

EXPLOSIVE RADIATION SOURCES FOR ANALYTICAL SPECTROSCOPY

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The high-current electron beams impact to the energy materials under certain experimental conditions, leads to the explosion initiation, which is accompanied by an intensive radiation. The emission spectra of explosive decomposition products of furazanotetrazin dioxide (C₂N₆O₃, FTDO) and of the heavy metals azides were measured and identified in [1–2].

The purpose of investigation is to explore the possibility of explosive radiation source using for analytical spectroscopy.

The investigation objects were salt BaCl₂ and SrCl₂. The FTDO pressed powder tablets were used for vaporization, atomization and emission spectra excitation. The samples in form of a powder or a compressed tablet were placed on the explosive tablets surface. The pulsed electron accelerator (250 keV, 15 ns) was served as the source of the explosion initiation.

The intensive lines of metals (Na, K, Ba, Sr) and series of BaCl and SrCl molecular bands were found in the total spectra of samples explosion plasma.

The research results indicate the possibility of the explosive energy using for solid samples evaporation, atomic and molecular emission spectra excitation. The benefits of the explosive radiation source include a high level of thermal capacity, providing heating of any substance to tens of thousands degrees, rapidity and cost-effectiveness.

Keywords: *explosive radiation sources, analytical spectroscopy, explosive decomposition spectra, high-current electron beams, explosion plasma spectra.*