

Archaeometry: brief overview and advancements

Ioannis Liritzis, *Dean Class IV, EASA; Distinguished Professor, Institute of Capital Civilization, Henan University, Kaifeng 475001, China.*

(www.liritzis.eu; ioannis.liritzis@euro-acad.eu; liritzis@aegean.gr; liritzis@henu.edu.cn)

The best place for finding the past is no other than an “archaeological site”. An archaeological site is a site where the past activity is preserved and it is traced by various things like food remains, structures, humanly manufactured objects, and others. Archaeometry provides answers to archaeological questions concerning material culture.

I could divide the wide archaeometry subject to 7 sub-fields: 1) *Chronology/ Dating*, 2) *Characterization & Provenance (chemical analysis, statistics)* 3) *Bioarchaeology (stable isotopes, aDNA, ancient diet)*, 4) *Conservation (analysis & preventive-passive conservation/ restoration)*, 5) *Archaeoastronomy (measuring time, determining rituals, celebrations)*, 6) *ArchaeoGeophysical Prospection (locating buried antiquities)*, 7) *3D reconstruction*.

Investigating the past requires remains of material culture and human artifacts and man-made constructions, geoarchaeological materials, human remains of organic and inorganic origin. For all these investigations multiple techniques are available to support instrumental analysis including nuclear, spectroscopic, chemical, electronic devices. Regarding the popular research & applications of computer systems the cyber-archaeology has emerged making use of big data collection, storage, documentation, processing in the field by a various diversified equipment, with a result the digital reconstruction of monuments and artifacts, in the field and in the museums.

The documentation is an emerging field with fast development especially for the preservation of at-risk antiquities from natural, and anthropogenic destructions. Also, documentation of the techniques used to make a work of art in a non-destructive (without sampling) readings of electromagnetic rays in the optical IR, UV, NIR and beyond. This is achieved by presenting energy spectra and a kind of tomography which digitally reveals underlying layers of an overpainted work of art like a palimpsest.

Selective a few examples are given from of case studies dated by radiocarbon, luminescence, archeoastronomy, characterization, analysis, and provenance. Archaeometry deciphers the past, and natural sciences with archaeometry strengthen and develop the spirit of interdisciplinarity, delves into the past and retains our memory. In the remote past we meet our future and enhance sustainability-growth but ecumenical values too. Archaeometry is the heart in the present in which past and future meet....



Ref: Liritzis, I & Korke, E (2019) Archaeometry's Role in Cultural Heritage Sustainability and Development. SUSTAINABILITY, 11, 1972. DOI:10.3390/su11071972 (and refs therein)