## Main field of study: 011200 Physics

Area of specialization: Physical Optics and Lasers

Department of Optics

Scientific advisor: ass. prof. A.A. Kudryavtsev

Reviewer: prof. A.N. Klucharev

**Simulations of atmospheric pressure gas discharges in air.**

***S.I. Eliseev***

1D and 2D simulations of a glow discharge in air under atmospheric pressure have been carried out using Comsol Multiphysics software. A self-consistent set of equations, including balance equations for particle density and electron temperature and Poisson’s equation, was used to obtain main plasma parameters. Influence of plasma chemistry on integral characteristics of the discharge was investigated during 1D simulations. The phenomena of normal current density and influence of gas heating were investigated during 2D simulations.

List of Publications

1. S. Gutsev, S. Eliseev, E. Demidov, R. Zamchiy, A. Kudryavtsev, N. Kosykh, *40th EPS Conference on Plasma Physics*, "On Formation of Dusty Structures in Plasma", Finland, July 1st - 5th 2013.
2. S. Gutsev, S. Eliseev, E. Demidov, R. Zamchiy, A. Kudryavtsev, N. Kosykh, *40th EPS Conference on Plasma Physics,* "On Diagnostics of Electron-free Plasma in Oxygen", Finland, July 1st - 5th 2013.

3. V.I.Kolobov, R.R. Arslanbekov, E.A. Bogdanov, S.I. Eliseev, A.A. Kudryavtsev, *31st International Conference on Phenomena in Ionized Gases,* “Comparison of Computational Tools for Simulations of Glow and Corona Discharges”, Granada, Spain, July 14-19, 2013

4. S. Eliseev, V. Kolobov, A. Kudryavtsev, *66th Gaseous Electronics Conference,* “Simulations of Pulsed Gas Breakdown between pin-to-pin electrodes”, Princeton, USA, October 1st-5th

5. А. Астафьев, Е. Демидов, C. Елисеев, А. Кудрявцев, *XLI Международная (Звенигородская) конференция по физике плазмы и УТС*, "Исследование параметров тлеющего микроразряда при атмосферном давлении", г.Звенигород, 2014.

6. E. Demidov, S. Eliseev, E. Bogdanov, A. Kudryavtsev, "Gas Heating and Transition to Obstructed Mode in DC Glow Microdischarges in Air," MS#TPS7076. IEEE Transactions on Plasma Science (TPS), v.99, N8, 2014. (в печати).