

4^{NEU} Neutron4: Heritage Science

9th - 12th September 2025
Bosco Chiesanuova (VR), Italy

Neutron techniques for
non-destructive technological study
of Cultural Heritage artefacts

Preliminary program

Sala Olimpica, Teatro Vittoria
Bosco Chiesanuova (Verona, Italy)

Tuesday, 9th September 2025

18:00 - 19:30 *Welcome & registration*
20.00 *Dinner*

Neutrons4: the crash course

Wednesday, 10th September 2025

9:00 - 10:00 **N. Kardjilov**, General introduction on neutrons & comparison with other probes.
10:00 - 10:30 *Coffee break*
10:30 - 12:00 **B. Schillinger**, Imaging: introduction & case studies.
12:00 - 14:00 *Lunch*
14:00 - 15:30 **F. Grazzi**, Neutron diffraction: introduction & case studies.
15:30 - 16:30 **A. Scherillo**, Elemental analysis with neutrons
16:30 - 17:00 *Coffee break*
17:00 - 18:00 **F. Cantini**, Experiments with neutrons: from the proposal to the publication
20:00 *Dinner*

Neutrons4: the conference

Thursday, 11th September 2025

9:00 - 9:50 *Keynote lecture*
Gilberto Artioli, To Be Announced.
9:50 - 10:10 **Y. Kiyonagi**, Japanese Sword Study by Using Neutron Imaging and Muon Lifetime Measurement.
10:10 - 10:30 **F. Grazzi**, Non-invasive analysis of Japanese swords through Neutron methods Lessons learnt after 18 years of research.
10:30 - 11:00 *Coffee break*
11:00 - 11:20 **A. Williams**, Complementary methods of analysis for Indian swords? Neutron diffraction and metallography.
11:20 - 11:40 **O. Cocen**, Multimodal Characterization Approach for Studying Corrosion of Archaeological Iron Artifacts.



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- 11:40 - 12:00 **G.A. Green**, Muonic X-ray Emission Spectroscopy (μ XES) for Sub-surface, Non-destructive Analysis of Ancient Gold.
- 12:00 - 12:20 **A. Scherillo**, Neutron techniques for Cultural heritage at ISIS: New developments and some successful stories.
- 12:40 - 14:30 *Lunch*
- 14:30 - 14:50 **M.P.M. Marques**, Probing the Effect of Fire on Egyptian Mummies by Neutron Spectroscopy and Neutron Activation Analysis.
- 14:50 - 15:10 **A. Venturi**, Characterisation of water-induced damage in painting varnishes using neutron scattering techniques and optical coherence tomography.
- 15:10 - 15:30 **C. Mondelli**, Neutrons for conservation of stone materials and organic based artefacts in cultural heritage. The project nanoHERCULES.
- 15:30 - 15:50 **N. Kardjilov**, Neutron imaging in cultural heritage preservation.
- 15:50 - 17:30 *Poster session*
- 20:00 *Social dinner*

Friday, 12th September 2025

- 9:00 - 9:50 *Keynote lecture*
Monica Galeotti, To Be Announced.
- 9:50 - 10:10 **F. Salvemini**, Neutron study of Roman medical utensils from the RD Milns Antiquities Museum - University of Queensland.
- 10:10 - 10:30 **F. Cantini**, White beam and monochromatic neutron imaging for the reconstruction of the casting process of ancient bronzes: an overview of results and interpretation.
- 10:30 - 11:00 *Coffee break*
- 11:00 - 11:20 **M. Wu**, The progress of CARR neutron imaging and its applications in culture heritage.
- 11:20 - 11:40 **M. Marabotto**, Calibration of Bragg Edge Neutron Transmission analysis for the characterisation of archaeological bronzes.
- 11:40 - 12:00 **X. Zhao**, Advances in Muon-Induced X-ray Emission (MIXE) with the GIANT Instrument at PSI: Applications in Archaeology, Cultural Heritage, and Energy Materials.
- 12:00 - 12:45 *Round table*
Neutron beamtime, projects and opportunities
- 12:45 - 13:00 *Conclusions*
- 13:00 - 14:00 *Light lunch*



**Società Italiana di
Scienze Neutroniche**
Associazione di Promozione Sociale