

Dynamics of the Spatial Distribution of Atomic and Molecular Absorbing Layers in the Electrothermal Vaporization and Electrostatic Precipitation of an Analyte in an Atomizer

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Abstract

An experimental device was described for atomic absorption analysis with the electrothermal vaporization of the initial sample followed by the condensation of vaporization products and the electrostatic precipitation of the resulting aerosol in the secondary atomizer. Working conditions ensuring the maximum transfer of the sample to the atomizer were determined. The dynamics of the spatial distribution of the absorbing atomic and molecular layers was studied for atomization in a graphite furnace after the direct sample injection and electrostatic precipitation. The contribution of some physicochemical processes to the formation of the structure of cadmium atomic layers was assessed for different methods of sample injection into the atomizer. It was shown that an additional vaporization-condensation step significantly decreases the level of nonselective absorption and smoothes its gradients.

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