**LAEC investment in the use of IBA techniques to valorize cultural heritage**

Mohamad Roumie

*Accelerator Laboratory, Lebanese Atomic energy Commission, National Council for Scientific Research, Beirut, Lebanon*

Since 1990, large scale campaigns of archeological excavations were undertaken in Lebanon, showing the richness and diversity of the Lebanese archaeological patrimony. Due to the geographical and historical place of Lebanon, the related findings revealed unearthed vestiges dating up to thousands of years, as old as the prehistoric age, and belonging to many ancient civilizations: Phoenician, Babylonian, Assyrian, Hellenistic, Roman, Persian, Byzantine, Omayyad, Abbasside, Mamluk and Ottoman.

Nuclear analytical techniques, accelerators based, have proven to be an effective tools for the studies of archeological artifacts, in particular for provenance, authenticity, fabrication techniques and dating. As early as its installation, the LAEC particle accelerator invested in this direction. IBA techniques such as PIXE and RBS contributed to characterize ceramics, figurines, coins and other artefacts from different excavated archaeological sites. This was expressed by many collaborative projects with archeologists where IBA techniques contributed to solve some of the issues related to the characterization of workshop production and authenticity. In this work, relevant case studies will be highlighted as to show the usefulness and capabilities of accelerator based techniques. Furthermore, many technical updates of the accelerator machine were undertaken, such as the new external micro-beam, as to accommodate more advanced analysis of archeological objects.