

Method for precise wavelength measurements of middle- Z ions He- and Li-like satellites emitted by laser plasma of mineral targets

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In this work, an easy-to-implement method for accurately measuring wavelengths of spectral lines emitted by highly charged ions is presented.

It is proposed to use minerals of natural origin simultaneously containing elements with moderate ($20 \leq Z \leq 25$) and low ($Z \leq 15$) nuclear charge (Z) as laser targets. Emission from the latter ones provides perfect reference lines over a whole range of He- and Li-like moderate- Z ions emission under examination.

The method was implemented to precisely restore a dispersion function of a spectrometer with a spherically bent mica crystal as a dispersive element. As a result, wavelengths of dielectronic satellites corresponding to radiation decay of Li-like Potassium ions states were measured with precision 0.6 mÅ for the first time.

The reported study was funded by the Russian Foundation for Basic Research, project No. 19-32-60050.