis, M. Menu, E. Pagliano, R. Pillay, X. Salmon, V. Selbach, S. Lepape
12:30-12:50	Characterization and photostability of red synthetic organic pigments in alkyd and acrylic paints. M. Anghelone, D. Jembrih-Simbürger, Z. Siketić, M. Schreiner, I. Bogdanović Radović
12:50-13:10	'Do you see what I see?' A non-invasive multi-analytical study of the limits of detection of smalt in ultramarine mixtures. P. Ricciardi, D. MacLennan, G. Bertolotti, S. Bucklow, N. Turner, J. K. Delaney, K. Dooley, C. Patterson

13:10-13:30	Synchrotron study of micro-structure and luminescence of lead carbonates: revealing the Old Masters pigments qualities. V. Gonzalez, T. Calligaro, D. Comelli, M. Cotte, D. Gourier, A. Nevin, M. Réfrégiers, M. Thoury, G. Wallez, M. Menu
Parallel session B (Baroja Hall)	
11:50-12:10	Advanced characterization of new nanostructured stone treatments for the conservation of European Architectural Heritage. F. Gherardi, T. Poli, M. Roveri, O. Chiantore, L. Toniolo
12:10-12:30	The first use of portable Raman instrumentation for the analysis of Patagonian prehistoric rock art paintings: pigments, accretions and substrata. A. Rousaki, C. Vázquez, V. Aldazábal, C. Bellelli, M. Carballido Calatayud, A. Hajduk, E. Vargas, O. Palacios, A. Culka, J. Jehlička, L. Moens, P. Vandenaabeele
12:30-12:50	Investigation on construction materials and their environmental interaction at the Panamanian UNESCO sites. C. Ciantelli, A. Sardella, C. Vaccaro, A. Bonazza
12:50-13:10	New in situ non invasive analytical methodology to determinate the state of preservation of prehistoric rock art sites. J. F. Ruiz, S. Fdez-Ortiz de Vallejuelo, J. Aramendia, M. Maguregui, J. M. Madariaga
13:10-13:30	The investigation of calcium carbonate formation using micro-Raman spectroscopy Radek Ševčík, Petra Mácová, Alberto Viani
Parallel session C (Oteiza Gallery)	
11:50-12:10	Study of applicability of non-invasive analyses methods in archaeology. A. M. Gójska, E. A. Mišta
12:10-12:30	Non-invasive studies on technological provenance of medieval silver jewelry form Baltic Sea region. E. A. Mišta, W. Duczko, R. Czech-Błotńska, A. M. Gójska, A. Tuross, P. Ciepielewski
12:30-12:50	Electrochemical discrimination of monetary emissions: characterizing ten-cash Dragon copper coins. A. Doménech-Carbó, M. T. Doménech-Carbó, E. Montagna, Y. Lee
12:50-13:10	A spectroscopic study of metal foils and its layering in Norwegian Medieval objects. A. Vila, E. Platania, D. Buti, N. Streeton
13:10-13:30	Unveiling ancient gold inlay technique of a bronze belt plaque. M.-w. Tang, W.-f. Lai
13:30-15:00	Lunch
15:00-15:50	Plenary Lecture 3: Art and Cultural Heritage natural polymers by bottom up and top down approaches by Caroline Tokarski.

Parallel session A (Mixelena Hall)	
15:50-16:10	A Multi-Analytical Approach to Identify Historic Carbonaceous Media on 19 th Century French Drawings. N. Daly, M. Sullivan, L. Lee, K. Trentelman
16:10-16:30	Large volume imaging of cultural heritage with optical coherence tomography. T. Callewaert, J. Kalkman, J. Dik
16:30-16:50	Macroscopic X-ray powder diffraction imaging: highly specific pigment mapping using mobile equipment. F. Vanmeert, S. De Meyer, S. Legrand, G. Van der Snickt, K. Janssens, L. Klaasen, N. De Keyser, P. Noble, A. Van Loon, J. Dik
16:50-17:10	FT-IR investigation of painting cross-sections. E. Pięta, J. Olszewska-Świetlik, J. Adamczyk, A. Zając, C. Paluszkiwicz
17:10-17:30	Capabilities of in-situ Spectroscopic Imaging for Visualizing Traces of Antique Polychromy. M. Alfeld, M. Mulliez, J. Devogelaere, P. Martinez, L. de Viguerie ⁽¹⁾ , P. Jockey, P. Walter
Parallel session B (Baroja Hall)	
15:50-16:10	X-ray photoelectron spectroscopy of pictorial samples. E. Carrasco, M. Oujja, M. Sanz, J. F. Marco, M. Castillejo
16:10-16:30	From micro to macro: A multiscale Raman mapping approach for the analysis of inks and pigments on paper, panels and walls. S. Mosca, A. Artesani, D. Gulotta, A. Nevin, G. Valentini, D. Comelli
16:30-16:50	A system for scientific microscope color calibration at the Rijksmuseum for the Paint Sample Database. S. Smelt, R. Erdmann
16:50-17:10	The aggregation of lead and calcium carboxylates on experimental models. A combined analytical approach for their sampling, identification and characterization. Elena Aguado-Guardiola, Laura Fuster-López, Oscar Chiantore, Anna Piccirillo, Tommaso Poli, Paola Croveri, Marco Nervo
17:10-17:30	MA-XRF imaging spectroscopy on the Archaic painted panels from Pitsa (6th c. BC, Corinthia, Greece): New evidence on their original polychromy and their iconography. H. Brekoulaki, F.P. Romano, A.G. Karydas, G. Kavvadias
Parallel session C (Oteiza Gallery)	
15:50-16:10	What synchrotron radiation based experiments can tell about Poverty Point Objects (PPOs). J. Hormes, G.-L. Bovenkamp-Langlois, M. W. Schaefer, O. Kiyilkaza, W. Klysubun, D. M. Greenlee
16:10-16:30	Towards non-destructive analysis of archaeological ceramics by micro X-ray fluorescence spectrometry. E. Calparsoro, M. Maguregui, J. G. Iñáñez, J. M. Madariaga

16:30-16:50	Portable XRF setup with monochromatic radiation for the analysis of Cultural Heritage. S. Pessanha, M. Guerra, J. M. Sampaio, M. L. Carvalho, I. Queralt
16:50-17:10	The material characterisation of Industrial and Technical Heritage: The power plant in Levada de Tomar – Portugal. M. Manso, M. L. Carvalho, J. F. Fonseca, I. Queralt, M. Lemos, M. Tissot
17:10-17:30	In situ characterization of the materials and techniques of Roman Egyptian mummy portraits using combined forensic photography and spectroscopy. R. Radpour, Y. Lin, M. Svoboda, G. Chiari, C. Fischer, I. Kakoulli
17:30-19:00	Coffee Break, Poster session 2
21:00	GALA DINNER

3. Thursday, May 4

8:40-9:30	Plenary Lecture 4: Macromolecules in Archaeology by Maria Perla Colombini.
Parallel session A (Mixelena Hall)	
9:30-9:50	p-XRF analysis of lapis lazuli for provenance studies. A. Lo Giudice, A. Re, D. Angelici, M. Zangirolami, A. Agostino, M. Gulmini, A. Borghi, A. Mazzinghi, C. Ruberto, L. Castelli, A. Impallaria, F. Taccetti, G. Pratesi, M. C. Guidotti
9:50-10:10	Multidisciplinary non-invasive image diagnostics based on mobile techniques of 15th century paintings from Sicily. M. Barucci, C. Caliri, L. Castelli, E. Grifoni, A. Impallaria, S. Legnaioli, A. Orlando, F.C. Petrucci, M. Raffaelli, F.P. Romano, C.H. Santos, F. Taccetti, F. Tisato
10:10-10:30	Non-invasive analysis of mural paintings from a Republican house (1st century B.C.) in Ostia. D. Strivay, E. Herens, T. Morard, C. Defeyt
10:30-10:50	Characterization of Arsenic Sulfide Pigments in Japanese Prints of the late Edo Period. S. Zaleski, M. Leona
10:50-11:10	Time-resolved ATR-FTIR as a tool to monitor chemical reactivity in oil paint model systems. L. Baij, J. Hermans, K. Keune, P. Iedema
Parallel session B (Baroja Hall)	
9:30-9:50	The Glass beads as markers of the trade to Southern Africa from the 8th to the 19th century A.D. Ph. Colombar, F. Koleini, L. C. Prinsloo, W. Biemond, J. C.A. Boeyens, M. M. van der Ryst, I. Pikiyai
9:50-10:10	A novel tool for Cultural Heritage material analysis: Transmission Electron Microscope (TEM) 3D Electron Diffraction Tomography and Orientation/Phase Mapping applied to ancient Roman glass tesserae. N. Zacharias, F. Karavasili, P. Das, A. Galanis, E. Rauch, S. Nicolopoulos, A. Oikonomou, I. Margiolaki
10:10-10:30	Study of a modern Chinese cloisonné vase by means of EDXRF and Raman spectroscopy. I. Queralt, S. Pessanha, M. Manso, M. L. Carvalho
10:30-10:50	Investigation of 18 th -century Chinese double-walled vases in yangcai painted enamel. T.-H. Chen, C.-C. Huang
10:50-11:10	The magic of colour of medieval stained glass windows. Insights into composition of red and violet flashed glasses. M. Walczak, D. Wilk, M. Kamińska, E. Bernady, E. Bulska
Parallel session C (Oteiza Gallery)	
9:30-9:50	Rubrication in historic manuscripts. B. Frühmann, F. Cappa, W. Vetter, M. Schreiner

9:50-10:10	The presence of iron in the inks of the Valencian manuscripts from the 13th to the 17th centuries. G. M. Contreras Zamorano
10:10-10:30	Applicability of micro-reflection-FTIR-mapping for the investigation of medieval manuscripts – a case study. W. Vetter, B. Fruehmann, M. Schreiner
10:30-10:50	A multi-analytical characterization of French paper negatives: how to see through many processes? C. Daher, M.-A. Languille, A. de Mondenard, A. Tournié, S. Aubenas, B. Lavédrine
10:50-11:10	In situ spectrofluorimetric analysis of red & blue colours on 19th century Japanese engravings (Torralba collection, Zaragoza Museum). A. Mounier, G. Le Bourdon, C. Aupetit, S. Lazare, J. Perez-Arantegui, F. Daniel
11:10-11:50	Coffee Break
Parallel session A (Mitxelena Hall)	
11:50-12:10	Iba and Fors mapping applied to the analysis of cultural heritage artefacts: Last improvements on the aglae facility. Q. Lemasson, B. Moignard, C. Pacheco, L. Pichon, T. Calligaro, J. Rumolo, C. Boust, M. Guiavarc'h, G. Querré
12:10-12:30	Advanced techniques of photo-luminescence microscopy for the analysis of precious semiconductor-based painting layers. D. Comelli, A. Artesani, A. Nevin, V. Gonzalez, M. Réfrégiers, M. Thoury
12:30-12:50	The new "CRONO" macro-XRF scanner applied to Cimabue's masterpiece. T. Frizzi, G. Sciutto, N. Aresi, E. Catelli, S. Prati, R. Alberti, R. Mazzeo
12:50-13:10	A multi-analytical approach to the painting technique and the green and blue pigments used in Andean colonial wall paintings E. Tomasini, V. Careaga, C. Rúa Landa, F. Guzmán, G. Siracusano, M. Maier
13:10-13:30	The Giotto's workshop in the XXI century: looking inside the "God the Father with Angels" Cusp. A. Galli, R. Alberti, N. Aresi, L. Bonizzoni, M. Caccia, I. Castiglioni, M. Gargano, M. Interlenghi, N. Ludwig, C. Salvatore, M. Martini
Parallel session B (Baroja Hall)	
11:50-12:10	Mycenaean Glass from the Argolid, Peloponnese, Greece: A Technological and Provenance Study. N. Zacharias, M. Kaparou, A. Oikonomou, Z. Kasztovszky
12:10-12:30	Historic conservation materials on stained glass windows in the Naumburg cathedral E. Kanaki, J. Brandt
12:30-12:50	Characterization of glaze ceramics from the archaeological site of La Alcazaba, Almería (Spain). I. Ortega-Feliu, B. Gómez-Tubío, Y. Cáceres, M. A. Respaldiza

12:50-13:10	Assessing the firing temperature of Uruk pottery in the Middle Euphrates Valley (Syria): bevelled rim bowls. J. Sanjurjo-Sánchez, J. L. Montero Fenollós, V. Barrientos, G. S. Polymeris
13:10-13:30	Use of small angle neutron scattering and X-ray powder diffraction with the Rietveld method in the assessment of firing conditions in historical fired-clay bricks. A. Viani, K. Sotiriadis, R. Ševčík
Parallel session C (Oteiza Gallery)	
11:50-12:10	Printing materials and technologies in the 15 th -17 th century book production: an underestimated research field. F. Albertin, E. Balliana, G. Pizzol, G. Colavizza, E. Zendri, D. Raines
12:10-12:30	The use of polyamidoamines for the deacidification of iron-gall inked papers. C. Isca, L. Bergamonti, C. Graiff, G. Predieri, P. P. Lottici
12:30-12:50	Interdisciplinary approach for cleaning graphic artworks: the case study of Diana Scultori engraving. L. Micheli, C. Mazzuca, M. Missori, L. Teodonio, A. Mosca Conte, O. Pulci, L. Arcadipane, S. Dominijanni, S. Iannuccelli, S. Sotgiu
12:50-13:10	Combined macroscopic XRF and FTIR mapping of a 14 th century illuminated manuscript fragment. S. Legrand, P. Ricciardi, L. Nodari, K. Janssens
13:10-13:30	Highly retentive hydrogels for paper cleaning. C. Mazzuca, L. Micheli, G. Poggi, N. Bonelli, R. Giorgi, P. Baglioni, A. Palleschi
13:30-15:00	Lunch
15:00-15:50	Plenary Lecture 5: Applications of non-linear imaging microscopy techniques for Cultural Heritage studies by George Filippidis.
Parallel session A (Mitxelena Hall)	
15:50-16:10	Pigment identification in historical samples of Matisse Cut-Outs. A. Martins, A. Ondate, A. Cesaratto, K. Buchberg, C. McGlinchey, M. Leona
16:10-16:30	A tale of two pigments: the characterization and synthesis of Indian yellow, and zinc orange from Toulouse-Lautrec's early palette. A. Shugar, R. Ploeger, K. Harada, K. Spendel, S. Goodman
16:30-16:50	Comparative technical analysis of the medieval altarpieces by Hermen Rode in Tallinn and in Lübeck. A. Uueni, S. Vahur, H. Hiiop, H. Pagi, R. Rebane
16:50-17:10	Nicolas Poussin's painting technique in the scope of a mobile laboratory: X-ray fluorescence, X-ray diffraction and reflectance hyperspectral imaging. L. de Viguerie, M. Radepont, H. Glanville, M. Alfeld, S. Pedetti, Ph. Walter
17:10-17:30	New insights into Indian yellow and its use in Rajasthani wall paintings – a multi-analytical study. D. Tamburini, C. Martin de Fonjaudran, G. Verri, G. Accorsi, A. Rava, S. Whittaker, D. Saunders

Parallel session B (Baroja Hall)	
15:50-16:10	XRF analyses of the Serra d'Alto pottery (Matera, Italy). S. Legnaioli, L. Angeli, E. Grifoni, V. Palleschi, C. Fabbri, G. Radi
16:10-16:30	Not too white': an investigation into the influence of the use of calcium carbonate-rich imported marls on 17 - 18 th century Dutch tin-glaze tile production. K. van Lookeren Campagne, S. Pereira, L. Megens, O. Çopuroğlu, E. Goemaere, N. H. Tennent, M. van Bommel
16:30-16:50	Jun Ware – A Technical Study. L. Cooper, K. Eremin, M. Walton, E. Pouyet, A. Shortland, L. Dussubieux
16:50-17:10	LA-ICP-MS multi-element analyses of blue & white tin-glazed earthenware tiles: 2D surface and depth mapping of glazes. N. H. Tennent, J. T. van Elteren, V. S. Šelih
17:10-17:30	Computed radiography, pxe and XRF analysis of pre-colonial pottery from Maranhão, Brazil. R. A. Ikeoka, C. R. Appoloni, M. A. Rizzutto, A. M. Bandeira
Parallel session C (Oteiza Gallery)	
15:50-16:10	Direct fluorimetric characterization of dyes in ancient purple codices. A. Idone, I. Miletto, P. Davit, M. Aceto, M. Gulmini
16:10-16:30	Shades of blue: non-invasive spectroscopic investigations of blue paints on Mesoamerican Pre-Hispanic codices. C. Grazia, D. Buti, A. Romani, A. Sgamellotti, C. Miliani
16:30-16:50	Quantitative diagnostics of ancient paper using THz time-domain spectroscopy. M. Missori, R. Fastampa, M. Peccianti, M. S. Maggio, C. Violante, A. Mosca Conte, O. Pulci, J. Lojewska
16:50-17:10	What Vis-NIR reflectance spectroscopy can reveal about 15th century illuminated manuscripts: the Corale 43 by Beato Angelico at the Biblioteca Medicea Laurenziana in Florence (Italy). C. Cucci, S. Innocenti, M. Picollo, I. G. Rao, M. Scudieri
17:10-17:30	Quantitative monitoring of works of art on paper with spectral imaging. R. Padoan, M. E. Klein, R. Erdmann, M. Strlič
17:30-19:00	Coffee Break, Poster session 3

4. Friday, May 5

8:40-9:30	Plenary Lecture 6: Capturing Artists' Intent in the Works of the Impressionists through the Expressionists: Pigment Manufacture and Alteration by Jennifer Mass.
Parallel session A (Mitxelena Hall)	
9:30-9:50	Portable instrumentation for the study of wall paintings: the case of S. Maria ad Undas in Idro (BS-Italy). L. de Ferri, F. Mazzini, D. Manzini, G. Pojana
9:50-10:10	"Precious powder": Designing a methodology for the technical and analytical study of pastel paintings from the Rijksmuseum collection. L. Sauvage, S. Settini, I. van Leeuwen, J. Schultz, K. Abdulah
10:10-10:30	Paul Gauguin's graphic works: multi-analytical characterization of the artist's techniques and materials. C. Daher, K. Sutherland, H. Stratis, F. Casadio
10:30-10:50	300-400 nm UV fluorescence multispectral imaging for organic pictorial materials identification. Tiziana Cavaleri, Marco Gargano, Marco Pisani, Massimo Zucco, Paola Buscaglia
10:50-11:10	A comparison of non-invasive imaging and portable techniques for the study of Old Master paintings: Rembrandt's The Jewish Bride c. 1665 P. Noble, A. van Loon, K. Janssens, J. Delaney, Y. Abe, I. Nakai, J. Dik
Parallel session B (Baroja Hall)	
9:30-9:50	Self-cleaning coatings by N-doped TiO ₂ on limestones. L. Fornasini, L. Bergamonti, G. Predieri, Y. Paz, D. Bersani, P.P. Lottici, F. Bondioli
9:50-10:10	Limestone chromatic changes: a microbial-mediated inorganic process. L. Dias, T. Rosado, A. Coelho, L. Lopes, J. Mirão, A. T. Caldeira, A. Candeias
10:10-10:30	Novel materials for the restoration of marble and limestone substrates based on oxalate derivatives: an experimental and DFT-theoretical approach. L. Giacometti, M. C. Aragoni, G. Carcangiu, O. Cocco, V. Lippolis, L. Maiore, P. Meloni, A. Murru, M. Arca
10:30-10:50	Analysis of typomorphic minerals applied in the investigation of origin of archeological objects and painting materials. B. Łydźba-Kopczyńska, B. Kosmowska-Ceranowicz, M. Sachanbinski
10:50-11:10	
Parallel session C (Oteiza Gallery)	
9:30-9:50	Spectroscopic methods for mapping and dating restoration phases on two Egyptian sarcophagi (XXI dynasty). L. Bonizzoni, S. Bruni, M. Gargano, V. Guglielmi, C. Zaffino, A. Pezzotta, N. Ludwig
9:50-10:10	An insight into the complexity of agar gels. M. Bertasa, T. Poli, C. Riedo, V. Di Tullio, D. Capitani, N. Proietti, C. Canevali, A. Sansonetti, D. Scalarone

10:10-10:30	Evaluating the exploitability of several Essential Oils constituents as a new biological treatment against Cultural Heritage biodeterioration. I. Costantini, M. Veneranda, L. Blanco, P. Cinaglia, G. Di Girolami, K. Castro, J.M. Madariaga
10:30-10:50	Testing of new mortars for the conservation of frescoes in the wooden church in Amărăști, Romania. I. Mohanu, D. Mohanu, I. Gomoiu, O.-H. Barbu, I. Petre, N. Vlad, G. Voicu, R. Trușcă
10:50-11:10	A multidisciplinary investigation on a pair of leonardesque canal gates. M. Gargano, A. Galli, C. Giorgione, N. Ludwig, F. Maspero, M. Orlandi, L. Zoia, M. Martini
11:10-11:50	Coffee Break
Parallel session A (Mitxelena Hall)	
11:50-12:10	Two in one: Unraveling a hidden Jan Steen painting. W.-Y.Lee, R. Tagle
12:10-12:30	Micro and Macro Scale Chemical Imaging on Van Eyck's Ghent Altarpiece (1432). G. Van der Snickt, H. Dubois, J. Sanyova, S. Legrand, K. Janssens
12:30-12:50	Concealed features in Botticelli's fresco unveiled by multispectral visible-near infrared and X-ray Fluorescence imaging. J. Striova, A. Mazzinghi, C. Ruberto, M. Barucci, C. Czelusniak, L. Giuntini, P. A. Mandò, L. Palla, E. Pampaloni, F. Taccetti, R. Fontana
12:50-13:10	Analytical and Technological Investigation of the Paintings and other Decorative Elements of the Holy Aedicule of the Holy Selpuchre in Jerusalem. A. Moropoulou, E. T. Delegou, I. Ntoutsis, M. Apostolopoulou
13:10-13:30	On-site analysis of paintings by means of portable XRD. I. Nakai, A. Hirayama, S. Akagi, Y. Abe, K. Tantrakarn, K. Taniguchi, A. van Loon, P. Noble, G.D. Vivo, K. Janssens
Parallel session B (Baroja Hall)	
11:50-12:10	New insights into the characterization of lipids in pre-Hispanic ceramics by mass spectrometry techniques. I. J. Lantos, V. P. Careaga, E. L. Bonifazi, D. M. Castellanos Rodríguez, M. S. Maier
12:10-12:30	Nuclear Magnetic Resonance Analysis for Treatment Decisions: The case of a White Sculptural Environment by Louise Nevelson. C. Kehlet, S. Nunberg, C. Tomkiewicz, S. Alcalá, J. Dittmer
12:30-12:50	Discrimination of Acacia gums by MALDI-MS: developments and applications to samples from Ancient Egypt. C. Granzotto, J. Arslanoglu, K. Sutherland
12:50-13:10	Development of a new methodology for the analysis of sterols and bile acids in archaeological soils for the characterization of species. J. Gea, M. C. Sampedro, A. Vallejo, A. Polo, J. Fernández-Eraso, R. J. Barrio
13:10-13:30	

Parallel session C (Oteiza Gallery)	
11:50-12:10	In-situ micro XRF investigation of four Mycenaean gold signet rings from the grave of the Griffin Warrior at the Palace of Nestor in Pylos V. Kantarelou, A. G. Karydas, J. L. Davis, S. R. Stocker
12:10-12:30	Combined μ -XRF and μ -PIXE/ μ -EBS analysis of ancient copper coins. J. Cruz, V. Corregidor, M. Manso, L.C. Alves, L. Carvalho
12:30-12:50	Chemical analysis of the Pharaonic Period bronze mirrors stored in the Museo Egizio and study of the degradation phenomena. A completely non-invasive approach. S. Robotti, P. Rizzi, C. Soffritti, G. L. Garagnani, C. Greco, M. Borla, L. Operti, A. Agostino
12:50-13:10	Metallurgy of the earliest lost-wax cast. M. Thoury, B. Mille, T. Séverin-Fabiani, L. Robbiola, M. Réfrégiers, A. Didier, L. Bertrand
13:10-13:30	
13:30-15:00	Lunch
15:00-15:50	Plenary Lecture 7: Structure, Coordination Environment and Dynamics of Lead Carboxylates implicated in Soap Deterioration in Oil Paintings by Silvia Centeno.
Parallel session A (Mitxelena Hall)	
15:50-16:10	The use of smalt in Rembrandt's Homer – new research combining MA-XRF, quantitative microanalysis, paint reconstructions and OCT. A. van Loon, P. Noble, D. de Man, G. Van der Snickt, K. Janssens, M. Alfeld, T. Callewaert, J. Dik
16:10-16:30	Jan Davidsz. de Heem: a technical examination of fruit and flower still lifes combining MA-XRF scanning, cross-section analysis and technical historical sources. N. De Keyser, G. Van der Snickt, A. Van Loon, S. Legrand, A. Wallert, K. Janssens
16:30-16:50	A New Innovative Sampling Technique for Analysis of Microorganisms on Angkor Temples in Cambodia. J.-D. Gu, Y. Katayama
16:50-17:10	A comprehensive study of the effects induced by brown rot fungi on archaeological waterlogged wood. J. J. Lucejko, M. Mattonai, M. Zborowska, C. Cartwright, D. Tamburini, G. Cofta, F. Modugno, M. P. Colombini, E. Ribechini
Parallel session B (Baroja Hall)	
15:50-16:10	GC-MS and HPLC-APCI-MS for the research, valorization and dissemination of the Iberian Culture. D. J. Parras, A. Sánchez, J. A. Tuñón, C. Rueda, J. F. García-Reyes
16:10-16:30	Identification of organic residues in archaeological ceramic vessels used by Basque whalers from 16 th to 17 th century. L. Blanco-Zubiaguirre, E. Ribechini, I. Degano, J. La Nasa, J. García-Iñañez, M. Olivares, K. Castro
16:30-16:50	DMFDMA: a new/old GC-MS derivatization agent for the analysis of binders in cultural heritage objects. F. Caruso, B. Ebert, E. Platania, C. C. Steindal, N. L.W. Streeton

16:50-17:10	Development of a qualitative and quantitative analytical method for the characterisation of mixtures of free fatty acids and metal soaps in paint samples. J. La Nasa, A. Lluveras Tenorio, F. Modugno, I. Bonaduce
Parallel session C (Oteiza Gallery)	
15:50-16:10	Effectiveness of optical micro-profilometry for monitoring the surface morphology in metals and pictorial layers under aging process. C. Daffara, N. Gaburro, G. Marchioro, I. Ciortan, A. Giachetti, G. Karagiannis and M. Galeotti
16:10-16:30	None invasive Synchrotron based X-ray Diffraction investigations of Archaeological Bronze and Gold. M. Freudenberg, A. Rothkirch, L. Glaser
16:30-16:50	Armourers' marks and their detection A. Williams, N. Kardjilov, F. Grazzi, D. Edge
16:50-17:10	
17:10-17:30	Closing

POSTER SESSION

1. Tuesday, May 2

P01: On the modification of photoluminescence properties of zinc white induced by carboxylate formation.

A. Artesani, F. Gherardi, A. Nevin, G. Valentini, D. Comelli

P02: Profiling of free fatty acids and acylglycerols in oil paint by a novel HPLC-ESI-Q-ToF method.

I. Degano, J. La Nasa, F. Di Gianvincenzo, F. Modugno, I. Bonaduce

P03: Identifying the origin of pink pigmentation on mural paintings in churches from Romania.

I. Gomoiu, D. Mohanu, I. Mohanu, R. R dvan, M. Enache, S. Neagu, I. Maria Cortea, R. Cojoc

P04: Analysis of materials applied in the Banner of Sanlúcar de Barrameda.

A. Kriznar, A. Gómez Morón, C. Ángel Gómez , J.M. Santos Madrid, M.A. Respaldiza

P05: Characterization of the Inkaterra rock shelter paintings exposed to tropical climate (Machupicchu, Perú).

H. Morillas, M. Maguregui, J. Bastante, G. Huallparimachi, F. Astete, J.M. Madariaga.

P06: Data integration schemes from UV imaging analysis for mapping and dating restorations on two Egyptian sarcophagi.

N. Ludwig, J. Orsilli, L. Bonizzoni, M. Gargano

P07: Development of a simple method for the identification of proteinaceous binders in easel paintings.

O. Su Yin, C. Salvador, A. Candeias, A. Pereira, J.P. Prates Ramalho, A. Teresa Caldeira

P08: Scientific study for the evaluation of intervention methodologies in polychrome stone treatments.

L. Ferrazza, M.A. García, P.P. Pérez

P09: The effect of different silver nanoparticle substrates on SERS spectra of selected synthetic organic pigments.

C. Sessa, R. Weiß, N.P. Ivleva, H. Stege

P10: Investigation of Color Layers of Bohemian Panel Paintings by Confocal Micro-XRF.

R. Proke , R. efc , S. Chlumská, V. Antu ková, T. Trojek, T. echák

P11: Automated integration of 3D Multispectral data from works of art using Image Based Modeling technique.

B. Campanella, E. Grifoni, S. Legnaioli, G. Lorenzetti, S. Pagnotta, V. Palleschi

P12: A preliminary XRF study of Bernardino Luini`s use of smalt in the Storie della Passione di Cristo in Santa Maria degli Angeli church in Lugano.

E. Manship, G. Cavallo, J. Gilardi

P13: Preparation of SERS substrates by gel encapsulation of Ag nanoparticles prepared by laser ablation.

M.V Cañamares, M. Oujja, M. Sanz, M. Castillejo, S. Sanchez-Cortes

P14: Multi-analytical Study of Antimony Based Yellow Pigments on Czech Paintings around 1900.

V. Antu ková, M. Kmoní ková, H. Bilav íková, V. Pitthard, R. efc

P15: Raman Spectroscopy for the Assessment of an Artwork's Authenticity.

V. Antu ková, R. efc , I. Turková

P16: Nannofossil record in the chalk ground layers of Medieval paintings – a tool for the sediment provenance identification.

L. vábenická, R. efc , S. Chlumská

P17: Investigation of environmental effects on decay of alizarin in egg tempera paints.

K. Retko, L. Legan, M. Kav i , P. Ropret, R. Cerc Koro ec, S. Sanchez-Cortes, M.V. Cañamares

P18: Microchemical investigation of nanocrystalline CdS.

S. Pedetti, G. Patriarce, Ph. Walter

P19: Analytical characterization of Jorge Afonso palette and painting techniques, the great master of Lisbon painting workshop.

V. Antunes, A. Candeias, M.L. Carvalho, C. Barrocas Dias, A. Manhita, M.J. Francisco, A. Lauw, M. Manso

P20: Combined use of MA-XRF scanning and XRD for the noninvasive investigation of illuminated manuscripts.

C. Caliri, P. Ricciardi, F.P. Romano

P21: The Paston Treasure: a non-invasive elemental imaging by using a real-time MA-XRF technique.

C. Caliri, F.P. Romano, S. Bucklow, J. David, C. Titmus, F. Vanke

P22: The Sicilian period of Old Masters of painting in 17th century: common patterns and differences investigated by a non-invasive MA-XRF scanning.

F.P. Romano, C. Caliri, A. Orlando, S. Gammino, L. Pappalardo, F. Rizzo, H. C. Santos

P23: Multi-technique non-invasive investigation of visible and hidden compositions of Titian's studio Ecce Homo.

S. Gasanova, N. Bakirtzis, S. Hermon

P24: Non-invasive multi-technique characterization of polychromed sculptures from Cyprus.

S. Gasanova, S. Pagès-Camagna, S. Hermon

P25: Potential of Micro-SORS for Cultural Heritage.

C. Conti, A. Botteon, C. Colombo, M. Realini, P. Matousek

P26: The role of mineral assemblages in oil paint films: a synergic study of chemical-mineral composition, pH and conductivity.

E. Aguado-Guardiola, L. Fuster-López, O. Chiantore, F. Gambino, A. Borghi, P. Croveri, M. Nervo

P27: Alteration phenomena occurring in modern oil paints: non-invasive and micro-invasive spectroscopic investigations on Cobalt Blue paint films.

L. Nodari, F. C. Izzo, S. Buttignol, P. Tomasin

P28: Conservation of Contemporary Art: materials, technique and alteration phenomena on Alexis Harding artworks.

L. Nodari, V. Causin, M.K. Tufano, P. Tomasin

P29: In situ non-invasive characterization of the Pompeian pigments palette composition.

I. Marcaida, M. Maguregui, S. Fdez-Ortiz de Vallejuelo, H. Morillas, K. Castro, N. Prieto-Taboada, M. Veneranda, J.M. Madariaga

P30: Investigation of markers related to the degradation of binding media in wall paintings.

S. Sotiropoulou, J. Mazurek, M. Schilling, A. Lluveras Tenorio, S. Prati, G. Sciutto, R. Mazzeo, M.P. Colombini

P31: Depth Profiling of Paint Layers with a Conventional Handheld X-ray Fluorescence Analyser.

H. Bártoová, T. Trojek, T. echák

P32: A complete Raman approach for the identification of synthetic colorants in works of art.

A. Cesaratto, F. Pozzi, S.A. Centeno, J.R. Lombardi, M. Leona

P33: Multi-analytical approach to evaluate CaCO₃ crystalline evolution in fresco paintings.

L. Pocostales Plaza, A. Pitarch Martí, N. Guasch-Ferré, J.L. Prada Pérez

P34: How well constrained are Pb white provenance studies of paintings?.

P. D'Imporzano, K. Keune, E. Hermens, P. Noble, G.R. Davies

P35: A Unique Colours' Workshop in the Ancient Aegean World: Physicochemical characterisation of the iron-containing pigments found at the site.

A. Kostomitsopoulou-Marketou, K. Kouzeli, Y. Facorellis, J.A. Stratis

P36: Insights on multi-analytical study for documentation and treatment of the oil painted dome of Archangel Gabriel church.

S. Adel, I. El Rifai, G. Mahgoub, I. Osticioli, A. Elnaggar

P37: Experimental study for monitoring the physical changes in oil based wall paintings.

S. Adel, A. Nevin, G. Mahgoub, A. Elnaggar

P38: Pigments characterization for image reconstruction of wall paintings of Am r ti wooden church.

O.H. Barbu, I. Mohanu, L. Florea, D. Mohanu

P39: Study of the organic material in polychromed samples from the Alhambra using GC-MS.

P. Arjonilla, A. Domínguez Vidal, M.J. Ayora, E. Correa Gómez, R. Rubio Domene, M.P. Colombini, A. Lluveras Tenorio

P40: At the archaeological excavation site: Spectroscopic investigation of pigments in Egyptian funerary artifacts.

A. Domínguez-Vidal, M.J. Ayora-Cañada, Y. de la Torre, A. Jiménez Serrano

P41: Technology and materials of ancient encaustic media.

R. Stacey, J. Dyer, J. Mazurek, M. Schilling, A. Lluveras Tenorio, M.P. Colombini, S. Sotiropoulou, S. Prati, G. Sciutto, R. Mazzeo, F. Rosi, C. Miliani, L. Cartechini, M. Sablier, M. Küppers.

P42: A multi-analytical approach for the non-invasive and micro-invasive study of inorganic and organic materials and for assessing conservation state of the 16th century Italian wall painting.

V. Di Tullio, N. Proietti, L. Luvidi, D. Rigaglia, V. Romè, D. Capitani

P43: Multispectral Imaging Reveals New Insights on the Tomb of Iti and Neferu.

E. Barberis, M. Manfredi, B. Moiso, C. Greco, E. Marengo

P44: Luminescence of Egyptian Blue particle size - a parameter affecting the life time emission of the pigment?.

R. Linn, A. Nevin, G. Valentini, D. Comelli

P45: In-situ characterization of the paintings found in the Galleries of Punta Begoña (Getxo) by Raman Spectroscopy and X-Ray Fluorescence.

E. Lama, I. Madariaga, N. Prieto-Taboada, G. Arana, M.D. Rodríguez Laso, J.M. Madariaga

P46: Advantages and limitations of X-ray techniques in attribution investigations.

B. yd ba-Kopczy ska, J. Czop Piotr Fr czek, A. Klisi ska-Kopacz, M. Obarzanowski

P47: A multi-analytical approach for non-destructive in-situ characterization of early 20th century Portuguese Paintings.

R. Bordalo, C. Bottaini, A. Candeias

P48: Multi-analytical characterization of 18th-20th centuries votive paintings in southern Portugal.

R. Bordalo, C. Bottaini, A. Candeias

P49: Magritte on practice: multi analytical study of sixty-three paintings from 1921 to 1963.

C. Defeyt, E. Herens, F. Leen, F. Vandepitte, D. Strivay

P50: Study of organic materials in wall paintings by 1H HR-MAS NMR spectroscopy.

N. Proietti, V. Di Tullio, D. Capitani

P51: Building a fingerprint with multispectral analysis for modern Brazilian artist: Tarsila do Amaral.

M.A. Rizzutto, J.F. Curado, N.F. Agüero, W.G.P. Engel, P.R. Costa, N. Added, W.S. Silva, M. Barbosa, A.G. Magalhães

P52: An hyperspectral database for modern and contemporary pigments and its application to La bête by Karel Appel.

E. Herens, C. Defeyt, P. Walter, M. Alfeld, D. Strivay

P53: Novel double pulse LIPS for metal characterization using passively Q-Switched laser source and CCD detector.

J. Agresti, A. Azelio Mencaglia, S. Siano

P54: Local structure of Sb through Synchrotron Radiation X-Ray Absorption Spectroscopy in 19th century glazed tiles from the Pena National Palace, Sintra, Portugal.

J.P. Veiga, M. Cotte, M. Larsson Coutinho, T. Pereira da Silva

P55: Physical and Chemical Properties of Water-mixable Oil Paints Assessed Using Gas Chromatography and Single-Sided NMR.

N. A. Udell, R. E. Hodgkins, B.H. Berrie, T. Meldrum

P56: Preliminary scientific investigations on constitutive materials from Pagoda n.1205 Bagan valley (Myanmar).

M.L. Amadori, F.M. Mini, P. Fermo, V. Raspugli, D. Angellotto, A. Tinti, Y. Maekawa

P57: (Un)stability of azurite and malachite in fresco mural paintings: the role play by high humidity environment.

M.Gil, S. George, A. Candeias, José Mirão

P58: Infrared spectroscopic study of the formation of fossil resin analogs with temperature using trans-communic acid as precursor.

O. R. Montoro, A. Lobato, V.G. Baonza, M. Taravillo

P59: Identification of plastic bookbinding materials using system SurveNIR.

P. Vávrová, J. Neoralová, L. Palánková, M. Souková, D. Hebecká, K. Boumová

2. Wednesday, May 3

P01: Roman glass tesserae: a combined Raman and XRF spectroscopic investigation.

J. Van Pevenage, M.K. Donais, D.B. George, L. Moens, L. Vincze, P. Vandenabeele

P02: A study of building stones from structures dating back to the period of Ivan IV the Terrible in Kazan Kremlin and the Island town of Sviyazhsk.

R.Kh. Khranchenkova, A.N. Kolchugin, P. Yu. Kaplan, A.G. Sitdikov

P03: Micro X-ray fluorescence and micro computed tomography applied to characterize the limestone of a quoin of Castello Svevo, Bari, Italy.

G.S. Senesi, I. Allegretta, C. Porfido, R. Terzano, O. De Pascale

P04: Identification of elemental markers in historical musical instruments through XRF spectroscopy combined with Principal Component Analysis.

G.V. Fichera, T. Rovetta, G. Fiocco, M. Licchelli, M. Malagodi

P05: μ -Raman spectroscopy of rock paintings from the Galb Budarga and Tuama Budarga rock shelters, Western Sahara.

M. Iriarte, A. Hernanz, J.M. Gavira-Vallejo, A. Sáenz de Buruaga.

P06: The possible use of Mesopotamian bevelled rim bowls: results from organic content analyses.

J. Sanjurjo-Sánchez, J. Kaal, J.L. Montero Fenollós

P07: Calcium alkoxides for stone consolidation: investigating the carbonation process.

G. Mondin, L. Maria Moretto, M. Zuena, N. El Habra, L. Nodari, P. Tomasin

P08: Are the biocolonizations dangerous for the conservation state of Machupicchu? A multi-spectroscopic study of the Sacred Rock monolith.

H. Morillas, M. Maguregui, G. Huallparimachi, F. Astete, I. Salcedo, J.M. Madariaga

P09: MALDI-FT-ICR-MS for the analysis of resinous materials.

A. Teearu, S. Vahur, I. Leito

P10: Micro-chemical evaluation of ancient potsherd by mean of Micro-Libs-Scanning on thin section negatives.

E. Grifoni, S. Legnaioli, M. Lezzerini, G. Lorenzetti, S. Pagnotta, V. Palleschi, S. Raneri

P11: NIR m-Raman spectroscopy investigation on Early Bronze IV potteries from Khirbat Iskandar.

D. Chiriu, P. Carlo Ricci, M. Scattini, A. Polcaro, M. D'Andrea, S. Richard

P12: In situ analyses of Himalayan paintings to strengthen Ladakhi cultural identity

L. de Viguerie, E. Brunet, N. Martin, N. Rieuf

P13: Wine organic biomarkers in archaeological potteries: detection by GC-MS at ultratrace levels.

L. Blanco-Zubiaguirre, M. Olivares, K. Castro, J.A. Carrero, J.G. Iñañez, J.M. Madariaga

P14: Unraveling the composition of coloured glass by the comparison of complementary spectroscopic methodologies: the case of beads from the Kongo Kingdom.

B. Laforce, A. Rousaki, A. Coccato, M. Costa, B. Clist, K. Karklins, K. Bostoen, B. Vekemans, L. Moens, J. Mirão, L. Vincze, P. Vandenabeele

P15: A fixative fixation: Historical and analytical study of fixatives for pastel paintings.

S. Settimi, L. Sauvage, I. van Leeuwen

P16: Non destructive chemical analyses of the "Red Marble" from Santa Maria del Fiore Cathedral (Florence, Italy).

E. Pecchioni, F. Fratini, D. Magrini, C. Nosengo, A.P. Santo, E. Cantisani, C.A. Garzonio

P17: Preliminary considerations on the technology of manufacture of glass mosaics tesserae of the Rotunda in Thessaloniki, based on in situ colour and XRF measurements.

S. Sotiropoulou, M. Kyranoudi, K.T. Raptis

P18: On-site analysis of Limoges enamels from the 18th c. Research of technological links with painted enamels from Qing Dynasty.

Ph. Colombar, L. Arberet, A. Forray-Carlier, B. Quette

P19: Why the cement is not proper to consolidate stone monuments? The case of Tello Obelisk, Lima (Peru).

H. Morillas, M. Maguregui, G. Huallparimachi, L. Lumbreras, F. Astete, J.M. Madariaga

P20: Chemical Composition of the Ancient Silk Road glasses determined by Portable XRF.

M. Murakushi, I. Nakai

P21: X-ray computed microtomography of Late Copper Age decorated bowls with cross-shaped foots from central Slovenia and the Trieste Karst (north-eastern Italy): a provenance and production technology study.

E. Leghissa, F. Bernardini, A. Velušček, A. De Min, D. Lenaz, D. Dreossi, C. Tuniz, M. Montagnari Kokelj

P22: SEM and Micro-XRF analysis to investigate stained glass windows.

Manfred Torge, Ines Feldmann, Roald Tagle

P23: Ceramic glazes from Gaudí's Modernism Architecture: Non-destructive study of tiles from Casa Vicens.

I. Queralt, J.L. Prada, N. Guasch, S. Pessanha, M.L. Carvalho

P24: A non-destructive protocol for the evaluation of dual wavelength Nd:YAG laser cleaning of gypsum black crusts on granite.

J.S. Pozo-Antonio, K. Hatzigiannakis, K. Melessanaki, A. Phillipidis, A. Papanikolaou, A. Ramil, A.J. López, T. Rivas, P. Pouli

P25: On-line photoacoustic monitoring of laser cleaning on stone: Effectiveness evaluation and induced microdamage detection.

G.J. Tserevelakis, J.S. Pozo-Antonio, P. Siozos, K. Melessanaki, T. Rivas, A. Ramil, P. Pouli, G. Zacharakis

- P26:** ToF-SIMS study of pentacyclic triterpenic acids and birch bark pitch.
L. Tortora, P. Biocca, G. Sotgiu, G. Sidoti, B. Holbom
- P27:** Metal Nanoinks as Chemically Stable Surface Enhanced Scattering (SERS) Probes for Analysis of Blue BIC Ballpoint Pens.
A. Alyami, D. Saviello, M.A.P. McAuliffe, A. Mirabile, L. Lewis, D. Iacopino
- P28:** Byzantine glass bracelets from the Lower Danube.
R. Bugoi, I. Poll, C. Pacheco, P. Lehuédé
- P29:** Multidisciplinary approach on prehistoric pottery from South East Romania.
R. Bugoi, T. Ignat, M. Seclăman, A. Luca, D. Dimofte, C. Lazăr, F. Constantin
- P30:** Green Thessalian Stone: The Roman and Byzantine ornamental material characterization.
E. Lykartsis, V. Melfos, T. Zorba, K.M. Paraskevopoulos
- P31:** Single-point and imaging procedures to analyze non-destructively the decorative glazes on ceramics from Punta Begoña Galleries.
E. Calparsoro, M. Maguregui, J.G. Iñañez, A. Azkarate Garai-Olaun, J.M. Madariaga
- P32:** Colorimetric analysis of Balearic medieval stone polychromy through Digital Image Analysis.
L. Bosch Rubio, M.A. Gómez Morón, M. Jardón Cabezas, P. Ortiz, T. Sabater
- P33:** Transparency of blue paint layers probed by OCT.
J. Striova, V. Fontani, A. Dal Fovo, M. Barucci, E. Pampaloni, R. Fontana
- P34:** Islamic polychromatic glazed pottery technology in South Western Iberia: the case of the town port of Mértola (Portugal).
M. Beltrame, L. Dias, S. Gómez Martínez, P. Barrulas, A. Candeias, J. Mirão
- P35:** Method development for the detection of indoor sources of styrene in museums.
S. Vasilca, M. Vîrgolici, M. Cutrubinis, V. Moise, I. Stănculescu, Q. Khôi Tran, A. Medvedovici
- P36:** Spectroscopic analysis of white pigments and substrata of prehistoric paintings of Prado del Navazo rock-shelter (Albarracín, Spain).
S. Fdez-Ortiz de Vallejuelo, J.F. Ruiz, M. Maguregui, I. Martinez-Arkarazo, A. Giakoumaki, R. Alloza, J.M. Madariaga
- P37:** Evaluation of the usefulness of Kudzu starch as adhesive: ageing test and spectroscopic analysis.
E. Lama, N. Prieto-Taboada, M.D. Rodríguez Laso, J.M. Madariaga
- P38:** Raman Spectroscopy and X-Ray Fluorescence as a restoration tool in the removal of whitish crusts in ceramics of the 20th century (Punta Begoña, Getxo).
I. Madariaga, E. Lama, N. Prieto-Taboada, G. Arana, M.D. Rodríguez Laso, J.M. Madariaga
- P39:** Pigments and colouration in the 18th century Chinese court paintings of Giuseppe Castiglione (1688-1766).
Tung-Ho Chen, Yun-Chie Chen, Chien-Chi Huang, Chien-Lin Tseng

P40: Mastic incrustations: a study of the medieval sculptures of the San Nicola Church in Bari (Italy).

I. Dorothé van der Werf, G. Germinario, A. Martinelli, P. Acquafredda, L. Sabbatini

P41: Trace element and isotopic analysis for the study of marble provenance.
M. Fonseca, H. Luis, L.C. Alves, J. Cruz, H. Silva, A.P. Jesus

P42: Multi-analytical characterization of glasses from South Spain
M.A. Gómez-Morón, R. Ortiz, J.M. Martín, P. Ortiz

P43: Ancient beads from the Late Minoan cemetery of Armenoi in Crete (Greece): non-destructive examination using Raman Spectroscopy.
K. Kouzeli

P44: Integrated study of a Late Bronze Age axe mold by optical imaging, pXRF, SEM-EDS, XRD, μ FTIR and μ Raman.

E. Figueiredo, C. Bottaini, C. Miguel, A. Lackinger, S. Costa, J. Mirão, B. Comendador Rey

P45: Mortars and binders: from Roman times to 20th century reconstruction periods in built heritage. The case studies of the aqueduct of Carthage, the fortress of Safim and the Knossos palace.

J.P. Veiga, L. Gil, T. Pereira da Silva, A. Lopes, M. Margarida Lima, A. Teixeira, R. Monteiro

P46: Photoacoustic approach to the assessment of stone consolidation.

D. Ciofini, A. A. Mencaglia, S. Siano

P47: The multi-disciplinary approach to determine and monitor the state of conservation of the wall painting of Our Lady of Mellieha (Malta) before, during and after the restoration works.

C. Riminesi, D. Magrini, V. Lupo, S. Penoni, M.G. Zenzani

P48: Portable FTIR spectroscopy to monitor conservation treatments applied on archeological surfaces in Pompeii.

B. Salvadori, C. Riminesi, O.A. Cuzman, F. Fratini, R. Manganelli Del Fà, B. De Nigris

P49: TiO₂ nanostructured silica-hepoxo resins as photo-bioactive and protective consolidants.

P. Cardiano, P. Lanzafame, O. Gomez-Laserna, M^a Angeles Olazabal, S. Lo Schiavo

P50: Comparison of two direct mass spectrometric methods for the analysis of paint samples.

W. Genuit, E. van Kuijk, K.J. van den Berg

P51: A XANES study of archaeological glass beads

A. Migliori, J. Osan, M. Czyzycki, I. Darby, E. Palamara, V. Kantarelou, N. Zacharias, A.G. Karydas

P52: Analytical pyrolysis of proteins in samples from artistic and archaeological objects.

S. Orsini, A. Lluveras, M.P. Colombini, I. Bonaduce

3. Thursday, May 4

P01: Microbiological extraction of sulfur compounds from simulated waterlogged wood.

M. Albelda Berenguer, M. Monachon, C. Jacquet, P. Junier, C. Rémazeilles, E.J. Schofield, E. Joseph

P02: A comparative analysis of the gesso ground of frescoes in the Cathedral of the Protection of Most Holy Theotokos (Moscow) and the Cathedral of the Assumption of Most Holy Theotokos on the Island of Sviyazhsk (Russia).

R.Kh. Khrumchenkova, T.G. Saracheva, I.A. Chugreeva, A.G. Sitdikov, P. Yu. Kaplan

P03: The ceramic bodies of Hispano-Moresque tiles: chemical and mineralogical characterization.

S. Coentro, L.C. Alves, C. Relvas, M. Nunes, T. Ferreira, J. Mirão, J. Coll Conesa, A. Pleguezuelo, R. Trindade, R.C. da Silva, V.S.F. Muralha

P04: Chemometric studies of analytical data obtained from water sensitive Winsor & Newton Artists' Oil Paint Swatches and twentieth century oil paintings.

J. Lee, I. Bonaduce, F. Modugno, B. Ormsby, K.J. van den Berg

P05: Analysis of Roman Imperial coins by combined PIXE, m-XRF and LIBS techniques.

M. Vadrucci, M. Chiari, R. Fantoni, A. Gorghinian, V. Lazic, A. Mazzinghi, L. Picardi, C. Ronsivalle, C. Ruberto

P06: Non-destructive investigations of set of French golden coins.

E. Nistratova, I. Cheyesh D. Galkin M. Goldshtrah

P07: Technical characterization of the necklace of El Carambolo treasure.

S. Scrivano, I. Ortega-Feliu, B. Gómez Tubío, F.J. Ager, M.L. de la Bandera, M.A. Respaldiza

P08: Electrochemical screening of Spanish maravedis from different mints.

A. Doménech-Carbó, M.T. Doménech-Carbó, C. Álvarez-Romero, T. Pasíes-Oviedo, M. Buendía-Ortuño, L. Osete-Cortina

P09: Study of submarine lead objects using solid-state electrochemistry techniques.

A. Doménech-Carbó, M.T. Doménech-Carbó, T. Pasíes-Oviedo, M. Buendía-Ortuño, B. Martínez

P10: Biogenic characterization of archaeological organic residual soils using n-alkanes ratios from a stable rock-shelter, Los Husos II, (Upper Ebro Basin, Spain).

J. Gea, M.C. Sampedro, A. Vallejo, A. Polo, J. Fernández-Eraso, R.J. Barrio

P11: Investigation of proteins in samples of a mid-18th century colonial mural painting by MALDI-TOF and nano-LC-ESI-hybrid-Q-orbitrap mass spectrometry.

I.K. Levy, R. Neme Tauil, S. Moreno, G. Siracusano, M.S. Maier

P12: EDXRF analysis of Iberian votive figurines from the southern Spain (4th-3rd centuries BC).

C. Roldán García, J. Vives-Ferrándiz Sánchez

P13: Photography unveiled: a multi-analytical approach for the study of 19th century ambrotypes.

M. Nunes, L.S. Costa, S. Costa, C. Miguel, A. Teresa Caldeira, T. Ferreira

P14: Ancient and Modern Paper: study on degradation process by means of NIR Raman Spectroscopy.

D. Chiriu, P. Carlo Ricci, G. Cappellini, R. Cardia, C. Maria Carbonaro

P15: Investigation on metal adornments from ancient Eastern Europe.

L. Ghervase, R. Radvan, C. Bors, I.M. Corcea

P16: Complementary non-destructive investigations of two Lipovan-style icons.

R. Radvan, I.M. Corcea, L. Ghervase, L. Ratoi, A. Chelmuș, L. Angheluta, C. Constantin

P17: Elemental characterization (gold, silver, copper) in Ancient gold jewelry using X-ray fluorescence.

H.S. Gama Filho, R.S. Santos, D.F. Oliveira, C.M. Prado, J.T. Assis, M.L. Carvalho, M.J. Anjos

P18: Goa cathedral former altarpiece: a Portuguese feature? Material and technical assessment to the work of Garcia Fernandes, Portuguese painter from Lisbon workshop.

V. Antunes, A. Candeias, J. Mirão, M.L. Carvalho, V. Serrão, C. Dias, M. Esteves Reis, M. Manso

P19: Trading and stories behind a Bull's eye stamp: unveiling the placement's authenticity of early Brazilian printed stamps through in-situ spectroscopic analysis.

C. Miguel, F. Vasconcelos, A. Candeias

P20: Colours and fibres in ancient Siberian textiles.

D. Tamburini, R. Stacey, C. Cartwright, St John Simpson

P21: Lixiviation pathways of metals in the Corten steel façade of the Euskalduna Palace.

P. Ruíz-Galende, J. Aramendia, L. Gomez-Nubla, K. Castro, I. Martinez-Ararakazo, M. Sagasti, G. Arana, J.M. Madariaga

P22: Neutron and X-ray imaging techniques for the investigation of structures of pearls.

D. Micieli, D. Di Martino, A. Bravin, L. Gori, G. Gorini, A. Kaestner, A. Mittone, M. Musa, R. Navone

P23: Energy-resolved (4D) neutron tomography of natural and cultured pearls at a pulsed spallation source using a microchannel plate camera.

G. Vitucci, D. Di Martino, D. Micieli, T. Minniti, M. Musa, W. Kockelmann, K. Watanabe, A.S. Tremsin, G. Gorini

P24: FTIR and Raman spectroscopy determination of Japanese armour's material composition.

L. Legan, K. Retko, C. Tavzes, P. Ropret

P25: Recent advances in XRF spectrometric analysis combined with Monte Carlo simulation for the non-destructive chemical characterization of museum metal collections.

C. Bottaini, A. Brunetti, R. Silva, J. Mirão, A. Candeias

P26: XRD, SEM/EDX and micro-Raman spectroscopy for mineralogical and chemical characterization of iron slags from the roman archaeological site of Forua (Biscay).

H. Portillo, M.C. Zuluaga, L.A. Ortega, A. Alonso-Olazabal, X. Murelaga, A. Martinez Salcedo

P27: FTIR microscopy for analysis of treated archaeological wood samples.

C.M.A. McQueen, D. Tamburini, Susan Braovac

P28: Dose-dependent effects of gamma irradiation on vegetable leather physical-chemical properties and structure.

E. Badea, C. Carote, C. Andreea, M. Ignat, L. Miu, P. Budruga

P29: A non-invasive in situ methodology to characterize the lacquers and metals from the Edo period Japanese armour.

M. Maguregui, H. Morillas, I. Marcaida, C. García-Florentino, I. Ortiz de Errazti, C. Aransay, J.M. Madariaga

P30: Canada's National Historic Sites and their contribution to Material Research and Cultural Heritage studies.

D. Kavousanaki,

P31: Sourcing manganese-rich lumps from Middle and Upper Palaeolithic sites in South West France by external PIXE.

A. Pitarch Martí, F. d'Errico

P32: Potentiality of Raman spectroscopy for pearls characterization and authentication.

G. Barone, L. Bergamonti, D. Bersani, L. Fornasini, U. Longobardo, P. Mazzoleni, S. Raneri, P.P. Lottici

P33: Protective effect of linseed oil varnish on archaeological wood treated with alum.

J.J. Lucejko, J. La Nasa, F. Modugno, S. Braovac, M.P. Colombini

P34: A micro XRF study of the bronze statue of Poseidon of Livadostra at the National Archaeological Museum in Athens.

A. Fragkou, V. Kantarelou, G. Moraitou, A.G. Karydas

P35: 2 step algorithm for the segmentation of varnish layers in OCT images of cultural heritage.

T. Callewaert, J. Dik, J. Kalkman

P36: Research of Photographic Materials.

E. Svobodova, I. Kopecka, T. Cechak

P37: Composition analysis of writing materials in Geniza fragments.

Z. Cohen, J. Schlanger, O. Hahn, I. Rabin

P38: FUTURAHMA: an online non invasive spectroscopic database of modern art materials by Lefranc.

L. Cartechini, C. Miliani, R. Fontana, C. Grazia, O. Vilanova, A. Chieli, L. Monico, B. Doherty, A. Romani, M. Patti, D. Kunzelman, E. Buzzegoli, J. Striova, A. Ficini, G. Andreoletti, C. Mannari, R. Manca, A. Dal Fovo, F. Rosi

P39: Silver coins from the Spain Independence's War minted in Catalonia Region: Legal and counterfeit coinage.

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