# New opportunities for X-ray investigations in archaeometry at the new MUSA beamline

Carlomagno Ilaria[1]
[1]*Elettra-Sincrotrone Trieste, SS 14, km 163.5, 34149 Trieste (IT)*

Synchrotron Radiation X-Ray Fluorescence (SR-XRF) and X-ray Absorption Spectroscopy (XAS) are two complementary probes capable of assessing information on surface morphology, elemental composition, electronic and local structure. Both techniques were available at the previous XRF beamline at Elettra, which was chosen by many research groups interested in the characterization of ancient materials.

With the advent of Elettra 2.0, new beamlines will become available for new and better science. Among them, there is one devoted to XRF and XAFS in the tender and hard X-ray range.

The Microprobe Unit for Spectromicroscopic Analysis (MUSA) beamline builds on the strong foundation of the previous XRF beamline, while offering many additional benefits. Its new source, extended energy range, and tunable beam size will enable XRF and XANES mapping with micrometric resolution and faster acquisition times. A new, flexible end-station will allow to measure in air, while cryosystems will be available to keep radiaiton damage at a minimum.

The MUSA beamline will be an excellent addition to the CERIC-ERIC portfolio, offering vital multi-technique synergies for the international archaeometry community.

**Short bio:**
Carlomagno Ilaria is a beamline scientist at the XRF beamline of Elettra Sincrotrone Trieste, which she joined in 2018. She began her career studying nanostructured materials with a combination of X-ray techniques, including X-ray absorption spectroscopy (XANES/EXAFS), X-ray reflectivity and grazing-incidence diffraction. Her research interests have since broadened to include cultural heritage and archaeometry. Thanks to several international collaborations, she had the chance of applying XRF and XAS techniques on a wide variety of ancient materials.