

Abstract Submitted
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Emission properties of atmospheric pressure plasma jets on the basis of helium-air and argon-air operating mixtures ANDRII HENERAL¹, Retired — The spectral-temporal and energy luminescence characteristics of the "cold" plasma jets generated by the atmospheric pressure barrier discharge in helium-air and argon-air mixtures were experimentally studied and analyzed. The main radiating components of the nitrogen containing low-temperature plasma were observed in radiation spectrum of the generated plasma jets outside the capillary cut-off when an operating mixture is blown through the gas-discharge radiation source, namely, nitrogen molecules $N_2(C^3\Pi_u \rightarrow B^3\Pi_g$ - transition) and nitrogen ions $N_2^+(B^2\Sigma_u^+ \rightarrow X^2\Sigma_g^+$ -transition) for helium-air mixture and nitrogen molecules $N_2(C^3\Pi_u \rightarrow B^3\Pi_g$ - transition) for argon-air mixture. At the same time, the radiation power of the "cold" plasma jet increased approximately in 3 times when the argon-air mixture is replaced with the helium-air mixture. The work was supported by a grant of National Academy of Sciences of Ukraine for young scientists (2017–2018).

¹Emission properties of atmospheric pressure plasma jets on the basis of helium-air and argon-air operating mixtures

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