



European Materials Research Society

Spring Meeting 2022

May 30 | June 3
Virtual Conference

SYMPOSIUM P

Cultural heritage at risk - perspectives on technologies,
materials, modelling and digitalization

Symposium Organizers :

Anne BOUQUILLON, C2RMF

Giuseppina PADELETTI, CNR - Consiglio Nazionale delle Ricerche,
ISMN—Istituto per lo Studio dei Materiali Nanostrutturati

João Pedro VEIGA, Universidade Nova de Lisboa

Wednesday June 1

08:45	Provisional programme - may be subjected to changes	
08:50	Opening - G. Padeletti	
09:00	INV Internal structure observation of a detached fresco painting Kaori FUKUNAGA National Institute of Information and Communications Technology	P 11.1
09:30	Structural - J.P. Veiga	
09:30	Comparative study of architectural bricks from Khorsabad and Susa: characterization and synthesis of black glazes E. Beauvoit (1, 2), O. Majérus (2), D. Caurant (2), G. Wallez (2), J. Cuny (3), A. Thomas (3), A. Bouquillon (1) (1) Centre de Recherche et de Restauration des Musées de France (C2RMF), Palais du Louvre, 14 quai François Mitterrand, 75001 Paris, FRANCE, (2) Chimie ParisTech, CNRS, Institut de Recherche de Chimie Paris (IRCP), PSL Research University, 75005 Paris, FRANCE, (3) Musée du Louvre, Département des Antiquités Orientales, 75001 Paris, FRANCE	P O1.1
09:45	The degradation of concrete used by Sir Arthur Evans in the reconstruction of the Palace of Knossos Giuseppina Padeletti ^{1*} , Giampiero Montesperelli ² , Sara Ronca ³ , Antonella Curulli ¹ , Francesca Romana Lamastra ² , João Pedro Veiga ⁴ , Fernanda Carvalho ⁴ , Hugo Aguiar ⁴ , Nicola Cavalagli ⁵ , Filippo Ubertini ⁵ , Elissavet Kavoulaki ⁶ 1. CNR Consiglio Nazionale delle Ricerche, ISMN – Istituto per lo Studio dei Materiali Nanostrutturati, Via Salaria km 29.5, 00015 Monterotondo, Roma, Italy 2. Dipartimento di Ingegneria dell'Impresa, Università di Roma Tor Vergata, INSTM - Consorzio Interuniversitario Nazionale per la Scienza e Tecnologia dei Materiali, via della Ricerca Scientifica, 00133 Rome, Italy 3. Dipartimento di Scienze della Terra, La Sapienza Università di Roma, P.le Aldo Moro 5, 00185 Rome, Italy 4. CENIMAT/ I3N Centro de Investigação em Materiais, UNINOVA – Instituto de Desenvolvimento de Novas Tecnologias, Departamento de Ciência dos Materiais, Faculdade de Ciências e Tecnologia, Universidade Nova de Lisboa, 2829-516 Caparica, Portugal 5. Dipartimento di Ingegneria Civile ed Ambientale, Università di Perugia, via G. Duranti 93, 06125, Perugia 6. EPHORATE of Antiquities of Heraklion, Xanthoudidou & 1 Chatzidakis str, Heraklion 71202, Greece. * Corresponding author: giuseppina.padeletti@cnr.it	P O2.2
10:00	A Late Iron Age gold earring in the context of Proto-historic gold and silver technologies Serrano S.(1,2), Rodrigues A.(2), Machado A.F.(3), Figueiredo E.(2) (1) Department of Conservation and Restoration, NOVA School of Science and Technology, Portugal, (2) CENIMAT/I3N, NOVA School of Science and Technology, Portugal, (3) Laboratório José de Figueiredo, Direção Geral do Património Cultural, Portugal.	P O3.3
10:15	pH-responsive pHEMA/PAA SIPNs for the capture of copper ions and corrosion removal Teresa Guaragnone, Marta Rossi, David Chelazzi, Rosangela Mastrangelo, Mirko Severi, Emiliano Fratini, Piero Baglioni Department of Chemistry "Ugo Schiff" and CSGI, University of Florence, I-50019 Florence, Italy	P O4.4
10:30	Discussion	
10:45		
11:00	Preventive - G. Padeletti	
11:00	Ultrashort pulsed laser ablation in conservation: preserving the Sydney Harbour Bridge Julia Brand ¹ (1,2), Andrei Rode ² , Steve Madden ² , Alison Wain ¹ , Penelope King ³ , Ludovic Rapp ² (1) Centre for Creative and Cultural Research, Faculty of Art and Design, University of Canberra, Australia (2) Department of Quantum Science and Technology, Research School of Physics, Australian National University, Australia (3) Research School of Earth Sciences, Australian National University, Australia	P O5.5
11:15	Ultrafast laser structuring of natural stones for protection applications in Cultural Heritage David M. Freire-Lista ¹ , Ana J. López ² , Alberto Ramil ² (1) UTAD Universidade de Trás-os-Montes e Alto Douro. Quinta de Prados. 5001-801 Vila Real, Portugal, (2) Universidade da Coruña, Campus Industrial de Ferrol, Ferrol, 15403, A Coruña, Spain	P O6.6

11:30	Predictive Tool Based on Hybrid Modeling for an Optimized Preservation of Cellulose-Acetate Movie Films Abeer Al Mohtar [*] [1,2], João Lopes [2] and Moisés L. Pinto [1] (1) CERENA, Departamento de Engenharia Química, Instituto Superior Técnico, Universidade de Lisboa, 1049-001 Lisboa, Portugal. (2) iMed.Ulisboa, Faculdade de Farmácia, Universidade de Lisboa, Av. Prof. Gama Pinto, 1649-003 Lisboa, Portugal.	P O7.7
11:45	Cryogels with tailored cleaning abilities to restore Modern and Contemporary Art: the role of phase separation Rosangela Mastrangelo, Claudio Resta, Emiliano Carretti, Emiliano Fratini and Piero Baglioni Center for Colloid and Interface Science, CSGI, and Department of Chemistry, Università degli Studi di Firenze, Via della Lastruccia 3, 50019 – Sesto Fiorentino (FI), Italy	P O8.8
12:00	Single sensor-based electronic nose for preventive conservation of cultural heritage Guillem Domènech-Gil (1), Jens Eriksson (1), Robert Brooke (2), Valerio Beni (2), Donatella Puglisi (1) (1) Sensor and Actuator Systems, Linköping University, Sweden (2) RISE Research Institutes of Sweden, Norrköping, Sweden	P O9.9
12:15	Environmentally friendly ZnO/Castor oil polyurethane composites for the gas-phase adsorption of acetic acid Alessio Zuliani, Damiano Bandelli, David Chelazzi, Rodorico Giorgi, Piero Baglioni Department of Chemistry «Ugo Schiff» and CSGI, University of Florence, Via della Lastruccia 3, 50019 Sesto Fiorentino, Florence, Italy	P O18.18
12:30	Discussion	
12:45	Lunch	
15:00	Welcome Afternoon - J.P. Veiga	
15:00	INV The Heritage BAG at the ESRF: a new collaborative access modality for the structural analysis of historical materials V. Gonzalez ^{1*} , M. Cotte ^{2,3*} , F. Vanmeert ^{4,5} , L. Monico ^{4,6,7} , C. Dejoie ² , M. Burghammer ² , Wout de Nolf ² , Loïc Huder ² 1 Université Paris-Saclay, ENS Paris-Saclay, CNRS, PPSM, 91190, Gif-sur-Yvette, France 2 ESRF, the European Synchrotron Radiation Facility, Grenoble, France 3 L.A.M.S., CNRS UMR 8220, Sorbonne Université, Paris, France 4 AXIS, NANOLab Centre of Excellence, Department of Physics, University of Antwerp, Groenenborgerlaan 171, 2020 Antwerp, Belgium 5 Royal Institute for Cultural Heritage, Jubelpark 1, 1000 Brussels, Belgium 6 CNR-SCITEC, Via Elce di Sotto 8, 06123 Perugia, Italy 7 Centre of Excellence SMAArt, University of Perugia, Via Elce di Sotto 8, 06123 Perugia, Italy Keywords: synchrotron, X-ray diffraction, BAG, new access modes Correspondence: marine.cotte@esrf.fr	P 12.2
15:30	Pigments - G. Padeletti	
15:30	Unveiling historical recipes for the production of yellow silver stained glass M. Vilarigues ^{1,2} , A. Ruivo ^{1,2} , S. Louro ² , L.C. Alves ³ 1 Research Unit VICARTE - Vidro e Cerâmica para as Artes, Campus de Caparica, 2829-516 Caparica, Portugal 2 Department of Conservation and Restoration, Faculdade de Ciências e Tecnologia - Universidade Nova de Lisboa, Campus de Caparica, 2829-516 Caparica, Portugal 3 C2TN, Instituto Superior Técnico, Universidade de Lisboa, E.N.10, 2695-066, Bobadela LRS, Portugal Corresponding author: mgv@fct.unl.pt	P O10.10
15:45	Transient absorption study on Red Vermilion darkening in presence of chlorine ions and after UV exposure Francesca Assunta Pisu, Marco Marceddu, Claudio Melis, Pier Carlo Ricci, Carlo Maria Carbonaro, Daniele Chiriu Department of Physics, University of Cagliari Campus of Monserrato, sp n8, km 0.700, Monserrato, Italy - Italy	P O11.11
16:00	Pigments and pictorial works of Fleury Richard (1777 - 1852): physico-chemical analyses for the study of artistic practices Bensalah-Ledoux, A.(1), Carole, D.* ² , Le Luyer-Urlacher, C.(1), Paccoux, S.(3), Panczer, G.(1), Pillonnet, A.(1) & E. Wicky ⁴ (1) Institut Lumière Matière UMR 5306 CNRS - Université Lyon1, Université de Lyon, France (2) Laboratoire des Multimatiériaux et Interfaces UMR CNRS 5615, Université Lyon1, Université de Lyon, France (3) Musée des Beaux-Arts de Lyon, France (4) Laboratoire de Recherche Historique Rhône-Alpes UMR CNRS 5190, Université Lyon2, France	P O12.12

16:15	Studies on CdS pigment degradation through pump-probe, reflectance, and Raman spectroscopy F. A. Pisu, P. C. Ricci, C. M. Carbonaro, D. Chiriu. Dept. of Physics University of Cagliari Cittadella Universitaria, S.P. n 8 Km 0.700, 09042 Monserrato CA (Italy)	P O13.13	17:45	Non-destructive characterization of 19th-century pieces: identification of glaze pigments by hyperspectral imaging and PIXE-PIGE E. Beauvoit ⁽¹⁾ , Q. Lemasson (2, 3), J.-B. Javel (1), R. Chapoulie (1), A. Ben Amara (1) (1) IRAMAT-CRP2A, UMR 5060 CNRS, Université Bordeaux Montaigne, Maison de l'Archéologie, Domaine Universitaire, Esplanade des Antilles, 33607 Pessac Cedex, FRANCE, (2) C2RMF, Palais du Louvre, 14 quai François Mitterrand, 75001 Paris, FRANCE, (3) FR3506 New AGLAE, CNRS/Ministère de la Culture, 14 quai François Mitterrand, 75001 Paris, FRANCE	P P5.5
16:30	Modern - A. Bouquillon				
16:30	Colloidal Jin Shofu starch hydrogel dispersions as consolidant for modern and contemporary paintings Andrea Casini, David Chelazzi, Rodorico Giorgi Department of Chemistry «Ugo Schiff» University of Florence, I-50019 Florence, Italy Consorzio Interuniversitario per lo Sviluppo dei Sistemi a Grande Interfase (Center for Colloid and Surface Science), University of Florence, I-50019 Florence, Italy	P O14.14	17:45	Ceramics from Gharb Al-Ándalus: contributions for the study of interculturality in the medieval Iberian Peninsula Ana S. Saraiva ^{1, 2, 3} , Maria José Gonçalves ⁴ , Mathilda Larsson Coutinho ³ , João Pedro Veiga ^{1, 5} 1 CENIMAT/i3N, Materials Research Centre, NOVA School of Science and Technology, FCT NOVA, 2829-516 Caparica, Portugal 2 Vidro e Cerâmica para as Artes (VICARTE), NOVA School of Science and Technology, FCT NOVA, 2829-516 Caparica, Portugal 3 HERCULES Laboratory, University of Évora, Largo Marquês de Marialva, 8, 7000 Évora, Portugal 4 Câmara Municipal de Silves (Silves Municipality), Largo do Município, 8300-117 Silves, Portugal 5 Department of Conservation and Restoration, NOVA School of Science and Technology, FCT NOVA, 2829-516 Caparica, Portugal Corresponding author: as.saraiva@campus.fct.unl.pt	P P6.6
16:45	Into the Molecular Mechanisms of Yellowing: Case Study for Epoxy and Polyurethane Andrey E. Krauklis Institute for Mechanics of Materials, University of Latvia, Jelgavas Street 3, LV-1004 Riga, Latvia, andykrauklis@gmail.com	P O15.15			
17:00	Composite colloidal dispersions for the consolidation of historical silk David Chelazzi, Chiara Cianci, Giovanna Poggi, Francesco Modi, Rodorico Giorgi, Marco Laurati Department of Chemistry "Ugo Schiff" and CSGI, University of Florence, Via della Lastruccia 3, Sesto Fiorentino, 50019, Florence, Italy	P O16.16			
17:15	Dynamic identification of the tabernacle of the church of Santa Maria Maggiore in Spello, Italy Nicola Cavalagli, Enrique García-Macías, Matteo Castellani, Riccardo Vetturini, Filippo Ubertini University of Perugia, Perugia, Italy, ETS de Ingeniería de Caminos, Granada, Spain, University of Perugia, Perugia, Italy, Ingenium srl, Foligno, Italy, University of Perugia, Perugia, Italy,	P O17.17			
17:30	Discussion				
17:45	- G. Padeletti, A. Bouquillon, J.P. Veiga				
17:45	Virtual sensors for preservation of cultural heritage under humid conditions Guillem Domènech-Gil (1), Donatella Puglisi (1) (1) Sensor and Actuator Systems, Linköping University, Sweden	P P1.1			
17:45	Stability of luminescent marking compositions under tropical environments of Southeast Asia I.R. Avetisov ¹ , K.V.Kazmina ¹ , K.I. Runina ¹ , O.B. Petrova ¹ , I.Ch. Avetissov ¹ , Dinh Trung Do ² , Thu Trang Ta ² , Van Luong Nguyen ² 1 Department of Chemistry and Technology of Crystals, D. Mendeleev University of Chemical Technology, MUCTR, Moscow, Russia 2 Vietnam - Russia Tropical Centre, Hanoi, Vietnam	P P2.2			
17:45	First studies on the 13th Century Ceramic Pavement Mortars from Alcobaça Monastery, a World Heritage site Fernanda Carvalho (1,2*), Ana Nunes (3), Isabel Costeira (4), Ana Pagará (4), Nuno Leal (5), Joaquim Simão (5), Hugo Águas (1,2), Maria Margarida Lima (1,2), João Pedro Veiga (1,6) (1) CENIMAT/i3N Centro de Investigação de Materiais, NOVA School of Science & Technology FCT NOVA, 2829-516 Caparica, Portugal, (2) Department of Materials Science, NOVA School of Science & Technology FCT NOVA, 2829-516 Caparica, Portugal, (3) DGPC-Direção Geral do Património Cultural, 1349-021 Lisboa, Portugal, (4) Mosteiro de Alcobaça, 2460-218 Alcobaça, Portugal, (5) GEOBIOTEC and Earth Sciences Department, NOVA School of Science & Technology FCT NOVA, 2829-516 Caparica, Portugal, (6) Department of Conservation and Restoration, NOVA School of Science & Technology-FCT NOVA, 2829-516 Caparica, Portugal.	P P3.3			
17:45	Characterization of mortars from the Roman Aqueduct of Carthage, Tunisia Fernanda Carvalho (1,2), Maria Margarida Lima (1,2), João Pedro Veiga (1,3*) 1. CENIMAT/i3N Centro de Investigação de Materiais, NOVA School of Science & Technology, FCT NOVA, 2829-516 Caparica, Portugal. 2. Department of Materials Science, NOVA School of Science & Technology, FCT NOVA, 2829-516 Caparica, Portugal. 3. Department of Conservation and Restoration, NOVA School of Science & Technology, FCT NOVA, 2829-516 Caparica, Portugal.	P P4.4			