



# art'23

14<sup>th</sup> International Conference on non destructive investigations and microanalysis for the diagnostics and conservation of cultural and environmental heritage



Brescia (Italy)  
November 28<sup>th</sup>/30<sup>th</sup>, 2023



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*The World Organisation for NDT*

International Committee for  
Non-Destructive Testing

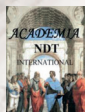
EF European Federation for  
Non-Destructive Testing  
NDT

European Federation for  
Non-Destructive Testing

AAENDE

Asociación Argentina de Ensayos  
No Destructivos y Estructurales

Argentine Society for  
Non Destructive Testing



ACADEMIA NDT  
International



International Council for  
Monuments and Sites



CENTRO ITALIANO  
DI COORDINAMENTO  
PER LE PROVE  
NON DISTRUTTIVE

Italian Coordination Center  
for Non Destructive Testing

ENEA

Italian National Agency for New Technologies,  
Energy and Sustainable Economic Development

RESTAURO  
SALONE INTERNAZIONALE

International Restoration Trade Show

GRUPPO  
BRESCIA MOBILITÀ

Brescia Mobility Group

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CNEA Comisión Nacional de Energía Atómica  
(Argentina)

## Presentation

Non-destructive Analysis has turned out to be crucial methods to achieve more successful and long-lasting preservation of works of art and environmental heritage. With the aim to promote education and competence in this field, the “**art**” logo was created almost forty years ago and it still represents, in national and international sphere, one of the most successful initiatives in this area. The desired synergy among experts will lead to continuous development of new scientific methods in the fields of preservation, reconstruction and diagnostics of cultural and environmental artworks.

The last edition of the “art Conference” was held in Buenos Aires (Argentina) in November 2021 and despite the pandemic period it promoted cooperation among different specialists coming from all over the world and strengthened the relationship especially between Italian and Latin-American world of NDT.

The “**art’23 Conference**” will strive to achieve the funding goals by bringing together delegates, conservation scientists and curators, art historians, analytical scientists and architectural researchers. These experts will meet in Brescia: placed in the North of Italy, AIPnD hometown has been nominated “2023 Italian Capital of Culture” together with Bergamo.

The technical and scientific program will include both invited and short presentations and poster sessions that will highlight the application of NDT in many important sectors related to cultural heritage.

### Conference Topics

Non-destructive Testing in Cultural Heritage  
Microanalysis and Conservation of Cultural Heritage  
Monitoring of Cultural Heritage  
Environmental Control and Protection

Organized in cooperation with



**IAEA**

International Atomic Energy Agency

*Atoms for Peace and Development*



09.00 am **registration**

09.30 am **opening ceremony**  
**welcome address**

E. TUBEROSA  
AIPhD President - IREN Energia  
I. PASSAMANI  
University of Brescia - Italy  
S. KARADJOV  
Fondazione Brescia Musei - Italy  
V. MUCHETTI  
Council Member, City of Brescia - Italy

10.00 am **40 YEARS OF ART**

G. NARDONI  
AIPhD Honorary President  
Accademia NDT International

10.15 am **THE INNOVATION SOLUTIONS FOR  
NON-INVASIVE EVALUATION OF THE  
FINE ART AND THE CULTURE AND  
HISTORICAL HERITAGE OBJECTS FOR  
FORGERY DETECTION VIA UNIQUE  
PATTERNS MATCHING**

R. MAEV  
University Distinguished Physics Professor, University of  
Windsor - Canada

10.45 am **FACING THE EVIDENCE.  
CONTROVERSIES AND DEBATES  
BETWEEN SCIENCE AND ART**

C. FROSININI  
Opificio delle Pietre Dure, Advisory Board of the Uffizi Galleries,  
Florence - Italy

11.15 am **IAEA "ACCELERATORS FOR HERITAGE"**

L. BASSEL  
IAEA, International Atomic Energy Agency - Physics Section/  
Division of Physical and Chemical Sciences/Department of  
Nuclear Sciences and Applications

**DEVELOPMENT OF A SYLLABUS  
ON RADIOGRAPHY FOR CULTURAL  
HERITAGE APPLICATIONS**

G. MAGHELLA SEMINARIO  
IAEA, International Atomic Energy Agency - Radiochemistry and  
Radiation Technology Section/Division of Physical and Chemical  
Sciences/Department of Nuclear Sciences and Applications

11.45 am *technical sponsor lecture*

**RECENT DEVELOPMENTS IN X-RAY  
IMAGING APPLIED TO CULTURAL HERITAGE**

E. ELIA  
Gilardoni SPA

12.15 pm *lunch*

**I SESSION "NON DESTRUCTIVE TESTING IN  
CULTURAL HERITAGE - PART 1"**

chairmen: M. VOLINIA - P. BISON

01.15 pm **IND 1 - INFRARED IMAGING ANALYSIS  
FOR IN-SITU INSPECTION OF A WORK  
OF ART: COMBINED SWIR-MWIR  
METHODS FOR A PAINTING ON  
WOOD INVESTIGATION**

M. RIPPA<sup>1</sup>, M. CASCIELLO<sup>2</sup>, P. MORMILE<sup>1</sup>, B. BALBI<sup>3</sup>,  
S. VITULLI<sup>4</sup>, M.R. VIGORITO<sup>2</sup>

<sup>1</sup> Institute of Applied Sciences and Intelligent Systems "E.  
Caiamiello" of CNR, Pozzuoli (Na), Italy

<sup>2</sup> Department of Humanities, University Suor Orsola Benincasa,  
Naples, Italy

<sup>3</sup> Superintendency Archaeology, Fine Arts and Landscape for  
the city of Naples, Naples, Italy

<sup>4</sup> Department of Restoration of the Museum and Real Bosco di  
Capodimonte, Naples, Italy

01.35 pm **IND 2 - GPR INVESTIGATION ON  
THE SAINT JOHN BAPTISTERY AT  
FLORENCE, ITALY**

M. COLI<sup>1</sup>, A.L. CIUFFREDA<sup>1</sup>, E. MARCHETTI<sup>1</sup>, A. NAPOLI<sup>1</sup>,  
B. AGOSTINI<sup>2</sup>, P. PAPESCHI<sup>3</sup>, D. MORANDI<sup>3</sup>

<sup>1</sup> DST, Department of Earth Sciences, Florence University, Italy

<sup>2</sup> OPA, Opera del Duomo di Firenze, Italy

<sup>3</sup> IDS GeoRadar, part of Hexagon, Pisa, Italy

01.55 pm **IND 5 - DENSITY ESTIMATION OF  
HISTORICAL WOODEN ELEMENTS  
THROUGH MEANS OF THERMOGRAPHIC  
CORRELATION APPROACH**

L. SANTORO<sup>1</sup>, V. BORGHESE<sup>2</sup>, S. SANTINI<sup>2</sup>, R. SESANA<sup>1</sup>,  
F.M. CURÀ<sup>1</sup>, L. CORSARO<sup>1</sup>

<sup>1</sup> Politecnico di Torino, Dipartimento di Ingegneria Meccanica e  
Aerospaziale

<sup>2</sup> Università degli Studi di Roma Tre, Architecture Department

02.15 pm **IDN 11 - OBSERVATION OF THE INTERNAL STRUCTURE OF GILDED AND MULTILAYERED PAINTINGS BY USING THZ PULSED TIME DOMAIN IMAGING AND PULSED PHASE THERMOGRAPHY**

K. FUKUNAGA<sup>1</sup>, Y. UENO<sup>2</sup>

<sup>1</sup> National Institute of Information and Communications Technology

<sup>2</sup> C. R. S. Corporation

02.35 pm **IDN 45 - A METHODOLOGY FOR STRUCTURAL HEALTH MONITORING OF CULTURAL HERITAGE BUILDINGS BY ACOUSTIC EMISSION**

G. LACIDOGNA

Politecnico di Torino, Department of Structural, Geotechnical and Building Engineering

02.55 pm **IDN 4 - THERMAL TEXTURING FOR THE 4D EXPLORATION OF ANCIENT BOOKS**

N. ORAZI<sup>1</sup>, F. MERCURI<sup>1</sup>, S. PAOLONI<sup>1</sup>, U. ZAMMIT<sup>1</sup>, E. D'ANNIBALE<sup>2</sup>, D. RONCHI<sup>2</sup>, G. CARUSO<sup>2</sup>, D. FERRANI<sup>2</sup>, E. PIETRONI<sup>2</sup>

<sup>1</sup> Università degli Studi di Roma Tor Vergata, Dip. di Ingegneria Industriale

<sup>2</sup> CNR - ISPC

03.15 pm *quick coffee*

## II SESSION "ENVIRONMENTAL CONTROL AND PROTECTION"

chairmen: S. RIDOLFI - K. FUKUNAGA

03.35 pm **IDN 7 - MICROCLIMATE MONITORING FOR PRESERVATION CULTURAL HERITAGE AND VISITORS WELL BEING**

P. AVERSA<sup>1</sup>, C. INNELLA<sup>2</sup>, G. MARGHELLA<sup>3</sup>, A. MARZO<sup>3</sup>, C. TRIPEPI<sup>3</sup>

<sup>1</sup> ENEA Sustainability - Brindisi

<sup>2</sup> ENEA Sustainability - La Trisaia (MT)

<sup>3</sup> ENEA Sustainability - Bologna

03.55 pm **IDN 8 - THE MOISTURE ISSUE AFFECTING THE HISTORICAL BUILDINGS IN THE ALPS REGION**

E. ROSINA<sup>1</sup>, M. ZALA<sup>1</sup>, A. AMMENDOLA<sup>2</sup>

<sup>1</sup> Politecnico di Milano, Dipartimento di Architettura, Ingegneria delle Costruzioni e Ambiente Costruito

<sup>2</sup> Università degli Studi di Trieste

04.15 pm **IDN 36 - SOME DATA ABOUT RISING DAMP FROM 30 YEARS OF ANALYSIS IN VENETIAN BUILDINGS**

E. GUOLO<sup>1</sup>, P. BISON<sup>2</sup>, F. PERON<sup>1</sup>

<sup>1</sup> Università IUAV di Venezia, Department of Architecture and Arts

<sup>2</sup> CNR-ITC

04.35 pm **IDN 14 - ANALYSING OBJECTS TO PRODUCE MORE SUSTAINABLE CONSERVATION ENVIRONMENTS**

D. THICKETT<sup>1</sup>, A. MELINS<sup>1</sup>, C.S. CHEUNG<sup>2</sup>, H. LANG<sup>2</sup>

<sup>1</sup> English Heritage Trust

<sup>2</sup> Nottingham Trent University

04.55 pm **IDN 15 - SCIENTIFIC ANALYSES FOR PRESERVATION AND RESTORATION OF XIII - XV CENTURY STAINED GLASSES**

G.A. MAINO<sup>1</sup>, D. BIAGI MAINO<sup>2</sup>

<sup>1</sup> The New York Academy of Sciences, USA - Physics

<sup>2</sup> University of Bologna - Arts

05.15 pm **IDN 26 - EVALUATION OF THE POROSITY OF NATURAL AND ARTIFICIAL STONES BY INFRARED THERMOGRAPHY**

P. BISON<sup>1</sup>, M. VOLINIA<sup>2</sup>, G. FERRARINI<sup>1</sup>, G. CADELANO<sup>3</sup>, M. GOMEZ SERITO<sup>4</sup>, M. GIROTTI<sup>2</sup>, F. PERON<sup>5</sup>, E. GUOLO<sup>5</sup>

<sup>1</sup> CNR-ITC

<sup>2</sup> Politecnico di Torino, Department of Architecture and Design

<sup>3</sup> CNR-ISAC

<sup>4</sup> Politecnico di Torino, Interuniversity Department of Regional and Urban Studies and Planning

<sup>5</sup> Università IUAV di Venezia, Department of Architecture and Arts

05.35 pm **IDN 46 - WHAT MEDICAL IMAGING HAS TO OFFER IN ART CONSERVATION**

C. HOPPER

UCL Eastman, London

05.55 pm *closing of the day*

### III SESSION "MONITORING OF CULTURAL HERITAGE"

chairmen: D. FOPPOLI - Z. KOREN

08.30 am **IDN 9 - THE MICROCLIMATES UNBALANCE OF SUBTERRAIN HISTORIC SPACES IN ITALY**

E. ROSINA, M. ZALA

Department of Architecture, Built environment and Construction engineering, Polytechnic University of Milan, Italy

08.50 am **IDN 23 - AERIAL THERMOGRAPHY APPLICATIONS FOR ENERGY CONSERVATION AND RETROFIT OF URBAN HERITAGE**

S. ANSELMO<sup>1</sup>, M. FERRARA<sup>2</sup>, P. BOCCARDO<sup>1</sup>, S.P. CORGNATI<sup>2</sup>

<sup>1</sup> Politecnico di Torino, DIST

<sup>2</sup> Politecnico di Torino, DENERG

09.10 am **IDN 41 - NON-DESTRUCTIVE MONITORING AS A METHODOLOGICAL APPROACH FOR THE CONSERVATION OF CULTURAL HERITAGE: 10 YEARS OF STUDIES ON THE CHAPEL OF SANT'ELDRADO**

M. VOLINIA, M. GIROTTO

Politecnico di Torino, Department of Architecture and Design, Italy

09.30 am **IDN 35 - SOME DATA ABOUT TRADITIONAL VENETIAN BUILDING MATERIALS CHARACTERISTICS**

E. GUOLO<sup>1</sup>, L. SCAPPIN<sup>1</sup>, P. BISON<sup>2</sup>, F. PERON<sup>1</sup>

<sup>1</sup> University IUAV of Venezia

<sup>2</sup> CNR-ITC

09.50 am **IDN 42 - DIGITAL TWIN ENVIRONMENT FOR DATA INTEGRATION OF ICT TECHNOLOGICAL SERVICES IN CULTURAL HERITAGE FIELD**

M. MONGELLI<sup>1</sup>, S. PIERATTINI<sup>2</sup>

<sup>1</sup> ENEA, Italian National Agency for New Technologies, Energy and Sustainable Economic Development

<sup>2</sup> ENEA National Agency for New Technologies Energy and Economic Sustainable Development, Department of Energy Technologies and Renewable Energy Sources, ICT Division, Florence, Italy

10.10 am **IDN 30 - PRECETTORIA OF SANT'ANTONIO DI RANVERSO, AN INTEGRATED APPROACH FOR THE STUDY AND MONITORING OF THE JAQUERIAN PAINTING CYCLES. THE PROCESS FOR THE DEFINITION, IMPLEMENTATION AND VERIFICATION OF CONSERVATION STRATEGIES**

A. BOVERO<sup>1</sup>, MC. CANEPA<sup>1</sup>, M. CARDINALI<sup>1</sup>, S. DE BLASI<sup>1</sup>, M. GIROTTO<sup>2</sup>, M. NERVO<sup>1</sup>, A. PICCIRILLO<sup>1</sup>, M. VOLINIA<sup>2</sup>

<sup>1</sup> Fondazione Centro Conservazione e Restauro "La Venaria Reale", Italy

<sup>2</sup> Politecnico di Torino, Department of Architecture and Design

10.30 am *coffee break*

### IV SESSION "NON DESTRUCTIVE TESTING IN CULTURAL HERITAGE - PART 2"

chairmen: M. COLI - E. ROSINA

11.00 am **IDN 22 - ADVANCED SYSTEM FOR FREQUENCY RESOLVED ACOUSTIC IMAGING FOR ON-SITE INVESTIGATIONS OF CULTURAL HERITAGE: AN EXAMPLE OF PUBLIC PRIVATE PARTNERSHIP (PPP) OF CENTERS OF EXCELLENCE**

P. CALICCHIA<sup>1</sup>, F. COLAO<sup>2</sup>, P. TASSIN<sup>3</sup>, S. MINGARELLI<sup>3</sup>

<sup>1</sup> National Research Council Institute of Marine Engineering

<sup>2</sup> Italian National Agency for New Technologies, Energy and Sustainable Economic Development FSN-TECFIS-DIM - Diagnostics and Metrology Laboratory

<sup>3</sup> METAPROJECTS ETS - Laboratorio Automazione e Controllo

11.20 am **IDN3 - INFRARED INSPECTION OF WW2 CAMOUFLAGE GERMAN HELMETS**

A. SALERNO<sup>1</sup>, C. COLOMBO<sup>2</sup>

<sup>1</sup> University Politecnico di Milano, Energy Dept.

<sup>2</sup> University Politecnico di Milano, Mechanical Engineering Dept.



11.40 am **IDN 33 - ITALY-SWITZERLAND  
INTERREG PROJECT SHARES  
METHODOLOGIES FOR KNOWLEDGE  
OF CULTURAL HERITAGE**

P. CLEMENTI<sup>1</sup>, M.C. GIANGREGORIO<sup>2</sup>, V. CASPANI<sup>3</sup>, E. ZANOLARI<sup>4</sup>,  
D. FOPPOLI<sup>3</sup>

1 Municipality of Tirano, Italy  
2 Consultant Architect, PhD Structural Engineering specialized in  
Cultural Heritage, Milano, Italy  
3 Architect, Foppoli Moretta e Associati consulting engineers,  
Tirano, Italy  
4 Consultant Architect, ZARCH sa , Poschiavo, Switzerland  
5 Technical Director, Foppoli Moretta e Associati consulting  
engineers, Tirano, Italy

12.00 pm **IDN 53 - DETECTING MASONRY  
TYPES IN HISTORICAL BUILDINGS BY  
INFRARED THERMOGRAPHY AND THE  
CASE OF MARIA LUIGIA'S THEATER IN  
PIACENZA**

C. COLLA  
ALMA MATER STUDIORUM - Università di Bologna

12.20 pm **IDN 20 - NON-INVASIVE AND  
MICRO-INVASIVE INVESTIGATIONS  
ON CULTURAL HERITAGE TO  
SUPPORT THE MODERN TRAINING  
OF RESTORERS. THE CASE OF THE  
SCIENTIFIC LABORATORIES OF THE  
ISTITUTO RESTAURO ROMA**

S. RIDOLFI<sup>1</sup>, S. INSOGNA<sup>1</sup>, T. RINALDI<sup>2</sup>, R. LUCIANI<sup>3</sup>  
1 Istituto Restauro Roma - Scientific Laboratories  
2 Sapienza University "Charles Darwin" department of Biology  
and Biotechnology  
3 Istituto Restauro Roma

12.40 pm **IDN 21 - FROM HISTORIC WIND  
INSTRUMENTS TO MODERN COPIES  
TO REDISCOVER ANCIENT SOUNDS**

F. TANSELLA<sup>1,2</sup>, L. VIGORELLI<sup>1,2,3</sup>, G. RICCHIARDI<sup>4</sup>, A. RE<sup>1,2</sup>,  
L. BONIZZONI<sup>5</sup>, S. GRASSINI<sup>6</sup>, M. STAROPOLI<sup>7</sup>, A. LO GIUDICE<sup>1,2</sup>  
1 Dip. Fisica, Università di Torino, Italy  
2 INFN, Sezione di Torino, Italy  
3 Dip. Elettronica e Telecomunicazioni, Politecnico di Torino, Italy  
4 Dip. Chimica, Università di Torino, Italy  
5 Dip. Fisica "Aldo Pontremoli", Università di Milano, Italy  
6 Dip. Scienza Applicata e Tecnologia, Politecnico di Torino, Italy  
7 Conservatorio di Musica "Giuseppe Tartini" Trieste, Italy

01.00 pm **IDN 38 - X-RAY ANALYSIS OF WINGED  
VICTORY**

M. LAURIOLA<sup>1</sup>, T. RADELET<sup>2</sup>  
1 NDT CUSTOM srl  
2 Laboratorio Radelet

01.20 pm *lunch*

02.30 pm **moving to SANTA GIULIA  
MUSEUM**

(on foot, about 15 minutes)

**PLENARY SESSION AT SANTA  
GIULIA MUSEUM (auditorium)**

chairmen: G. DELLANTONIO  
Unità di missione strategica Soprintendenza per i beni e le  
attività culturali, Provincia autonoma di Trento - Italy

03.00 pm **welcome address**

F. BAZOLI  
Fondazione Brescia Musei - Italy

03.15 pm **THE WINGED VICTORY OF BRESCIA. HISTORY,  
RESEARCH AND ENHANCEMENT OF A GREAT  
ROMAN BRONZE**

F. MORANDINI  
Brescia Musei Foundation, Brescia - Italy

03.45 pm **THE ROLE OF SCIENTIFIC  
INVESTIGATION IN THE  
CONSERVATION PROJECT OF THE  
WINGED VICTORY OF BRESCIA**

M. GALEOTTI  
Ministero della Cultura, Opificio delle Pietre Dure, Firenze - Italy

04.15 pm **NUCLEAR ANALYSIS OF THE SHROUD  
OF TURIN**

R.A. RUCKER  
Shroud Research Network, [www.shroudresearch.net](http://www.shroudresearch.net)

04.45 pm **"DIFFICULT" ARCHIVES  
FOR "DIFFICULT" HERITAGE  
CONSERVATION: APPLIED VALUE OF  
20TH C. PROJECT DOCUMENTATION.  
ON THE MATERIALS OF THE  
WOLFSONIANA GENOA COLLECTION**

A. VYAZEMTSEVA  
Assistant Curator, Wolfsoniana - Palazzo Ducale Fondazione per  
la Cultura, Genoa - Italy

05.15 pm **NOTRE-DAME DE PARIS ET SA  
RESTAURATION AU XIXE SIÈCLE**

O. POISSON  
Architecte, Historien de l'art, Ancien Inspecteur général des  
Monuments historiques - France

05.45 pm **discussion and closing remarks**

06.00 pm **visit the Brixia Roman Archeological Area**

08.30 pm **social dinner at Ristorante LA SOSTA**

### V SESSION "NON DESTRUCTIVE TESTING IN CULTURAL HERITAGE - PART 3"

chairmen: P. CALICCHIA - C. CAPPABIANCA

08.30 am

#### IDN 13 - DIAGNOSTIC CAMPAIGN TO ASSESS THE SEISMIC VULNERABILITY OF THE CASTELLO SCALIGERO OF SIRMIONE IN ITALY

D. FOPPOLI<sup>1</sup>, M. BELLANOVA<sup>2</sup>, S. ZANZANI<sup>3</sup>

<sup>1</sup> Foppoli Moretta e Associati srl Strengthening, Restoration and NDT

<sup>2</sup> Consultant Architect, Specialized in Cultural Heritage

<sup>3</sup> Direzione regionale Musei Lombardia - Former Director, Castello Scaligero di Sirmione

08.50 am

#### IDN 19 - GLASS-GEMS EXPLORATION BY MULTIDISCIPLINARY METHODS, ANALYSES AND EXPERIMENTS: THE GEMMAE PROJECT

D. DI MARTINO<sup>1</sup>, E. GAGETTI<sup>2</sup>, G. MARCUCCI<sup>1</sup>, M.P. RICCARDI<sup>3</sup>

<sup>1</sup> Università degli Studi di Milano Bicocca - INFN Dipartimento di Fisica «G. Occhialini»

<sup>2</sup> Università degli Studi di Milano «La Statale» - Dipartimento di Beni Culturali e Ambientali

<sup>3</sup> Università degli Studi di Pavia, Dipartimento di Scienze della Terra e dell'Ambiente - Arvedi Laboratorio sede di Pavia

09.10 am

#### IDN 51 - A FAST PROCEDURE FOR THE ASSESSMENT OF HISTORICAL FLOOR TIMBER BEAMS IN PRESENCE OF PICTORIAL DECORATION

G. CARDANI<sup>1</sup>, M. CUCCHI<sup>2</sup>, C. TIRABOSCHI<sup>2</sup>

<sup>1</sup> Department of Civil and Environmental Engineering, Politecnico di Milano, Italy

<sup>2</sup> Laboratorio Prove Materiali, Politecnico di Milano, Italy

09.30 am

#### IDN 54 - THERMAL EVALUATION OF ENVELOPE MATERIALS IN HISTORICAL BUILDINGS THROUGH NON-DESTRUCTIVE THERMOGRAFC MOISTURE ANALYSIS

G. CADELANO<sup>1</sup>, N. STECCHETTI<sup>3</sup>, P. BISON<sup>2</sup>, A. BORTOLIN<sup>1</sup>, G. FERRARINI<sup>2</sup>, S. ROSSI<sup>2</sup>

<sup>1</sup> Institute of Atmospheric Sciences and Climate, National Research Council of Italy

<sup>2</sup> Construction Technologies Institute, National Research Council of Italy

<sup>3</sup> Department of Physics and Astronomy "Galileo Galilei", University of Padua, Italy

09.50 am

#### IDN 29 - THE "HEALTH RECORD" OF THE CHURCH OF SANTA MARIA ASSUNTA IN PONTECURONE: CONTAMINATION BETWEEN HISTORICAL KNOWLEDGE AND NON-DESTRUCTIVE TESTING RESULTS

G. BELTRAMO, M. NARETTO, M. VOLINIA

Politecnico di Torino, Department of Architecture and Design

10.10 am

#### IDN 10 - STUDY OF THE DYNAMIC BEHAVIOR OF A TIMBER ALTARPIECE USING LASER VIBROMETERS

E. SAEED<sup>1</sup>, M. SIMONETTA<sup>2</sup>, M. BENEDETTI<sup>2</sup>, O. NIGLIO<sup>1</sup>, F. GRAZIOTTI<sup>3</sup>, G. GIULIANI<sup>1,2</sup>

<sup>1</sup> Università di Pavia, DICAr - Department of Civil Engineering and Architecture, Pavia, Italy

<sup>2</sup> Julight Srl, Pavia, Italy

<sup>3</sup> EUCENTRE - European Centre for Training and Research in Earthquake Engineering, Pavia, Italy

10.30 am

#### IDN 44 - GAMMA RADIATION FOR CULTURAL HERITAGE PRESERVATION AT CALLOPE FACILITY (ENEA CASACCA R.C., ROME, ITALY)

I. DI SARCINA<sup>1</sup>, A. CEMMI<sup>1</sup>, B. D'ORSI<sup>2</sup>, A. VERNA<sup>1</sup>, J. SCIFO<sup>1</sup>

<sup>1</sup> ENEA, FSN - Fusion and Technology for Nuclear Safety and Security Department

<sup>2</sup> Sapienza Università di Roma

10.50 am

*coffee break*

### VI SESSION "MICROANALYSIS AND CONSERVATION OF CULTURAL HERITAGE"

chairmen: D. DI MARTINO - D. FOPPOLI

11.20 am

#### IDN 6 - A NEW SEMI-QUANTITATIVE XRF METHOD FOR THE FAST NON-DESTRUCTIVE DETERMINATION OF MOLLUSKAN PURPLE COMPONENTS IN WOOLEN DYEINGS

Z. KOREN

Shenkar College - The Edelstein Center, Dept. of Chemical Engineering



11.40 am **IDN 24 - 3D PRINTING OF ARCHITECTURAL ELEMENTS OF CULTURAL HERITAGE USING FIBER-REINFORCED MORTAR: A NOVEL APPROACH FOR REHABILITATION AND CONSERVATION**

D. UNGUREANU<sup>1,2</sup>, C. ONUȚU<sup>1</sup>, N. ȚĂRANU<sup>1,2</sup>, D.A. GHIGA<sup>1</sup>

1 Faculty of Civil Engineering and Building Services, "Gheorghe Asachi" Technical University of Iași, Romania  
2 The Academy of Romanian Scientists, București, Romania

12.00 pm **IDN 16 - THE FRESCOES OF THE NOVALESA ABBEY COMPLEX, FROM RESTORATION TO PREVENTIVE CONSERVATION THROUGH NON-DESTRUCTIVE DIAGNOSTICS**

M.C. CAPUA<sup>1</sup>, G. ROLLO<sup>1</sup>, M. VOLINIA<sup>2</sup>, M. GIROTTO<sup>2</sup>, M. DI SALVO<sup>3</sup>, L. GARAVOGLIA<sup>3</sup>, F. PEROSSINI<sup>4</sup>

1 Koinè Conservazione Beni Culturali s.c.r.l., Roma-Torino  
2 Politecnico di Torino, Department of Architecture and Design  
3 Città Metropolitana di Torino, Coordinamento Edilizia  
4 Kpeople Research Foundation, Malta

12.20 pm **IDN 25 - CONVERTING AN INDUSTRIAL HALL INTO A MUSEUM OF INDUSTRIAL ARCHEOLOGY: APPROACHES AND PLANS FOR THE TRANSFORMATION OF 'THE TOBACCO STOREHOUSE' IN IASI, ROMANIA**

D.A. GHIGA<sup>1,2</sup>, D. UNGUREANU<sup>2,3</sup>, C. ONUȚU<sup>2</sup>, E. ANTOHIE<sup>2</sup>, I.A. SPIRIDON<sup>2</sup>, N. IFTIME<sup>3</sup>, N. ȚĂRANU<sup>2,3</sup>

1 State Inspectorate in Constructions  
2 Faculty of Civil Engineering and Building Services, Gheorghe Asachi Technical University of Iași  
3 The Romanian Academy of Scientists  
4 National Institute of Research and Development for Technical Physics

12.40 pm **IDN 18 - NON-INVASIVE AND MICRO-INVASIVE INVESTIGATIONS APPLIED TO LARGE PAINTINGS. THE CASE OF THE FRESCOED CEILING BY ANTON RAPHAEL MENGIS IN SANT'EUSEBIO IN ROME**

S. RIDOLFI<sup>1</sup>, R. PORFIRI<sup>2</sup>, I. CAROCCI<sup>1</sup>

1 Ars Mensurae  
2 Soprintendenza Speciale di Roma, Archeologia, Belle Arti, Paesaggio

01.00 pm **IDN 28 - CONTACT ANGLE AS NON-DESTRUCTIVE METHOD TO DETERMINATE WETTABILITY CHANGES INDUCED BY SUB-AERIAL BIOFILMS ON BUILT HERITAGE POROUS SUBSTRATES**

L. BERTI<sup>1</sup>, F. VILLA<sup>2</sup>, F. CAPPITELLI<sup>2</sup>, S. NAPOLI<sup>3</sup>, A. BARBIERI<sup>4</sup>, L. TONIOLO<sup>4</sup>, D. GIULOTTA<sup>5</sup>, S. GOIDANICH<sup>4</sup>

1 University of Rome "La Sapienza", Department of Sciences of Antiquity

2 University of Milan, Department of Food, Environmental and Nutritional Sciences

3 CORES4N srl

4 Politecnico di Milan, Department of Chemistry, Material and Chemical Engineering "Giulio Natta"

5 Getty Conservation Institute - Science Department

01.20 pm *lunch*

**VII SESSION "NON DESTRUCTIVE TESTING IN CULTURAL HERITAGE - PART 4"**

chairmen: M. GIACHINO - M. VOLINIA

02.20 pm **IDN 39 - COMPARISON OF RADIOGRAPHIC TECHNIQUES FOR CULTURAL HERITAGE**

M. LAURIOLA  
NDT CUSTOM srl

02.40 pm **IDN 49 - INSPECTION AND DOCUMENTATION OF THE CONDITION OF HISTORIC TIMBER STRUCTURES**

F. RINN

Court registered Expert for Tree and Timber Inspection, Heidelberg, Germany

03.00 pm **IDN 27 - NDT OF FINE RENAISSANCE MANUFACTURES VIA ON SITE X-RAY DIFFRACTION**

G. BERTI

University of Pisa

XRD-Tools s.r.l. born as Academic spinoff

03.20 pm **IDN 52 - MASONRY DOME SPANDRELS IN AN EARLY 16TH CENTURY CHURCH IN PIACENZA: NON-DESTRUCTIVE APPROACH BY INSPECTION AND INFRARED THERMOGRAPHY**

C. COLLA

ALMA MATER STUDIORUM - Università di Bologna



03.40 pm **IDN 12 - ENGINEERING  
ARCHAEOLOGICAL RESEARCH:  
SUBMILLIMETRIC X-RAY CT SCAN OF  
METAL AND HARD STONE OBJECTS IN  
ANCIENT EGYPTIAN MUMMIES**

S. GALLI<sup>1</sup>, L. LIMENA<sup>2</sup>, C. ROSSI<sup>1</sup>, M. CARBONI<sup>3</sup>

<sup>1</sup> Politecnico di Milano, Department of Architecture, Built environment and Construction engineering

<sup>2</sup> Vektorix Engineering Srl

<sup>3</sup> Politecnico di Milano, Department of Mechanical engineering

04.00 pm **IDN 43 - APPLICATION OF VIRTUAL  
WAVE THERMOGRAPHY FOR THE  
INSPECTION OF PAINTINGS**

R. ZITO, S. LAURETI, M. RICCI

Unical, Dip. DIMES

04.20 pm **IDN 50 - THE POTENTIAL OF THERMAL  
QUASI-REFLECTOGRAPHY TO  
ADVANCE THE NON-DESTRUCTIVE  
TESTING IMAGE-BASED PROTOCOL IN  
CULTURAL HERITAGE**

C. DAFFARA

Università di Verona, Dipartimento di Informatica

04.40 pm **IDN 34 - HBIM, KNOWLEDGE  
COORDINATION TOOL FOR THE  
CONSERVATION OF THE CHURCH OF  
SANT'AGATA**

A. PANERONI<sup>2</sup>, D. FOPPOLI<sup>3</sup>, B. SCALA<sup>1</sup>, M. ANDREOLI<sup>1</sup>

<sup>1</sup> University of Brescia

<sup>2</sup> Engineer Specialized in Cultural Heritage

<sup>3</sup> Foppoli Moretta e Associati srl Strengthening, Restoration and NDT

05.00 pm **closing remarks and farewell**



Ordine degli Architetti,  
Pianificatori, Paesaggisti e Conservatori  
della Provincia di Brescia

**L'iniziativa è accreditata  
al rilascio di n.20 CFP  
per gli Architetti P.P.C.**

**Tuesday November 28<sup>th</sup>**

## **LOGGIA of BRESCIA**

The first day of the conference will end with a visit to the LOGGIA OF BRESCIA, the most outstanding civil monument in town. The visit will allow the participants to take the general knowledge of the beautiful halls of the palace and to reach the attic with an amazing vision of the historical huge wooden structure.

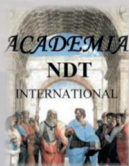


Visit with limited number of participants

**Thursday November 30<sup>th</sup>**

## **THE SHROUD OF TURIN** *workshop*

This special workshop, planned in the afternoon of the last day of the conference, will be focused on the studies connected to the Shroud of Turin. The workshop is organized by ACADEMIA NDT INTERNATIONAL and will be chaired by Giuseppe Nardoni and Robert A. Rucker.



More information at [nardoni.campus@gmail.com](mailto:nardoni.campus@gmail.com)

**Wednesday November 29<sup>th</sup>**

## **SANTA GIULIA museum**

The second day of the conference will end with a special session at the auditorium of SANTA GIULIA MUSEUM, the most important museum in town. After a couple of very remarkable lectures, all participants will be allowed to visit the Brixia Roman archeological area and to see the famous VITTORIA ALATA, the statue that has become the symbol of Brescia.



Session and visit will be open to all registered participants

## CONFERENCE VENUE

### CENTRO PASTORALE PAOLO VI

Via Gezio Calini, 30 - 25121 Brescia (Italy)  
Phone +39 030.3773511 - <https://paolovi.it/en/>

## REGISTRATION

Registrations have to be made by e.mail (completed Registration Form + copy of the Identity Card/Passport). Incomplete forms will not be taken into account.

### Late Fees (from August 1<sup>st</sup>)

AIPnD member	€ 550,00 VAT free
Author	€ 550,00 + VAT (if applicable)
Participant	€ 650,00 + VAT (if applicable)
Under 25	€ 200,00 + VAT (if applicable)
Accompanying person	€ 100,00 + VAT 22%

*NB: due to organizational reason and as requested by the Venue, be aware that copy of the Identity Card/Passport must be sent together with the Registration Form*

### Participants/Delegates Fees include:

- Entrance to sessions
- Conference's documents
- Proceedings Book (volume nr.15 of the international book series Cultural Heritage: <https://www.writeupbooks.com/cultural-heritage-emanuele-romeo/>)
- Certificate of attendance
- Coffee breaks & Lunches (when scheduled)
- Social Dinner: Wednesday (except for participants registered with the fee "Under 25")

### Accompanying people will be allowed to:

- Attend the Social Dinner (Wednesday)

## Payment methods

Full payment of fees, accepted in EURO only, is required in order to attend the Conference: payments must be net of all bank charges and must be made by bank-to-bank transfer (wire transfer) to AIPnD. Description of payment: "(Surname) - Registration ART2023". The Secretariat will send details about the amount to be paid to each participant together with bank details to proceed with the payment, together with an invoice that can be considered as a confirmation of the registration. The Registration Form must be sent by e-mail to the Organizing Secretariat AIPnD ([art@aipnd.it](mailto:art@aipnd.it)). Please, be aware that payment by credit card is possible, too: kindly send a request to the Organizational Secretariat ([art@aipnd.it](mailto:art@aipnd.it)) to proceed with the payment.





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