Abstract Submitted
for the GEC16 Meeting of
The American Physical Society

Photoionization sensors for non-invasive medical diagnostics[1]
ALEKSANDR MUSTAFAEV, St.Petersburg Mining University, Russia, IULIIA RASTVOROVA, KRISTINA KHOBNYA, SOFIA PODENKO, St. Petersburg Mining University, Russia — The analysis of biomarkers can help to identify the significant number of diseases: lung cancer, tuberculosis, diabetes, high levels of stress, psychosomatic disorders etc. To implement continuous monitoring of the state of human health, compact VUV photoionization detector with current-voltage measurement is designed by Saint-Petersburg Mining University Plasma Research Group. This sensor is based on the patented method of stabilization of electric parameters – CES (Collisional Electron Spectroscopy). During the operation at atmospheric pressure VUV photoionization sensor measures the energy of electrons, produced in the ionization with the resonance photons, whose wavelength situated in the vacuum ultraviolet (VUV). A special software was developed to obtain the second-order derivative of the I–U characteristics, taken by the VUV sensor, to construct the energy spectra of the characteristic electrons. VUV photoionization detector has an unique set of parameters: small size (10*10*1 mm), low cost, wide range of recognizable molecules, as well as accuracy, sufficient for using this instrument for the medical purposes. This device can be used for non-invasive medical diagnostics without compromising the quality of life, for control of environment and human life.

[1]Work supported by Foundation for Assistance to Small Innovative Enterprises in Science and Technology

Aleksandr Mustafaev
St.Petersburg Mining University, Russia

Date submitted: 20 Jul 2016 Electronic form version 1.4