9. Micro/nano diagnostics and ancient technology

There is a continuing search for methods capable of determining composition and structure of complex heterogeneous materials, shallow surface layers, interfaces, and heterogeneities on the microscopic (>100 nm) and nanoscale (<100 nm) level. These methods are based on the spatially confined interactions of ions, electrons, neutrons or electromagnetic radiation with a sample, such as secondary ion mass spectrometry (SIMS, nano-SIMS) with focused primary ion beams, laser microprobe mass spectrometry (LMMS), neutron diffraction (ND), transmission/scanning electron microscopy (TEM, SEM), ion beam analysis (IBA) and microscopic X-ray fluorescence analysis (μ-XRF). Simultaneously with these beam methods a number of characterization and analysis techniques based on Synchrotron Radiation Sources have been developed: X-ray spectroscopy (XAS, EXAFS, XANES) or Computed absorption μ-tomography (CMT).

Contributions dealing with the application of these methods aimed at understanding ancient technologies are welcome. Discussions are expected both on obtained results and on the potential outcome of the advanced analytical techniques previously described.