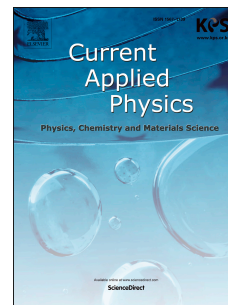


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The spectroscopic study of the effect of humidity on the atmospheric pressure helium plasma jets

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## The spectroscopic study of the effect of humidity on the atmospheric pressure helium plasma jets

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Atmospheric-pressure plasma has a great potential in many applications due to its simplicity rather than low pressure plasmas. In material processing, biomedical applications, and many other applications, the input power, gas flow rate, and the geometry of electrode have been mainly considered and studied as important external parameters of atmospheric-pressure plasma control. Besides, since the atmospheric-pressure plasmas are typically generated in an open air, the relative humidity is difficult to control and can change day by day. Therefore, the relative humidity cannot be ignored for plasmas. Thus, in this work, the atmospheric-pressure plasma jet was characterized by changing relative humidity, and it was found that the increase in electron density and OH radicals are due to Penning ionization between helium metastable and water vapors at higher humidity condition.

Keywords: Absorption spectroscopy, Absolute radical density, Atmospheric-pressure plasma jet, Penning ionization, ROS

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