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3D Diagnostics of Plasma Interactions with Surface ALEXANDER MUSTAFAEV, ARTIOM GRABOVSKIY, ANASTASIYA STRAKHOVA, National University of Mineral Resources “Mining”, VLADIMIR SOUKHOMLINOV, Saint-Petersburg State University — The plasma-surface interactions play an important role in various kinds of plasma applications. In the same time the physical behind of these processes is not well understood, that’s why developing new plasma diagnostics methods is the main task for plasma engineering. This talk presents 3D diagnostics method of plasma interaction with surface, which has been developed for wide range of plasma types. In knudsen diode with surface ionization the processes of secondary electron emission (SEE) from poly-crystal surfaces has been investigated. It is shown that SEE yield can be indeed very high (~ 0.8) but still not approaching unity. This result is explained by additional reflection of primary electrons from a potential barrier near the poly-crystal surface. The contribution of electron reflection from the barrier and the surface has been identified and studied. In plasma of helium and mercury glow discharge this method has been successfully applied for measurements of electron and ion distribution functions. The reliability of the method has been tested by comparing experimentally measured distributions of electrons and ions with results of theoretical calculations, taking into account ambipolar field in plasma. This work was supported by Education Ministry of Russian Federation.

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