Contribution ID: **1064** Type: **Oral**

On the VUV optical emission of N-APPJs

Monday 24 June 2019 16:00 (30 minutes)

In the past several decades, to understand the fast propagation behavior of nonequilibrium atmospheric pressure plasma jets (N-APPJs), many simulations have been reported. It is believed that photoionization plays key role for such behavior. In all the simulation model, it is either assumed that high energy photons are emitted by N2 in the wavelength range 98–102.5 nm, which induce the ionization of oxygen molecule, or simply replaces the photoionization by a given background electron density. However, no N2 emission from N-APPJs in the wavelength range 98–102.5 nm has been reported by experiment. In this paper, It is found that, for all the working gas, i.e. He, He+0.1%, 0.5% of O2 or N2, Ar, Ar+0.1%, 0.5% O2 or N2, and for the plasma jet driven by either pulsed DC power supply or kHz AC power supply, no N2 emission between 98 – 102.5 nm can be measured. On the other hand, the O II 83.3 nm emission is detectable, which is able to ionize O2, O, and N. Therefore, the widely used photoionization model for N-APPJs need to be revised.

Author: Prof. LU, XinPei (Huazhong University of Science and Technology)

Co-authors: Mrs LIU, FengWu (Huazhong University of Science and Technology); Dr LANLAN, Nie (Huazhong University of Science and Technology)

Presenter: Prof. LU, XinPei (Huazhong University of Science and Technology)

Session Classification: 6.4/6.5 Environmental, Biological, and Medical Applications

Track Classification: 6.5 Medical and Biological Applications