# PRECISE WAVELENGTH MEASUREMENTS OF POTASSIUM He- AND Li-LIKE SATELLITES IN A LASER PLASMA OF A MINERAL TARGET

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The atomic models of high-Z deeply charged ions are extremely complex and require experimental validation. One of the approaches is to measure the wavelengths of resonance transitions in He- and Li-like ions, using the spectral lines from H-like ions, which can be modelled with outstanding precision, as a reference in the spectra. However, already for the elements with Z$\sim$15 and above it is quite difficult to create hot and dense plasma providing a large concentration of H-like charge states. To mitigate the issue, here we suggest particular minerals to be used as laser targets composed of moderate (15<Z<30) and low (<15) Z elements, when the emission from the latter will deliver perfect reference lines over a whole range of He-and Li-like moderate-Z emission under examination. Such approach was implemented to measure wavelengths of the resonance transitions ($1snp–1s^2$ for n=2,3) in He-like K (potassium) ions and their dielectronic satellites by irradiating plates of Orthoclase ($KAlSi_3O_8$) with 0.5 kJ subnanosecond laser pulses. An X-ray spectrum of the laser generated plasma contains the investigated lines of highly charged K ions together with precisely known reference lines of H-like Al and Si ions. Potassium K-shell spectral line wavelengths are measured with $\sim$0.3 mÅ precision. The reported study was funded by RFBR, project number 19-32-60050.