

## **RESEARCH PROJECT**

## THE POTENTIAL OF SULPHOSALTS AS A SILVER RESOURCE - A MINERALOGICAL-ARCHAEOMETALLURGICAL STUDY ON SPANISH ORES, SLAGS AND LITHARGE

Silver was the most important metal of economic and military exchange in ancient Mediterranean and Near Eastern societies. The common assumption that galena ore, a lead ore that can contain mineable amounts of silver, accounted for most of the silver mined in antiquity will be reviewed. Numerous other minerals also containing mineable amounts of silver exist in nature, such as the group of sulfosalts. Roman Spanish ores and metallurgical (intermediate) products will be studied to address this question

From the impressive work and collection of Spanish material collected over tens of years by C. Domergue, Toulouse, several ore, slag and litharge samples from the Sierra Morena were chosen for archaeometallurgical investigation, collected by him during field surveys in the sites of Cerro de Plomo, El Centenillo mine and La Carolina, Fuente Espi mine and related foundries. Some of the findings were archaeologically datable to 2nd-1st. ct BCE. The sample group is in particular of interest for the study, because the different materials are regionally and contextually in strong relationship to each other and belong presumable to the same local metallurgical chain of silver production. The samples were subject to phase analyses by polarized light microscopy, XRD, SEM, EPMA and lead and copper isotope analysis in the central research laboratories of the Deutsches Bergbau-Museum Bochum and Ruhr-Universität, Institut für Geologie, Mineralogie und Geophysik, Bochum. The mineralogical and geochemical characterization aims at a better differentiation between galena and associated sulfosalt phases and the fractionation of silver between them.

## **Project Information**

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Project investigators	Prof. Dr. Sabine Klein
Team	Prof. Dr. Sabine Klein, Paul Krause, MSc.
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Involved research departments	Archaeometallurgy, Forschungslabor
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## Cooperation:

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