

Lasers in the Conservation of Artworks

# LACONA VIII

# LACONA XIII

Florence - September 12-16, 2022



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## 13<sup>th</sup> International Conference on *Lasers in the Conservation of Artworks*

Auditorium di Santa Apollonia, Via San Gallo 25<sup>A</sup>, Florence

# PROGRAM

**Monday 12/09/2022**

14:30-18:00	<b>Registration</b>
17:00-19:00	<b>Welcome Drink</b>

## Tuesday 13/09/2022

08:30-09:00	<b>Registration</b>	
09:00-09:30	<b>Welcome address: S Rossi (OPD), R. Pini (CNR), E Schmidt (Uffizi Gallery), S Siano</b>	
09:30-10:00	<b>Marco Leona</b> ( <i>Invited speaker</i> ) <b><i>Lasers &amp; Light in an Art Museum</i></b>	2
10:00-10:20	<b>P Targowski</b> <i>A mystery of a 17c. Hebrew grammar book – back to the 11th century</i>	10
10:20-10:40	<b>D Ciofini</b> <i>Laser induced photothermal texturing for enhancing solvent action in removal of unwanted oil-based paints</i>	171

10:40-11:10

**Coffee break**

### Session 1: Laser Treatments of Metal Artefacts (Chair: A Nevin)

11:10-11:30	<b>W Kautek</b> <i>Pulse-Laser-Induced diagnostics of historical and artificial copper patina</i>	99
11:30-11:50	<b>D Prokuratov</b> <i>The use of femtosecond laser pulses in the cleaning of archaeologically corroded iron and copper objects</i>	101
11:50-12:10	<b>M Baruffetti</b> <i>The restoration of the amalgam gilded bronze elements and of the enamelled and gilded strips of the Baptismal Font of Siena: remarks on laser ablation in combination with other cleaning methods</i>	103
12:10-12:30	<b>G Rotondi</b> <i>A new method for laser ablation in underwater irradiation conditions of large bronze artifacts</i>	105
12:30-12:50	<b>R Lahoz</b> <i>Innovative procedure for assessing laser interaction mechanisms on copper alloys and its validation on archaeological corrosion products</i>	112
12:50-13:10	<b>S Courtier</b> <b>V Detalle</b> <i>A new approach for the restoration of gilded surfaces: Revealing original decors of the “Bargueño” (16th century) by Er:YAG laser processing controlled by optical coherence tomography (OCT)</i>	109

13:10-14:30

**Lunch break**

### Session 2: Laser Treatments of Stone and Glass artefacts, and Bones (Chair: J Nimmrichter)

14:30-14:50	<b>J Brand</b> <i>Comparison between short pulse and ultrashort pulse laser cleaning of heritage stonework</i>	118
14:50-15:10	<b>LA Angurel</b> <i>Application of ultra-short pulse lasers in the restoration of historical stained-glasses</i>	120
15:10-15:30	<b>M Laboure</b> <i>Laser cleaning of graffitis and cleaning evaluation using FTIR</i>	122
15:30-15:50	<b>AJ López</b> <i>Evaluation of femtosecond laser texturing of natural stones for conservation applications in the field of Cultural Heritage</i>	124
15:50-16:10	<b>A Andreotti</b> <b>C Di Marco</b> <i>Combined used of Er:YAG and Nd:YAG lasers for the cleaning of marble sculpture from the portico of the Monumental Cemetery of Pisa</i>	126

16:10-16:40

**Coffee break**

16:40-17:00	<b>MA Rahman</b> <i>Application of Femtosecond UV Laser for Selective Cleaning of Archaeologically Significant Pleistocene Bones</i>	129
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### Poster Pitch 1: Laser Treatments of Metal and Stone Artefacts

17:00-17:40	<b>E Promise</b> (132), <b>J Brand</b> (134), <b>B Dajnowski</b> (136), <b>Y Ding</b> (137), <b>V Pouli</b> (115 and 141), <b>I Osticioli</b> (143)	
17:40 -18:00	<b>L Bartoli</b> <i>Novel laser systems by El.En for higher control, versatility, and efficiency</i>	
18:00-18:20	<b>J Striova</b> <i>IPERION HS offer to heritage science community</i>	

## Wednesday 14/09/2022

08:30-13:00	<p><b>Excursion</b></p> <p>➤ <u>09:00-11:30, five groups of 10 persons (50 pax)</u>  <b>Visit to the diagnostic yard of the Brancacci Chapel Church of Santa Maria del Carmine</b>            Thank to the kind collaboration of the Municipality of Florence</p> <p>➤ <u>09:30-11:30, 15 persons (15 pax)</u>  <b>Laboratories of the Opificio delle Pietre Dure: visit to the restoration yard of the Baptismal font of the Baptistery of Siena (bronze panels by Ghiberti and Donatello)</b>            Thank to the kind collaboration of the Opificio delle Pietre Dure and of the Opera Metropolitana del Duomo di Siena</p> <p>➤ <u>09:45-12:45, three groups of 20 persons (60 pax, 10:00, 10:15, 11:30)</u>  <b>Guided tour of the Museo Nazionale del Bargello</b>            Thank to the kind collaboration of the Musei del Bargello, Ministry of Culture, Florence</p> <p>➤ <u>11:50-13:00, two groups of 25 persons (50 pax, 11:50, 12:00)</u>  <b>Guided tour of the Museo dell'Opera del Duomo di Firenze</b>            Thank to the kind collaboration of the Opera di Santa Maria del Fiore, Florence</p>
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13:30-14:30

**Lunch break**

Session 3: <i>Photonic Diagnostics of Painted Surfaces</i> (Chair: M Castillejo)			
14:30-15:00	<b>Austin Nevin</b> ( <u>Invited Speaker</u> )	<b><i>Applied photonics vs. conservation in practice</i></b>	5
15:00-15:20	<b>V Tornari</b>	<i>A combined ND diagnostic investigation by DHSPI, SIRT, THZ, NMR, on Giotto fresco</i>	13
15:20-15:40	<b>C Riminesi</b>	<i>Non-destructive diagnostic investigations on the architectural layout of the Brancacci's chapel in Firenze</i>	15
15:40-16:00	<b>M Francucci</b>	<i>Detection of low contrast paintings by post-processing data collected with three laser stimuli elastic channels</i>	17

### Poster Pitch 2 *Photonic Diagnostics of Painted Surfaces*

16:00-16:25	<b>A Nevin</b> <sup>(30)</sup> , <b>I Cortea</b> <sup>(27)</sup> , <b>J Auber-Le Saux</b> <sup>(32)</sup> , <b>C Richardson</b> <sup>(35)</sup> <b>PK Śwituszek</b> <sup>(37)</sup> , <b>Rippa</b> <sup>(39)</sup>
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16:25-17:00

**Coffee break**

Session 3 (continued)			
17:00-17:20	<b>J Schenatto</b>	<i>Non-destructive methods of analysis applied to the study of Oscar Pereira da Silva paintings</i>	20
17:20-17:40	<b>C Cucci</b>	<i>Hyperspectral imaging leads through the Picasso Blue Period: the case-study <i>Copa Blava</i> (Blue Glass)</i>	22
17:40-18:00	<b>A Dal Fovo</b>	<i>Novel integration of non-invasive imaging techniques for the analysis of an egg tempera painting by Pietro Lorenzetti</i>	24

### Poster Pitch 2 (continued)

18:00-18:30	<b>G Chiarello</b> <sup>(42)</sup> , <b>I Cortea</b> <sup>(44)</sup> , <b>V Pouli</b> <sup>(46)</sup> , <b>L Ghervase</b> <sup>(48)</sup> <b>M Dinu</b> <sup>(50)</sup> , <b>A Suzuki</b> <sup>(51)</sup>
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## Thursday 15/09/2022

09:00-09:30	<b>Giorgio S Senesi</b> ( <i>Invited Speaker</i> ) <i>LIBS: a powerful analytical tool for the geochemical diagnostics of stone artifacts</i>	6
09:30-09:50	<b>J Agresti</b> Photothermal aspects in photonic diagnostics and laser treatments	54
<b>Session 4: Advances in Compositional Photonic Diagnostics</b> (Chair: W Kautek)		
09:50-10:10	<b>A Giakoumaki</b> <i>Development of a hybrid portable instrument performing LED-Induced Fluorescence, LIBS and Diffuse Reflectance for an integrated study of diverse surface layers/deposits on monuments</i>	57
10:10-10:30	<b>X Bai</b> <i>Remote spectroscopic system combined LIBS, LIF Raman spectroscopy and reflectance spectroscopy for cultural heritage</i>	59
10:30-10:50	<b>F Mirani</b> <i>Laser-driven particle acceleration for elemental characterization of artworks</i>	62
<b>Poster Pitch 3: Advances in Photonic Diagnostics</b>		
10:50-11:20	<b>S Richiero</b> <sup>(85)</sup> , <b>F Surma</b> <sup>(87)</sup> , <b>I Donate Carretero</b> <sup>(89)</sup> , <b>AJ López</b> <sup>(91)</sup> <b>V Knotek</b> <sup>(93)</sup> , <b>GS Senesi</b> <sup>(95)</sup>	
11:20-11:40	<b>Coffee break</b>	
<b>Session 4 (continued)</b>		
11:40-12:00	<b>A Philippidis</b> <i>Observation and mitigation of light-induced alterations of lead pigments in their study via Raman microscopy</i>	65
12:00-12:20	<b>I Osticioli</b> <i>Advances on temperature controlled Raman spectroscopy</i>	67
12:20-12:40	<b>P Carmona</b> <i>Development of new SERS sensors based on the laser irradiation of the major hydration product of Portland cement</i>	69
12:40-13:00	<b>S Kogou</b> <i>Combining multimodal ground based remote sensing with machine learning for monitoring and identification of salts on historical buildings</i>	71
13:00-13:20	<b>A Busacca</b> <i>Deep learning models for MA-XRF imaging Spectroscopy of paintings</i>	73
13:20-14:30	<b>Lunch break</b>	
<b>Session 5: Advances in Imaging Diagnostics</b> (Chair: V. Pouli)		
14:30-14:50	<b>M Oujja</b> <i>In-depth structural and compositional assessments of aged terpenoid varnish layer</i>	76
14:50-15:10	<b>V Parfenov</b> <i>Use of Laser Additive Technologies for Restoration of Artworks</i> ( <i>Video recording</i> )	78
15:10-15:30	<b>S Mazzocato</b> <i>A novel paradigm for accurate laser microprofilometry of poly-chrome artworks based on dual reflectance-heights surface dataset</i>	80
15:30-15:50	<b>D Cimino</b> <i>Integrating Thermal Quasi-Reflectography in manuscript imaging diagnostic protocols to improve non-invasive chemical investigation</i>	82
<b>Session 6: Laser treatments of fibrous and membranous material artefacts</b> (Chair: V. Pouli)		
<b>Poster Pitch 4: Fibrous and Membranous</b>		
15:50-16:25	<b>C Mammoliti</b> <sup>(151)</sup> , <b>M Bertasa</b> <sup>(153)</sup> , <b>A Di Matteo</b> <sup>(155)</sup> , <b>AC Machado</b> <sup>(156)</sup> , <b>M Dinu</b> <sup>(158)</sup>	
16:25-16:55	<b>Coffee break</b>	
<b>Poster Pitch 4: Fibrous and Membranous (continued)</b>		
16:55-17:20	<b>S Vegni</b> <sup>(160)</sup> , <b>C Chillè</b> <sup>(162)</sup> , <b>G Rossignoli</b> <sup>(164)</sup> , <b>V Scaglia</b> <sup>(166)</sup> , <b>C Donati</b> <sup>(168)</sup>	
17:20-17:40	<b>N Brockmann</b> <i>Application of laser technology for the cleaning of silk Comparison of different laser parameters and the effects of cleaning on the fibre</i>	147
<b>Session 7: Laser treatments of Painted Surfaces</b>		
<b>Poster Pitch 5: Laser Treatments of Painted Surfaces</b>		
17:40-18:30	<b>M Iwanicka</b> <sup>(193)</sup> , <b>M Havlová</b> <sup>(195)</sup> , <b>F Azolini</b> <sup>(197)</sup> , <b>C Riminesi</b> <sup>(199)</sup> , <b>C Ricci</b> <sup>(201)</sup> <b>E Dimitroulaki</b> <sup>(203)</sup> , <b>K Nakahara</b> <sup>(205)</sup> , <b>D Ciofini</b> <sup>(207)</sup> , <b>C Chillè</b> <sup>(209)</sup> , <b>A Brunetto</b> <sup>(211)</sup>	
~ 21:00	<b>Social Dinner</b>	

## Friday 16/09/2022

Session 7: Laser treatments of Painted Surfaces (Chair: P. Targowski)			
09:30-09:50	<b>V Detalle</b> <b>D Martos-Levif</b>	<i>Laser cleaning of the painted frames of the Issenheim altarpiece in Colmar (FR)</i>	171
09:50-10:10	<b>B Dajnowski</b>	<i>Waiting for Science to Catch Up to the Problem: The Development and Application of a Custom-Designed Green Laser System to Remove Decades Old Penciled Graffiti on Raw Canvas from Morris Louis' Masterwork, Beta Upsilon.</i>	176
10:10-10:30	<b>EA Furgieuele</b>	<i>Egyptian Limestone Polychrome Statues: Laser Cleaning in Comparison with Traditional Methods</i>	177
10:30-10:50	<b>A Dajnowski</b>	<i>You Can Clean But Cannot Touch. Graffiti Removal From Prehistoric Pictographs at Hueco Tanks State Park &amp; Historic Site Using Laser Ablation Process</i>	178
10:50-11:10	<b>T De Seauve</b>	<i>CW-laser thermal restoration of oxidized lead white in mural paintings</i>	180

11:10-11:40

**Coffee break**

Session 7 (continued)			
11:40-12:00	<b>A Suzuki</b>	<i>2D high lateral resolution XRPD mapping for the in-depth characterization of CW NIR laser irradiation to thermally induce the conversion of plattnerite into red lead pigment</i>	182
12:00-12:20	<b>A Faron</b>	<i>Finding a path for resolving laser cleaning problems – selected aspects of the preliminary studies and implementation process of a new type of IR laser with high repetition of pulses to conservation-restoration practice</i>	184
12:20-12:40	<b>E Dimitroulaki</b>	<i>Photoacoustic monitoring of UV laser ablation of aged varnish coatings on Heritage objects</i>	186
12:40-13:00	<b>M Camaiti</b>	<i>In-situ and rapid assessment of Er:YAG laser cleaning on easel paintings by a portable hyperspectral sensor</i>	188
13:00-13:20	<b>F Zenucchini</b>	<i>Laser applications in the conservation of archaeological artifacts: polychrome wooden objects from ancient Egypt</i>	190

13:20-14:40

**Lunch break**

14:40-15:30	<b>Best Poster Award, Closing remarks: Publications, LACONA XIV ...</b>		
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