FURNACE-FLAME ATOMIZER AND ITS ABILITY AT THE ATOMIC ABSORPTION ANALYSIS SOME OF ENVIRONMENTAL

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The atomic absorption spectroscopy (AAS) is one of the most effective analytical chemistry methods that widely used in environmental investigations. Thus the sensitivity its flame variant is insufficient for determination some of chemical elements in the corresponding materials. The utilized for solution this problem electrothermal (ET) AAS in the most cases are accompanied with different sort of interference effects which are satisfactory classified on the whole. For their elimination or reduced in analytical practice AAS different modes and receptions are proposed: separation of elements to be determined from the base components of analyte, matrix modifiers, L'vov platform, STPF-technique, Zeeman effect, improving of constructions (heightening isothermal) graphite furnace etc.

As is known that so-called electrothermal atomizers the opened type, including combined with high-temperature flame: furnace-flame, capsule-flame, Delves cup and similar are characterized satisfactory sensitivities determination a large number of elements, possibility to analyzed a solid materials and also smaller (in comparison with HGA type furnaces) some of interferences. Nevertheless in wide analytical practice AAS they till now are not practically used.

This work are presented the results investigation at analytical possibilities of furnace-flame atomizer on AAS determination $n\cdot10^{-5}$–$n\cdot10^{-4}$ mass.% *Cu, Zn, Cd, Pb, Cr, Fe, Sn, Bi, Sb, Mn* in soils, ground settlings, industrial and natural waters, atmospheric particles and some of vegetable materials.

The main particularities of evaporation and atomization process micro amounts of high listed elements are investigated at their transportation from the graphite furnace surface to high-temperature flame (C_2H_2–N_2O for ***Sn*** determination and C_2H_2-air for another elements). The process formation of analytical signals was discussed with estimate of contribution on its value a members of approximately equation:

$$n_h = 0{,}280\, n_o\, (D\, V\, h)^{-1/2} \qquad (1)$$

where n_h-effective thickness of atomic absorbance layer; n_o-quantity of atoms delivered in flame from furnace surface at one second; D-coefficient of atomic diffusion; V-linear speed of flame gases particles; h-means of flame photometric zone above surface of furnace.

The contribution of parameters a furnace-flame atomizer and some of analyzing materials components in magnitude on value of analytical signal was established.

The results obtained were used at the development of complex simple, accuracy and satisfactory sensitivities (>1 10^{-5} mass.% high listed elements) AAS method of analysis some of nature waters, soils, sediments, atmospheric air particles and plants.