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Physical-chemical characterization of nitrogen atmospheric pressure plasma jets¹ SYLWIA PTASINSKA, MATEJ KLAS, University of Notre Dame — Most of atmospheric pressure plasma jet (APPJ) sources operate with noble gases as the feed gas, which require lower breakdown voltage than typical molecular gases in order to ignite the plasma. However, a high consumption of expensive noble gases during long term plasma operation in many applications increases costs of usage. Therefore, the development of new sources working with less expensive gases such as nitrogen or air is needed. In this work we concentrated on electrical, optical and thermal characterization of two nitrogen plasma jet sources. Both APPJ sources have been constructed with the same materials and dimensions, the only difference is the shape of the electrodes: spiral and 4-strip. This distinction is responsible for different electrical, optical and thermal properties of plasma jets, which will be reported at the meeting. It has been also observed that by adding specific amount of oxygen to the N₂ flow the production of different species such as NO or ON₂ excimer can be controlled.

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> Sylwia Ptasinska University of Notre Dame

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