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Photo: G. Laron

3rd International Conference on
Techniques, Measurements & Materials in Art&Archaeology2018

December 9-12, 2018 / Jerusalem, Israel

www.art-archaeology.com

Dear Colleague,

We are happy to invite you to actively participate in the third Art&Archaeology International Conference to be held in Jerusalem, December 9-12, 2018.

The main objective of **Art&Archaeology2018** is to bring to light recent R&D results in the analysis methods that advance the frontiers of knowledge connected with human cultural heritage. Heritage is our legacy from the past. It is our source for understanding the human mind, its capabilities and potential. Knowledge of the past influences our present day life and what we pass on to future generations.

The conference will focus on novel and new breakthrough methods and technologies for measuring and analysis that contribute to deeper and better understanding of human cultural heritage, our archaeological, historic and artistic patrimony. It seeks to do so by encouraging communication between art, archaeology, destructive and nondestructive evaluation disciplines, to provide a survey of present work in the field, and to stimulate discussions and new joint research projects.

Art&Archaeology2018 aims to bring together a range of scholars, specialists and experts in the fields of archaeology, art, history, preservation, restoration and reconstruction of museum or archaeological objects, cultural heritage, researchers of ancient structures as well as measurement scientists and technologists. We believe that synergy between experts in various fields will yield further developments, adaption and adoption of measurement methods to deal with challenges of culture heritage research. The knowledge to be gained will provide understanding in more depth and dimensions of the human genius.

I am pleased to report that AIPnD will once again be partnering with us, as was the case for the first conference in 2008. We look forward to their contributions to the program.

We look forward to your participation in **Art&Archaeology2018**, enlightening us with your paper or poster presentation and enjoying the entertaining social and cultural events in Jerusalem and in Israel. Join colleagues from many countries and different disciplines and enrich your horizon.

We have chosen Jerusalem, a 3,000-year old city which has been the birthplace of the three great monotheistic religions. Its uniqueness, lying in the meeting of past and present, makes it an ideal city to tour. The atmosphere of a modern and vibrant society living among sites of major historical and religious significance dating back to the time of King David is guaranteed to provide you with an unforgettable experience.

With best regards,
Prof. Amos Notea
Conference Chair

Partners

ISRANDT - The Israel National Society for NDT

IAA - Israel Antiquities Authority

AIPnD - Italian Association for Non-Destructive Testing

Auspices

The Association of Museums and ICOM Israel

ICOMOS Israel

Holon Institute of Technology

Israel Society for the Conservation and Preservation of Cultural Property

Academia NDT International

Abstract Submission:

Papers can deal with both analytical and methodological approaches to gaining knowledge, implementation, and case studies.
All submissions must be written in English, the official language of the Conference.
Abstracts of approximately 250-300 words should be submitted on the website at https://art2018.isas.co.il/abstract-submission-form/
No pictures, tables or references.
Only fully registered participants will have their abstracts published.
Deadline for abstract submission (oral presentations): September 30, 2018
Late deadline (posters only): October 15, 2018

Organizing Committee:

Amos Notea, *Chair,* Holon Institute of Technology, Israel
Esther Ben Haim, Israel National Commission for UNESCO, Israel
Elisabetta Boaretto, Weizmann Institute of Science, Israel
Yuval Goren, Ben-Gurion University of the Negev, Israel
Zvi Greenhut, Israel Antiquities Authority, Israel
Zvi Koren, Shenkar College of Engineering, Design and Art, Israel
Orit Peleg-Barkat, The Institute of Archaeology, Hebrew University of Jerusalem, Israel
Aliza Polger Galili, Israel National Committee of ICOM, Israel
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Hasia Rimon, The Israel Museum, Jerusalem, Israel
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Ira Rabin, BAM Federal Institute for Materials Research and Testing, Germany
Hasia Rimon, The Israel Museum, Jerusalem, Israel
Sariel Shalev, University of Haifa, Israel
Giora Solar, ICOMOS Israel
Adin Stern, Ben-Gurion University, Israel
Rina Talgam, Hebrew University of Jerusalem, Israel

Major Themes

Analysis Based on Measurements/Evaluations in Archeology and Art
- Novel methods, trends and developments
- Measurement techniques to uncover mysteries in art
- Radioactive dating methods
- Iconography

Applications to Inorganic and Organic Materials and Objects
- Paintings, pigments and dyes, minerals
- Plaster, stone, ceramic, pottery, glass
- Metals
- Textiles, manuscripts, paper
- Organic residues, biomaterials

Non-Invasive Spectroscopic Research and Analysis
- Non-destructive testing
- Re-constructing the evidence: Novel studies of historical objects
- Non-invasive preservation monitoring, new developments and applications
- Spectroscopic techniques as a conservation treatment tool in art and archaeology

Microarchaeology
- Re-constructing the evidence: Studies in archaeology
- On-site sampling and analysis
- Archaeometry and microanalyses

Authentication vs. Detection of Forgery
- Scientific examination of evidence of manufacture, use and provenance
- Complementary and comparative micro-analytical techniques refining interpretation of the past
- Museology; identifying and determining historical values proving authenticity; validation of reconstruction

Digital Imaging and Computer Science
- Digital applications in conservation of art and archaeology
- Reconstructing the evidence in art and archaeology using advanced digital techniques
- Contactless scanning of objects; morphometric measurements

Ethical Perspectives; Values and Principles at Stake
- Implementation of integrated strategies satisfying conservation code of practice and research code of ethics
- Public display, conservation treatment and scientific research, is it safe? Impact of handling on integrity of cultural heritage
- Measurements and calculations; dealing with margins of error and contamination problems

In addition, papers on biblical-related archaeological measurement evaluations and archaeology in the Holy Land are welcome.

Plenum Speakers

Giacomo Chiari
Italy

Measurement Techniques to Uncover Mysteries in Art

This lecture will begin by providing a definition of Cultural Heritage from the perspective of Conservation Science, considering the radical challenge that the advent of new materials in contemporary art has posed for the field of conservation. This lecture will showcase a series of methods applied in the field of conservation science. Examples presented will be: the structure of Maya Blue, the paintings of Tutankhamen's tomb, Michelangelo censure panels in the Sistine chapel, a hidden face under a Rembrandt painting and the mapping of Egyptian blue in medieval churches. New procedures contributing to conservation science in the areas of archaeometry and conservation are presented below.

- Use of X-ray CT-scan for large bronze statues
- XRF scanners: A new very powerful tool for mapping the composition of painting
- A new program (SmARTscan) making use of hand held XRF, portable XRD and Raman to simulate the results of the XRF-scanners
- New noninvasive portable XRD/ XRF: this technique differs from the usual X-ray diffraction by analyzing the whole object rather than just the material
- Revisiting old techniques: Electron Emission for the characterization of thin layers of paintings independently from the substrate
- PiRM, Pictorial remanent magnetization: a promising way of dating mural paintings based on the orientation of hematite particles. Being too invasive had to be abandoned
- Laser Speckle Interferometry: a new noninvasive method to detect loose dangerous fragments of plaster
- Development of imaging techniques: VIL, Visible Induced Luminescence to map Egyptian blue in paintings

John Delaney
National Gallery of Art, USA

Tri-modal Imaging Spectroscopy of Paintings

A multi-modal imaging scanner able to cover an area up to 1.5 by 1.5 m has been designed and constructed to provide high spatial and spectral resolution image cubes of works of art. The three imaging modalities include optical reflectance imaging spectroscopy from the visible to near infrared (400 nm to 2500 nm, 2.5 nm sampling), molecular fluorescence imaging spectroscopy in the visible to near infrared (400 nm to 1000 nm) using different visible excitation light sources, and X-ray fluorescence imaging spectroscopy. The first two modalities provide molecular information and the third elemental information about artists' materials (pigments and paint binders). The information and material maps help to reveal insight into how the artworks were constructed and modified. Examples of the types of information that can be obtained from this scanner will be presented in case studies of paintings including a Greco-Roman Fayum "Portrait of a Woman", an illumination cutting by Pacino di Bonaguida, "Christ in Majesty with Twelve Apostles", c. 1320, and Pablo Picasso's Blue Period painting "Le Gourmet" c. 1901, all in the collection of the National Gallery of Art, Washington DC.

Dario Foppoli
Foppoli Moretta e Associati, Italy

NDT for the Approach to Seismic Safety of Outstanding Italian Heritage Buildings

The outstanding importance of the Italian heritage buildings is combined with their extraordinary fragility caused by the seismic sensitivity of the national territory. This consideration has been particularly highlighted by the seismic events occurred in the last twenty years (from the earthquake of Umbria in 1997 to the one of Amatrice in 2016): the intensity of these events was not so high, but they caused major damage to historic centres and monumental heritage. Furthermore, the well-established restoration practice, an operation in which the improvement of the seismic behaviour of monumental buildings is framed, is based on the assumption that the structural strengthening of an existing building must take place in accordance with the material consistency and the original structural conception of the artefact.

It is therefore necessary to develop the design path that the Italian Seismic Code for heritage buildings calls the "path of knowledge" in order to collect all the historical, geometric, material and mechanical information that allows to properly identify the structural behaviour of a building. In particular, it is crucial to know the constructive details, the characteristics of the materials and their level of degradation, mainly the ones resulting from the execution of NDT. It is also essential to take into account the artistic importance of monumental buildings, and therefore it is necessary to carefully evaluate the testing techniques applied in compliance with the conservation aspects, especially to reduce even minor alterations that may affect historical surfaces.

The following paper presents the state of art of the Italian experience and discusses some cases history referring to outstanding monuments which exemplify the most common structural issues field, showing how a proper approach through NDT can provide proper solutions to the problems raised.

Sabine Klein
German Mining Museum and Ruhr-University Bochum, Germany

Archaeometallurgy: Provenance Studies of Ancient Metal Artifacts through Isotope Analysis

Today, lead-isotope analysis is almost routinely applied in archaeometallurgical studies to provenance the raw material sources of metal objects. The method was previously developed in geosciences for geochronological purpose and was then adopted as an application in archaeometry.

Ancient metals are smelted and produced from metal-containing minerals. If the raw material can be regionally traced, the information is useful for archaeological interpretation towards local or supra-regional raw material supply, transfer of know-how, trade connections, socio-economic structures, etc. But the regional assignment of the raw material is only a secondary information gained from isotope analysis. The isotope method relies on the strong relationship between the ore minerals and their geological ore formation processes, thus indicating the geological age of the ore formation event. Very few isotope systems serve this purpose, and the lead isotope system is one of them. Based on the data achieved from mass spectrometer analysis, the geological age of rocks and ore minerals can be calculated by the help of calculation models. The ore minerals thus represent primarily different geological ages of their geological environment and secondarily this results in regional discrimination.

Other isotope systems are currently under investigation to serve as alternatives for the lead isotope system in archaeometry, although none of them can be used as discriminant as the lead isotopes. These are copper isotopes for copper-based objects, iron isotopes for iron objects, tin isotopes for bronze objects and silver isotopes for silver objects. Because they are no geochronological systems but rather are redox proxies, they can be used in archaeometry as a supplementary tool rather than as a replacement for the lead isotopes. A further system, osmium isotopes, is tested for provenancing the raw material of gold objects.

Admir Masic
Massachusetts Institute of Technology, USA

Frontiers of Biological Materials Characterization

Mary Virginia Orna
College of New Rochelle, USA

The Science of the Pigments in Illuminated Manuscripts

Illuminated manuscripts, created for the most part between the 9th and the 16th centuries CE, are the subject of intense interest in the art historical community because of their great value in providing a clear trajectory of palette development throughout Europe and the Middle East. Once the subject of speculation regarding pigment usage, it is now possible to examine these precious documents experimentally, yet non-destructively. Chemical analysis of pigments in illuminated manuscripts or identification of pigments purported in the literature sources to be present in these manuscripts serves several purposes. It can confirm or deny the alleged attribution or dating of a painting based on comparison with the known painting practices of the artist or period. In addition, the analysis of pigments can have a broader, and perhaps a more profound, importance to the historian as a tool for understanding more about the artistic process itself. And finally, linking literature sources with actual extant manuscripts that contain the pigments described can lead to greater insight into the identity of pigments no longer found in manuscripts because of their gradual deterioration over the course of many centuries. The indispensable tool for gaining this information is the array of modern scientific instruments that are now at the disposal of the interdisciplinary community. This paper reviews how these instruments, from the simplest to the more complex, have been used in the collaborative building of a pigment database, tracing lines of influence and interconnection between medieval centers of manuscript production, clarifying periods of known usage of several important artists' pigments, the difference in pigment usage between Armenian and Byzantine artists, the problems involved with handling manuscripts directly, and anachronistic pigment usage. Also to be discussed is the use of instrumental techniques to detect fraudulent artifacts. The technical future of chemical analysis of medieval manuscripts is also discussed.

General Information

Venue:
Ramada Hotel, Jerusalem

Language:
The official Conference language is English.

Welcoming Reception:
Sunday, December 9
Additional tickets: $50

Gala Banquet:
Tuesday, December 11
Additional tickets: $60

Exhibition and Sponsorship:
Space for the commercial exhibition will be available upon request. Please contact the secretariat at congress@isas.co.il for exhibition and sponsorship prices. A list of sponsors will be periodically published and updated on the Conference website.

Certificate of Participation:
Will be supplied to participants upon request.

Letters of Invitation:
Upon request, the Secretariat will send a personal invitation to participate in the conference. It should be understood that such an invitation is only meant to help visitors raise funds or obtain a visa and does not represent commitment on the part of the organizers to provide financial support.

Transportation from Airport:
Ben-Gurion International Airport is located 40 minutes from Jerusalem. Taxi service and shared "Nesher" shuttle service provide safe, fast and economic transportation into Jerusalem.
These taxis fill up with 10 people and then bring each person to their destination in Jerusalem. The cost is approximately $20 per person. Another option is a private taxi which costs approximately $85 per vehicle and takes you directly to your destination. To order return taxi service from Jerusalem to the airport, please see the hotel concierge.

Visas:
All visitors to Israel are required to have a valid passport, and from some countries, a visa is required. For more information please contact your nearest embassy, consulate or local travel agency well in advance. It is the responsibility of the participant to obtain a visa if required.

Climate:
The weather in December is cool with possible rain, temperatures ranging from 8-15°C / 45-60°F.

Clothing:
Clothing is informal for all occasions. A sweater or jacket is also recommended, as the conference rooms may be cool.

Important Notes:
ISAS International Seminars, and their agents, shall not be responsible for and shall be exempt from all liability in respect of any loss, damage, injury, accident, delay or inconvenience to any person, or his/her luggage or any other property for any reason whatsoever, for any tourist services provided.
Personal travel and health insurance is recommended.

Registration and Accommodation

Registration can only be done **on line** through the conference website:
https://art2018.isas.co.il/registration/

Registration:

	Before November 16, 2018	After November 16, 2018
Participants	$550	$600
Presenters	$470	$510
AIPnD Members	$440	$480
Current Students*	$280	$320

*Student registration form must be accompanied by proof of status.

Registration fee includes 3 days of conference, admission to scientific sessions, Program and Proceedings, 3 lunches, reception (Dec. 9), gala banquet (Dec. 11), 6 coffee and cake breaks and entrance to the exhibition and poster sessions.

Accommodations:

Price per night	Single Room	Double Room
Ramada Hotel (venue)	$135	$150

Accommodations include full Israeli buffet breakfast and 15% service charge. Official check-in time for hotel is 15:00 and check-out is 11:00. Check-in on Saturday only from 18:30. All requests for accommodations must be prepaid.

Payment:

Payment should be made by one of the following methods:

- By credit card via the conference website.
- By bank transfer (an additional $40 charge is required):
  ISAS International Seminars Ltd.
  Bank Leumi Branch #780, 19 King David St., Jerusalem, Israel
  Account Number 9400/87
  SWIFT Account: LUMIILITXXX
  IBAN Code: IL 690107800000000940087

Please make sure the name of the conference and of each participant are indicated on the bank transfer and that fully completed registration forms are submitted together with a copy of the bank transfer.

Cancellation Policy:

All cancellations must be received in writing, via email or fax.

Registration cancellations received:

- before October 15, 2018 - full refund less $60 (and bank commission)
- between October 15 and December 5, 2018 - 50% refund
- after December 5, 2018 - no refund

Hotel cancellations:

- before November 10, 2018 – full refund less $50
- between November 10 and November 25, 2018 – one night cancellation fee
- after November 25, 2018 – no refund

Tours may not be canceled after November 25, 2018.

All refunds will be processed after the conference.

Tours

For detailed information about these tours, go to http://art2018.isas.co.il/tours

Sunday, Dec. 9 **Sunday Tour 1:** Jerusalem



Sunday Tour 2: Caesarea, Acre & Rosh Hanikra



Sunday Tour 3: Masada & Dead Sea



Thursday, Dec. 13 **Thursday Tour 4:** Jerusalem Jewish Heritage Tour



Courtesy of the Israel
Antiquities Authority
Photo: Tsila Sagiv

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