UNIVERSITÀ DEGLI STUDI DI PERUGIA
DIPARTIMENTO DI FISICA
Via A. Pascoli – 06123 PERUGIA (Italy)

Dipartimento di Fisica, Giovedì 6 marzo
Ore 15:00, Aula A

Neutrons in archaeometry

Gilberto Artioli

Università degli Studi di Padova, Padova, Italy

Neutron probes are primary sources for the non-invasive characterization of materials related to cultural heritage. Their employment in the investigation of archaeological objects and art works encompasses imaging, chemical analysis, and crystallographic analysis, including phase identification, texture analysis, and structure and microstructure analysis. In principle, many of these information may be obtained simultaneously in a single combined experiment, thus minimizing neutron exposure and the risks and the costs related to object's handling. As a successful case study, diffraction-based crystallographic texture analysis (CTA) has been recently applied to the investigation of prehistoric copper objects. When performed using penetrating probes and adequate detector coverage of reciprocal space, for example using large detector arrays and/or ToF mode, CTA allows simultaneous identification and quantification of crystalline phases, besides the microstructural and textural characterization of the object. CTA can therefore be effectively used as a totally non invasive tool for metallographic analysis, thus proving to be a powerful tool for the interpretation of ancient metal working techniques.