## Abstract Submitted for the GEC14 Meeting of The American Physical Society

Ion Flux and Energy Virtual Sensor for Measuring Ion Flux and Energy Distribution at a RF Biased Electrode in ICP Reactor (**RIE-MODE**)<sup>1</sup> MARIA BOGDANOVA, 1 Skobeltsyn Insitute of Nuclear Physics, Moscow State University, SINP MSU, Moscow Russia; 2 Faculty of Physics, Moscow State University, MSU, Moscow, DMITRIY LOPAEV, Skobeltsyn Insitute of Nuclear Physics, Moscow State University, SINP MSU, Moscow Russia, SERGEY ZYRYANOV, 1 Skobeltsyn Insitute of Nuclear Physics, Moscow State University, SINP MSU, Moscow Russia; 2 Faculty of Physics, Moscow State University, MSU, Moscow — The modern technology of micro- and nanoelectronics involves a great number of steps, e.g. pattern transfer, where Reactive Ion Etching (RIE) in rf plasma reactors is widely used. RIE is carried out placing samples on the surface of rf biased electrode, as rule in an asymmetric rf low-pressure discharge. In an effort to control the etching process, ion flux and energy distribution should be controlled precisely as much as possible. However, measurements of them during the process in the real-time operation mode are impossible. Nevertheless, if virtual sensor of ion flux and energy can be developed, such a sensor would allow monitoring ion energy spectrum without direct measurements during plasma processing. This virtual plasma diagnostics should include calculation of ion energy spectrum based on the simple physical model of ion motion in collisionless rf sheath. In addition the modeling has to be fulfilled in the real-time operation mode by using the set of external measurable parameters. This paper is just devoted to creation of such ion energy distribution virtual diagnostics.

<sup>1</sup>The reported study was supported by RFBR, research project No. 14-02-31599

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Date submitted: 13 Jun 2014

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