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Mass-analyzer for micro and gaseous impurities analysis in solids

A P Sarycheva, E A Sysoeva and **Alexander A Sysoev**
National Research Nuclear University, Russia

The report describes a novel scheme of mass-analyzer. Such an analyzer allows performing an analysis of both microimpurities and gaseous impurities with ppb level detection limit. The analyzer is based on ion gate between two wedge-shaped reflectors. Tandem laser is used for solids analysis. Such a laser provides with removing of adsorbed particles from the surface, evaporation of solid sample and laser plasma generation. Ion gate allows intensive matrix ions package cut-off during ions' transit, thus detection limits can be improved due to exclusion of scattered matrix ions' influence on detection of microimpurities' ions. Suggested evaporation and plasma generation regimes from solid surfaces allow standardless analysis of both microimpurities and gaseous impurities. Achievable resolution is over 7000 within ion drift of 37 cm. Proposed ion-optical scheme of mass-analyzer allows one to build the mass-spectrometer with compact design, featuring standardless analysis.

Biography

A P Sarycheva is an undergraduate student of NRNU "MEPhI" of the Molecular Physics Department. Her field of research is Mass Spectrometry. She has participated in a number of conferences, such as the 2nd International Conference on Innovations in Mass Spectrometry: Instrumentation and Methods, Moscow, Russia, 2016.

sarycheva.anastasia@gmail.com

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