

Abstract Submitted
for the DPP15 Meeting of
The American Physical Society

Simulation of cold atmospheric plasma component composition and particle densities in air GENNADY KIRSANOV, ALEXANDER CHIRTSOV, ITMO University, Kronverkskiy pr. 49, St. Petersburg 197101, Russia, ANATOLIY KUDRYAVTSEV, 2St. Petersburg State University, St. Petersburg 199034, Russia — Recently discharges in air at atmospheric pressure were the subject of numerous studies. Of particular interest are the cold streams of air plasma, which contains large amounts of chemically active species. It is their action can be decisive in the interaction with living tissues. Therefore, in addition to its physical properties, it is important to know the component composition and particle densities. The goal was to develop a numerical model of atmospheric pressure glow microdischarge in air with the definition of the component composition of plasma. To achieve this goal the task was divided into two sub-tasks, in the first simulated microdischarge atmospheric pressure in air using a simplified set of plasma chemical reactions in order to obtain the basic characteristics of the discharge, which are the initial approximations in the problem of the calculation of the densities with detailed plasma chemistry, including 53 species and over 600 chemical reactions. As a result of the model was created, which can be adapted for calculating the component composition of plasma of various sources. Calculate the density of particles in the glow microdischarges and dynamics of their change in time.

Gennady Kirsanov
ITMO University, Kronverkskiy pr. 49, St. Petersburg 197101, Russia

Date submitted: 11 Sep 2015

Electronic form version 1.4