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X-RAY FLUORESCENCE ANALYSIS OF METALS FROM SÁRRÉTUDVARI-ÖRHALOM GRAVES

The composition of hair rings and the two copper tools has been measured by energy dispersive X-ray fluorescence method using X-ray tube excitation in a secondary target arrangement. In case of corroded surfaces, a small area of cca. 1 cm² was mechanically cleaned in order to analyse the bulk composition. The characteristic X-rays of components were excited with the radiation emitted by Sb secondary target. A typical X-ray spectrum (the spectrum of sample No. 3) is shown in Figure 1. The Sb source can excite the iron, copper and silver atoms by K-shells, while the gold and lead are excited by L-shells. The intensities of characteristic X-rays, which are proportional to the concentration, have been determined by least squares curve fitting technique. The composition of samples has been calculated by using a fundamental parameter method which has an accuracy of cca. 5 rel. % for major components, and cca. 10–15 rel. % for minor constituents. The results of XRF analyses are summarized in Table 1.

Table 1. *Composition of samples*

Sample	Fe	Cu	Ag (%)	Au	Pb	
1. hair ring (gr. 7. IV.92.59.1. - gray)	–	–	–	88.6	11.3	–
2. hair ring (gr. 7. IV.92.59.1. - yellow)	–	–	12.6	34.2	53.0	–
3. hair ring (gr. 4. 4.IV.92.58.1. - yellow)	–	–	2.3	20.1	77.4	–
4. hair ring (gr. 4. IV.92.58.1. - corroded)	–	–	14.9	76.3	8.7	–
5. hacker (gr. 7. IV.92.59.3.)	–	0.43	99.2	0.01	–	0.35
6. dagger (gr. 7. IV.92.59.2.)	–	–	99.9	0.02	–	–

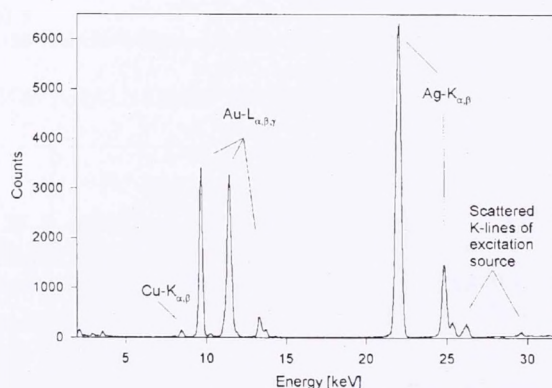


Fig. 1 XRF spectrum of sample No. 3.

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