

The main research problems of prehistoric metallurgy concern the characteristics of metallurgical activity on settlements, the local extraction of metallic raw materials (mainly copper and lead), as well as the studies on the provenance of metal. There are many settlements with the traces of metallurgy, which are known from brief information in the literature. Usually, however, they are still not fully published and the issues connected to metallurgy are not satisfactorily analysed. The most of the publications synthesize only the small amount of selected materials discovered at archaeological sites, e.g. ceramic vessels or metal artifacts. None of these publications dealt with detailed research on the metallurgical production, on the modern provenance studies or on the settlements in the context of metallurgical activities. The implementation of this project aims to change this picture.

In the Late Bronze Age and the Early Iron Age (around 1000-550 before Christ) in territory of Poland several metallurgical regions are distinguished: Silesia, Greater Poland, Kuyavia and Eastern Pomerania. They are distinguished on the basis of the presence of local metal products, as well as an outstanding number of items related to metallurgy (e.g. casting moulds) which are found in different contexts. The region with a distinctive degree of metallurgical production, that is usually ignored, is the south-eastern Baltic zone. Within this area numerous settlements with the traces of metallurgical activities as well as locally produced items are identified, especially in the Early Iron Age. In the context of metallurgical regions, the focus was on the finished products of 'local workshops' and on the distinguishing local types. When discussing tools related to metallurgy (casting moulds, crucibles and tuyeres), they were usually limited to a general and short description.

The main goal of the project is an interdisciplinary and complete analysis of the prehistoric metallurgy of copper alloys based on materials from selected settlements from the two metallurgical regions. There will be compared two distant regions which are traditionally perceived completely differently in the context of metallurgical production – the Silesia (within its historical boundaries) as strongly developed and the south-eastern Baltic zone (Warmia, Masuria, Suwałki Region), as an underdeveloped. Both regions in the Late Bronze Age were occupied by the Urnfield culture – Lusatian culture, namely by its different groups. In the Early Iron Age, the Lusatian culture continued to develop in Silesia, and the West Balt Barrow Culture began in north-eastern Poland. Both cultures share the presence of metallurgical evidence on the settlements, as well as the using of single-use clay casting moulds and the mass production of ring ornaments in the Early Iron Age. Is this the only similarity between these two regions?

The research goals will be achieved in the technological, raw material and settlement perspective:

Technological perspective: a detailed analysis of the metallurgical technologies on the settlements. With the modern methods the information on metallurgical tool kit will be collected and interpreted.

Raw material perspective: the determination of the chemical composition and provenance of the raw metal (copper, lead, tin) used on settlements and in a distinguished metallurgical regions.

Settlement perspective: the analysis of the copper alloys metallurgy in microscale (in the case of an individual settlement) and macroscale (the comparisons between individual settlements, then metallurgical regions, as well as in relation to the published results from the outside Polish territory).

Research objectives will be achieved by analyzing information from the prepared database, archaeometallurgical analyses (lead isotopy, chemical composition), microscopical observations, thermal method, archaeobotany, chromatography, network analysis, as well as distribution and cartographic analysis. The use of an interdisciplinary set of analyses will allow to obtain a completely new scientific data for an understanding of prehistoric metallurgy not only in Poland territory, but also in Central and Northern Europe.