Preserving and Safeguarding the Beauty of Cultural Heritage: Fundamentals, Methods and Applications of State-of-the-Art Diagnostic Tools Using Optical, X-Ray and Particle Probes

Venice International University
November 6-10, 2023

Faculty
1. Massimo Carpinelli, University of Milano-Bicocca, Scientific Coordinator
2. Alberto Bravin, University of Milano-Bicocca
3. Letizia Monico, National Research Council of Italy (CNR), Scientific Coordinator
4. Costanza Miliani, National Research Council of Italy (CNR)
5. Claudia Conti, National Research Council of Italy (CNR)
6. Francesco D’Acapito, National Research Council of Italy (CNR) & European Synchrotron Radiation Facility (ESRF)
7. Francesco Paolo Romano, National Research Council of Italy (CNR)
8. Roberto Senesi, Tor Vergata University of Rome, Scientific Coordinator
9. Carla Andreani, Tor Vergata University of Rome
10. Warren S. Warren, Duke University, Scientific Coordinator
11. Alessandra Fornetti, Venice International University (VIU)
12. Ilda Mannino, Venice International University (VIU)

Guest speakers
1. Patrizio Antici, Institut National de la Recherche Scientifique (INRS)
2. Marine Cotte, European Synchrotron Radiation Facility (ESRF)
3. John Delaney, National Gallery of Art, Washington
4. Christian Greco, Museo Egizio (Torino)
5. Claire Pacheco, Centre de recherche et de restauration des musées de France (C2RMF)
6. Luciano Pensabene, Peggy Guggenheim Collection (Venezia)
7. Luca Tortora, Roma Tre University
Day 1 | Monday, November 6, 2023

Morning | Introduction to Color: Chemical, Physical and Spectroscopic Principles

9:00 – 9:30  Registration and Welcome Remarks (VIU & PhD Academy Coordinators)

9:30 – 11:00 Molecular origins of color and color perception (Warren S. Warren, Duke University)

11:00 – 11:30 Break

11:30 – 13:00 The interaction of radiation with matter: linear and nonlinear spectroscopic techniques for pigment characterization (Warren S. Warren, Duke University)

13.00 – 14.00 Lunch

Afternoon | Advanced Raman Spectroscopy methods

14.00-15.30 Flash Poster presentation (3 minutes) (students)

15.30 – 15.45 Break

15:45 – 16:45 Advanced Raman Spectroscopy methods and their application to Cultural Heritage materials (Claudia Conti, CNR)

16.45 – 18:00 Transversal Skills Session - Introduction to project management (Patrizio Antici, INRS)

Day 2 | Tuesday November 7, 2023

Morning | Introduction to Medium-Large Scale Infrastructures for Cultural Heritage

9:00 – 9:45 ERIHS - European Research Infrastructure for Heritage Science (Costanza Miliani, CNR)

09:45 – 10:15 Cultural Heritage at the ESRF: developing new instruments and facilitating access (Marine Cotte, ESRF)

10:15 – 11:00 ISIS@MACH ITALIA (Carla Andreani and Roberto Senesi, Tor Vergata University of Rome)

11:00-11:30 Break

11.30 – 13:00 Poster Session (students)

13.00 – 14.00 Lunch

Afternoon | Management of Cultural Heritage objects and virtual experiments at ISIS/ISIS@MACH ITALIA

14:00 – 15:00 Management of Cultural Heritage objects (Christian Greco, Museo Egizio)

15:00-16.15 Virtual experiments at ISIS neutron source and the ISIS@MACH ITALIA Medium Range Facility for CH (Carla Andreani and Roberto Senesi, Tor Vergata University of Rome, and ISIS@MACH ITALIA staff)

16:15-16:30 Break
16:30-18:00  Virtual experiments at ISIS neutron source and the ISIS@MACH ITALIA Medium Range Facility for CH (Carla Andreani and Roberto Senesi, Tor Vergata University of Rome, and ISIS@MACH ITALIA staff)

Day 3 | Wednesday November 8, 2023

Morning | X-ray methods

9:00 – 10:30  Fundamentals on Synchrotron Radiation and X-ray Methods (Francesco D’Acapito, CNR and ESRF)

10:30 – 11:00  Break

11:00 – 12:00  Shedding light on ancient materials: exploring Cultural Heritage with X-Ray Mobile Techniques (Francesco Paolo Romano, CNR)

12:00 – 13:00  Applications of micro X-ray absorption spectroscopy to the study of historical material (Marine Cotte, ESRF)

13.00 – 14:30  Lunch

Afternoon | Visit at the Peggy Guggenheim Collection

14:30  Visit at the Peggy Guggenheim Collection with introduction by the Director and lecture by Luciano Pensabene (conservator/restorer in chief of the Collection) (Luciano Pensabene, Peggy Guggenheim Collection)

19:00  Social dinner in Venice

Day 4 | Thursday November 9, 2023

Morning | PIGE/PIXE methods and Transversal Skills Session

9:00-10:15  Introduction to PIGE/PIXE spectroscopies, AGLAE and application on Cultural Heritage (Claire Pacheco, C2RMF)

10:15 – 10.45  Break

10:45 – 12:00  New diagnostics using novel particle sources (Patrizio Antici, INRS)

12:00 – 13:00  Transversal Skills Session – Beating the Odds for Journal Acceptance (Warren S. Warren, Duke University; Senior Deputy Editor, Science Advances; John Delaney, NGA, Washington; Associate Editor, Science Advances)

13:00 – 14:00  Lunch

Afternoon | Transversal Skills Session and Muon methods

14:00 – 15:00  Transversal Skills Session - Dealing with scientific press (Warren S. Warren and John Delaney)

15:00 – 15:30  Break
15:30 – 17:45  Principles of muon techniques and applications in Cultural Heritage (Massimo Carpinelli, University of Milano-Bicocca)

**Day 5 | Friday November 10, 2023**

**Morning | 2D and 3D imaging methods**

09:00 – 11:00  2D chemical Imaging applications in Cultural Heritage (John Delaney, National Gallery of Art, Washington)

**11:00 – 11:30  Break**

11:30 – 13:00  3D Imaging X-ray Methods and applications in Cultural Heritage (Alberto Bravin, University of Milano-Bicocca)

**13:00 – 14:00  Lunch**

**Afternoon | ToF-SIMS and Transversal Skills Session**

14:00 – 15:15  ToF-SIMS (Luca Tortora, Roma Tre University)

15:15 – 16:15  Transversal Skills Session - How to communicate your research to the general public (Ilda Mannino and Alessandra Fornetti, VIU)

**16:15 – 17:00  Final Discussions and Wrap-up (VIU, PhD Academy Coordinators & students)**