

ANALYTICAL INVESTIGATIONS CONCERNING COPIES AFTER IMPERIAL ROMAN DENARII - CASE STUDY

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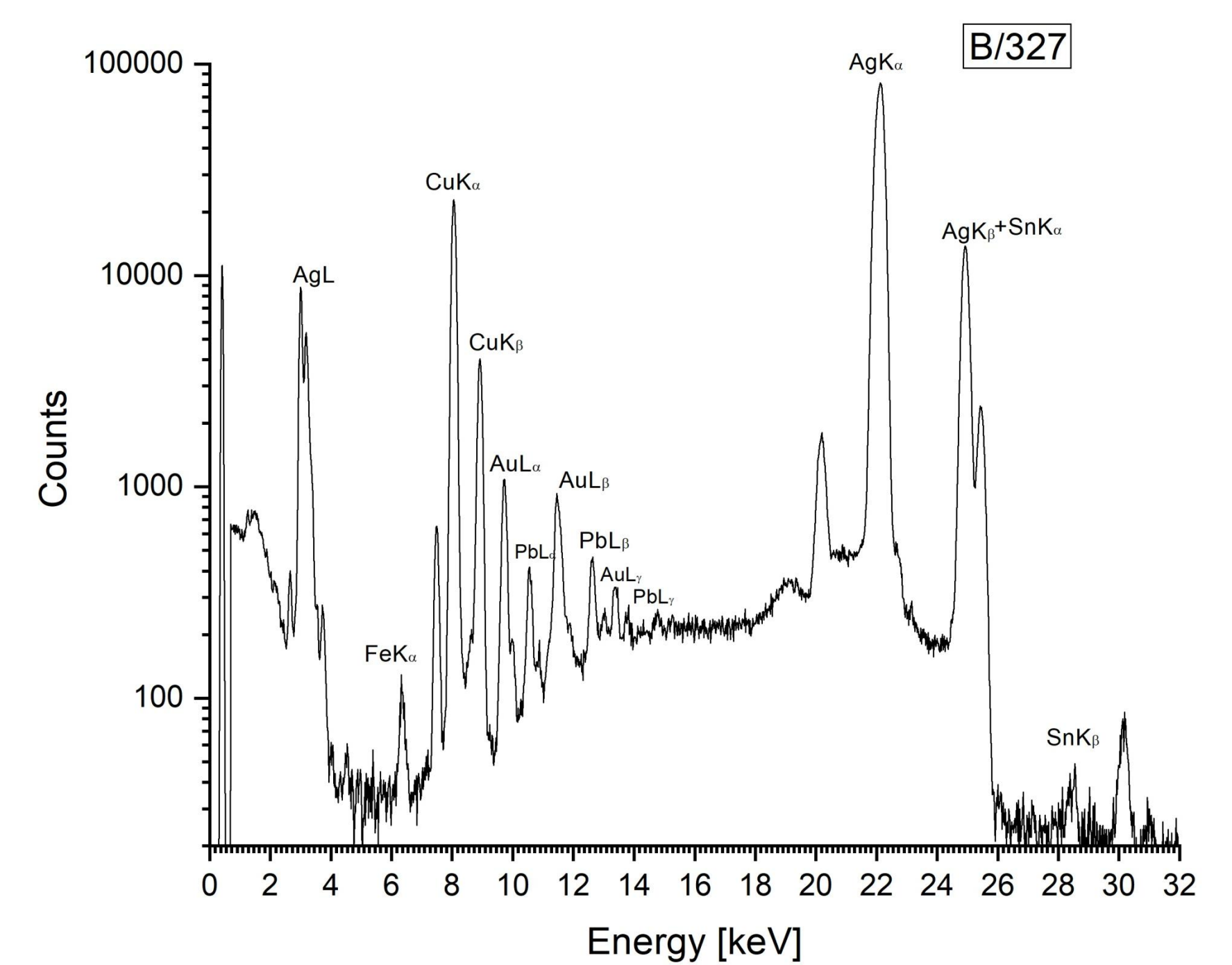
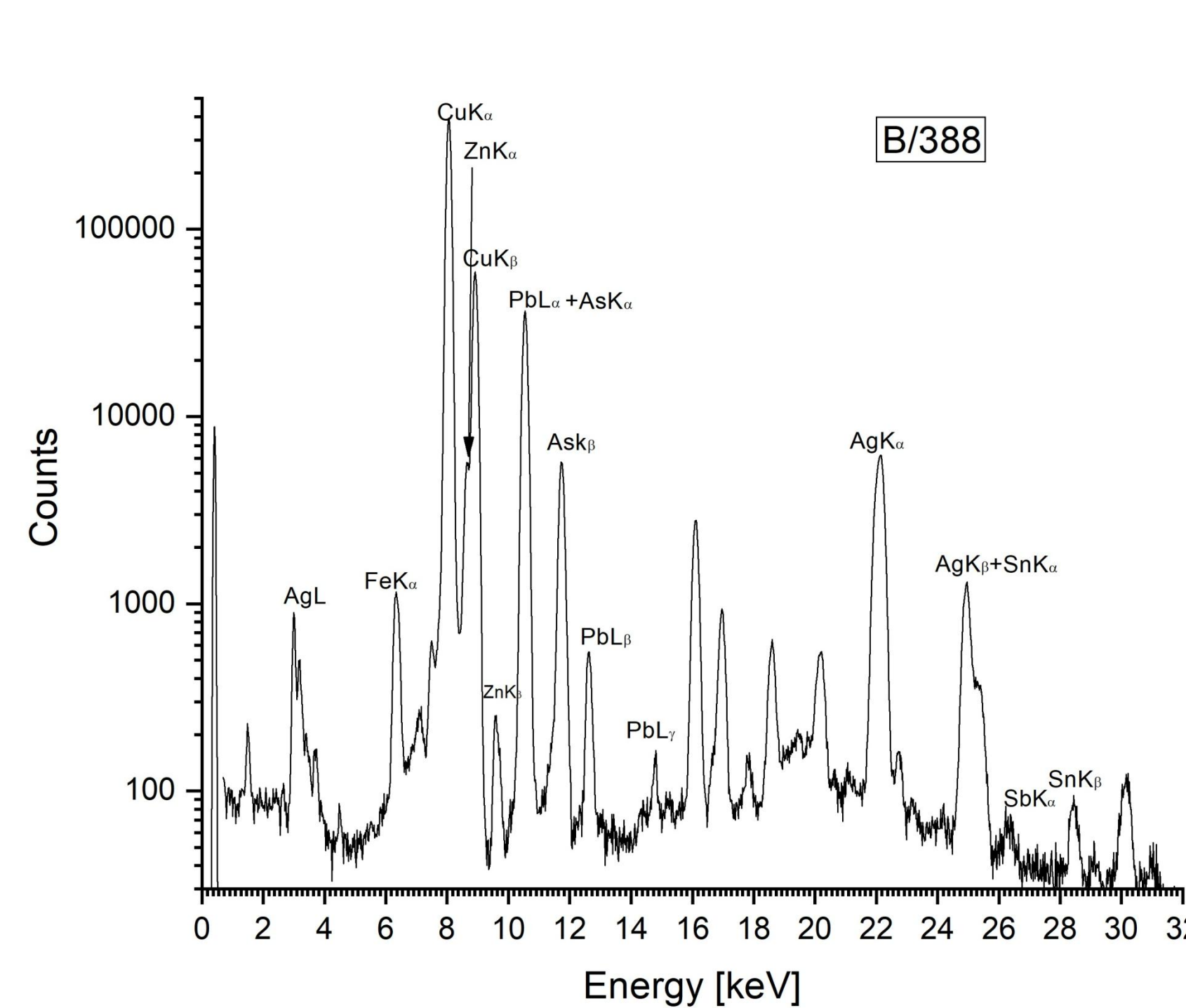
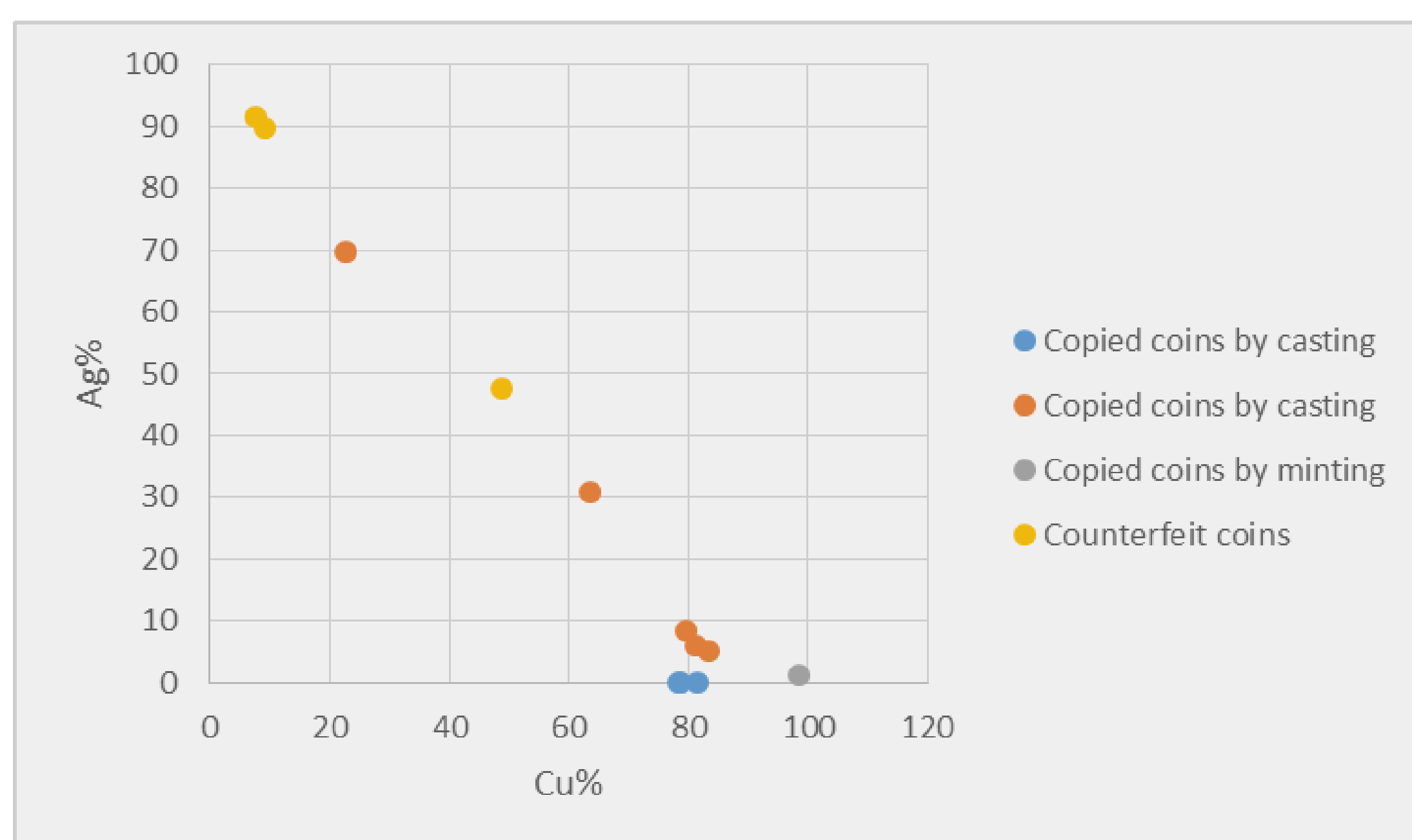
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12 coins from the lezer hoard (Vaslui county), located in the collection of the "Vasile Pârvan" Museum in Bârlad, were investigated using the X-ray Fluorescence method. The elemental composition of the alloy was determined using the TRACER 5i portable spectrometer produced by Bruker Instruments whose principle of operation is based on Energy Dispersive X-Ray Fluorescence (EDXRF) with high analysis speed and sensitivity. The exciting X-ray beam - 40 kV tube with Rh-anode. A PIN silicon diode detector with Peltier cooling. The resolutions of the detector are 140 eV, the measurement spot size is about 30 mm². Surface examination along with compositional analysis was conducted to explore the alloys and manufacturing techniques of the artifacts. All the coins can be considered copies of the Roman imperial denarius and can be divided into two categories: examples made by casting (the first 8 pieces) and by striking (the piece with no. 9), and "barbaric" imitations (3 coins).



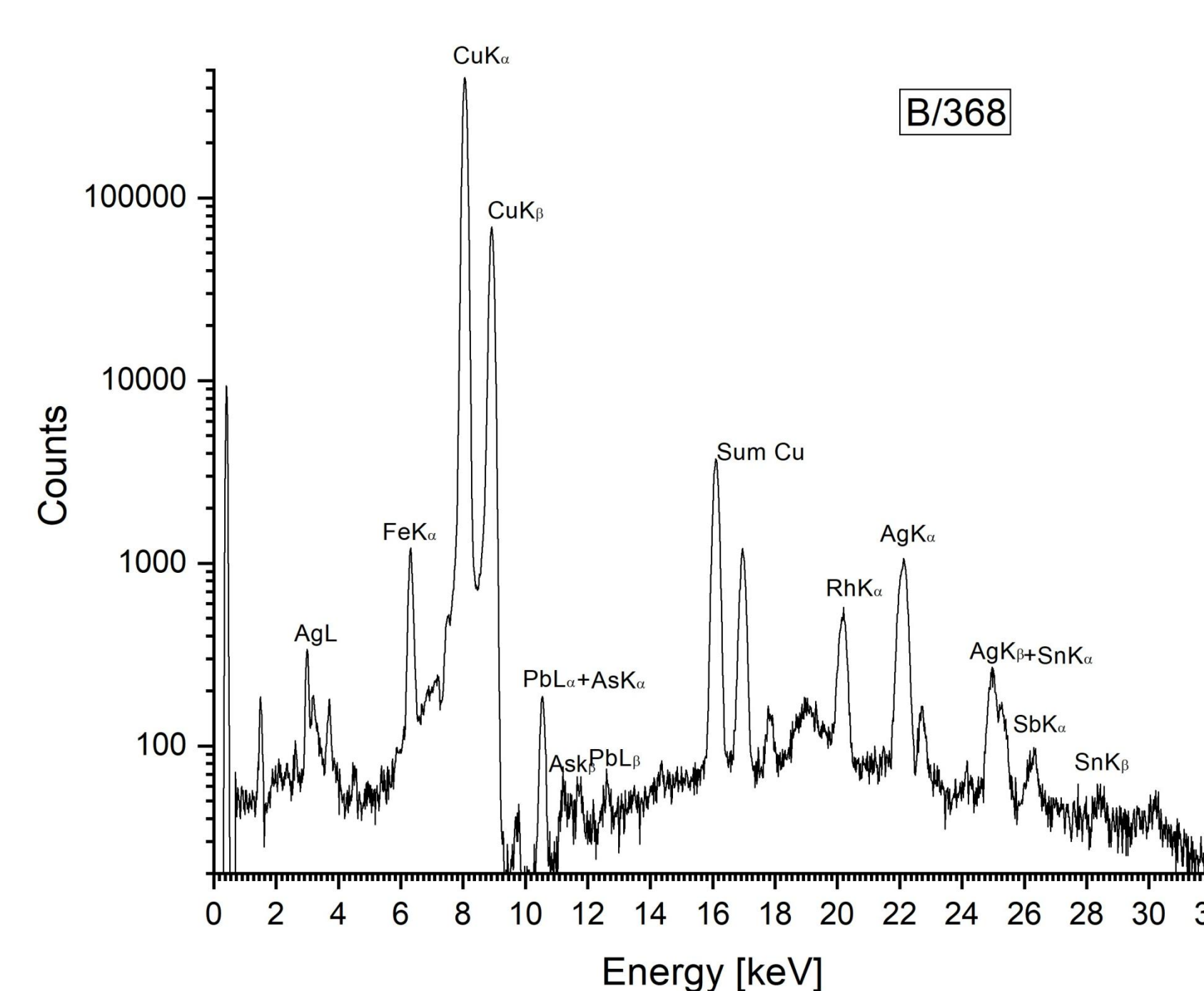
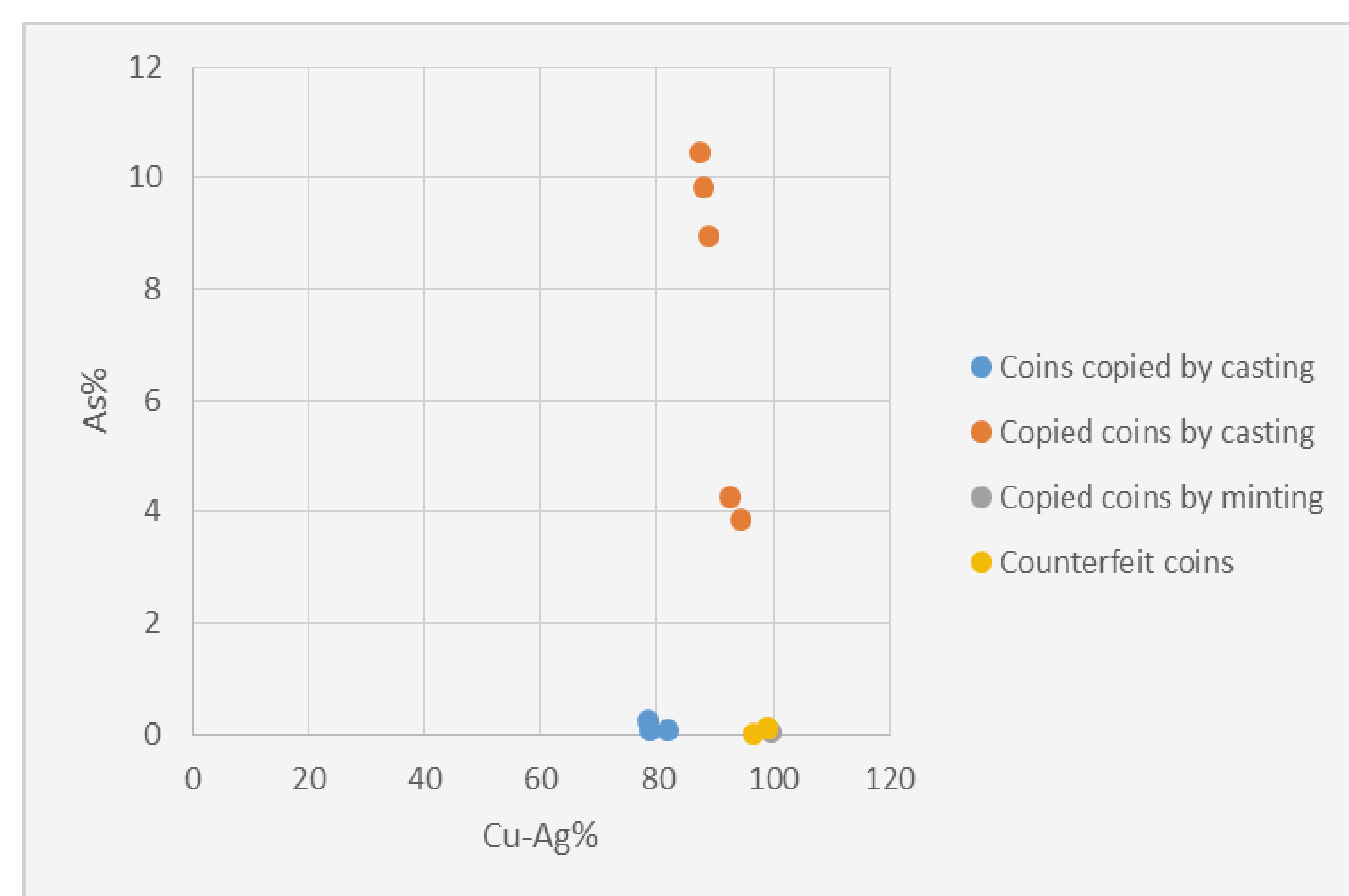
Coins from the lezer hoard

Denarii made by casting have recently been attested, in numerous finds from western Moldova probably originating from Dacia, they are made both of bronze with the addition of lead Cu-Sn(Pb), and of an alloy formed of Cu-As-Ag used for to give a silver color and which constitutes an unknown category of counterfeits in the Roman era. Among the cast coins, three pieces show most of the casting marks, and were made from an alloy composed mainly of copper (77.37-81.91%), tin (15.46-19.35%) and lead (1.16-3.16%), and five specimens were cast from an alloy in which copper predominates (79.55-89.01%), with arsenic (8.56-10.97%) being associated and silver (5.19-8.95%). As for the counterfeit coin represented by "barbaric" imitations of imperial Roman denarii, two have a very similar chemical composition, being minted from an alloy composed mainly of silver (89.94-91.63%), a small amount of copper (approx. 7.47-9.23%) and some minor elements such as lead and gold that have higher values (approx. 0.2-0.3%), the last metal being present only in one of the pieces.

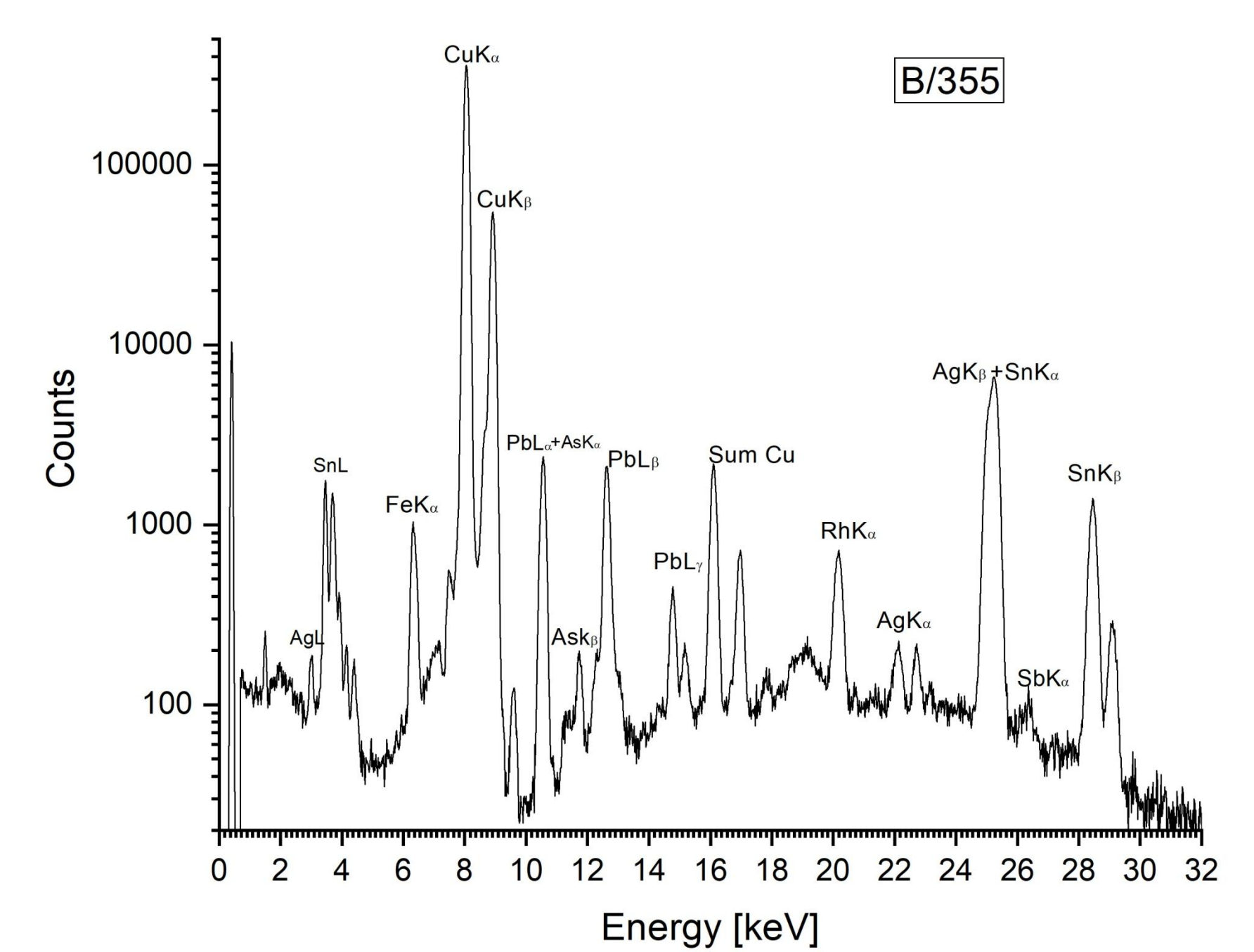


XRF spectrum - Copied coin by casting

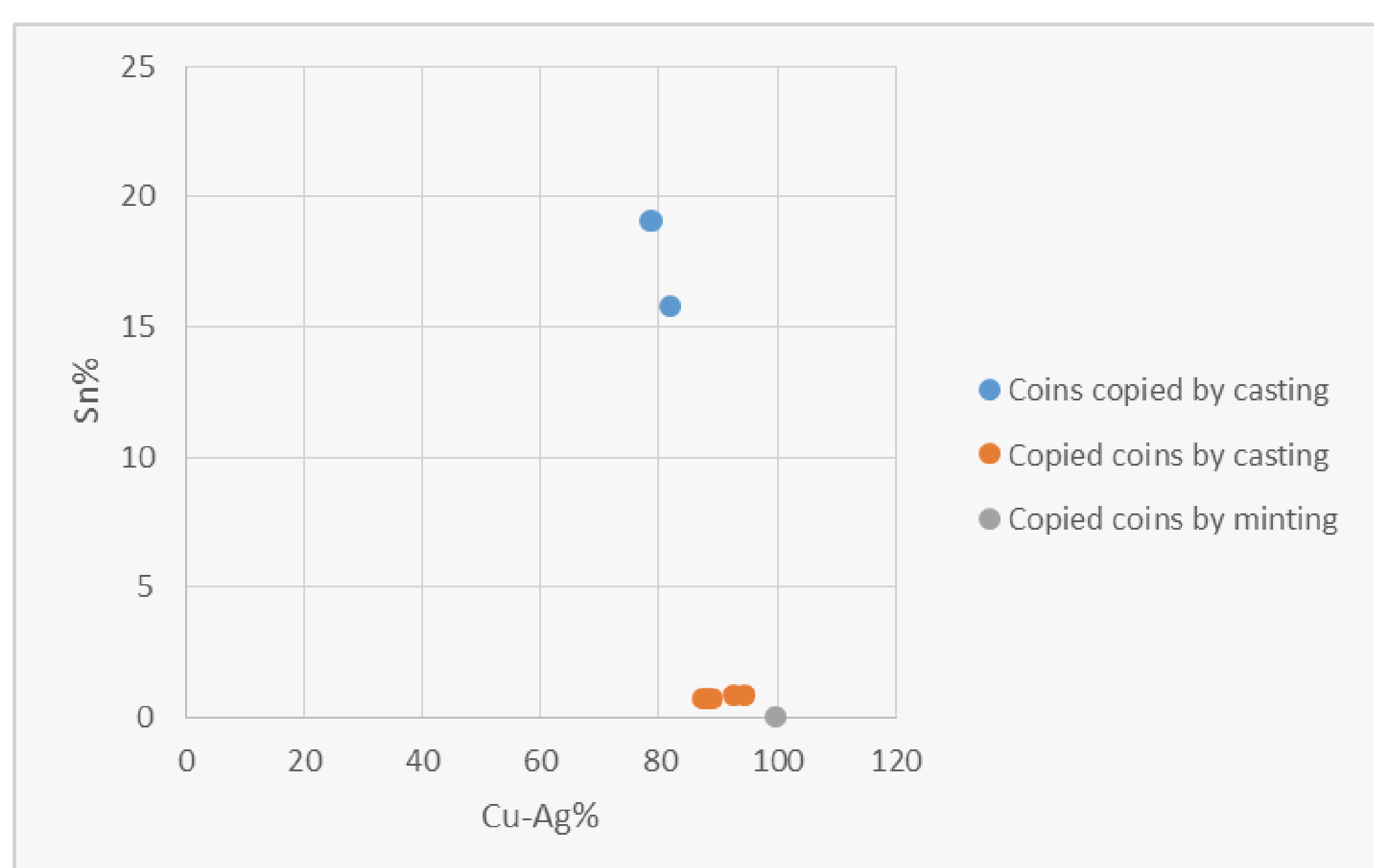
XRF spectrum - Counterfeit coin



XRF spectrum - Copied coin by minting



XRF spectrum - Copied coin by casting with As



The analysis of the elemental chemical composition of the coins from the lezer hoard, kept in the collection of the Bârlad Museum, revealed that almost a quarter of the pieces in this lot are private issues, of various nature and origin.

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