

## **Metallic artifacts: humanistic and scientific culture closely interlinked**

Sgarro N.<sup>1</sup>, Gallo S.<sup>2</sup>, Mesto E.<sup>3</sup> Rizzo G.<sup>1</sup>, Schingaro E.<sup>3</sup>, Scrano L.<sup>5</sup>, Tempesta G.<sup>3</sup>

<sup>1</sup>*Dipartimento di Scienze, Università della Basilicata, Via dell'Ateneo Lucano 10, Potenza, Italy*

<sup>2</sup>*Direttore del Museo Archeologico Nazionale della Siritide, Policoro, Italy*

<sup>3</sup>*Dipartimento di Scienze della Terra e Geoambientali, Università degli studi di Bari Aldo Moro*

<sup>4</sup>*Dipartimento Geomineralogico, Università degli studi di Bari, Bari, Italy*

<sup>5</sup>*Dipartimento delle Culture Europee e del Mediterraneo, Università della Basilicata, Matera, Italy*

According to Thucydides, the purpose of archeology was to "demonstrate to reconstruct the past not only through sources but also through exact scientific evidence", thus, highlighting the close relationship that exists between humanistic and scientific culture (Artioli, 2010). Archaeological finds, found in excavation areas or in underwater finds, duly questioned, can tell us, in detail, the traditions, customs, travel itineraries, and trade exchanges of the civilizations that populated the territories in the past (Parmeggiani, 2003).

The present research is focused on the study of metal objects found during archaeological excavations in the Siris area of Policoro (Matera) in order to obtain information on the chemical-physical characteristics of the objects, the construction technologies, and the state of degradation/corrosion.

These finds: probe (Fig. 1), arrowhead, flask cap, lead stick, iron weapon, javelin point, and fibula were analyzed through a synergy of non-destructive methods such as Optical Microscopy (MO), X-ray fluorescence (XRF), X-ray diffraction (XRD), X-ray photoelectron spectroscopy (XPS) and Raman spectroscopy. Microbiological investigations were also carried out on the findings to verify the presence of biodeteriogens.

The main results can be summarized as follows:

- √ XRD analyzes show that the samples are essentially made up of iron and aluminum alloys and iron and copper oxides, often with encrustations of quartz and calcite,
- √ XRF analyses, in addition to revealing the major elements such as Fe, Cu, and Zn, reveal traces of Zn and Pb for some samples. Specifically, "Spec3" (fig. 1), whose museum file reported the metal composition as 100% iron, turned out to be an alloy of Cu and Zn with traces of Fe and Pb (fig. 2).



Fig. 1: spec3

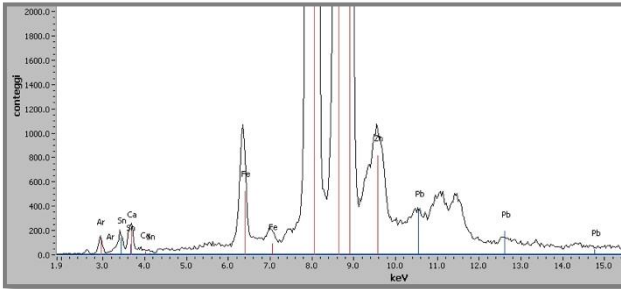


Fig. 2: XRF analysis of “spec3”.

No biodeteriogens appear to be present on the analyzed objects.

The ultimate goal of the research will consist in the identification and planning of subsequent green rehabilitation and consolidation interventions.

## REFERENCES

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