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**Experimental study of electric wind produced by a tubular actuator** YUBIN XIAN, XINPEI LU, CEEE, HuaZhong University of Science and Technology, WuHan, HuBei 430074, People's Republic of China — Three kinds of voltage waveforms (sinusoidal AC, positive/negative half-wave AC) are applied to a tubular DBD plasma actuator. The speeds and directions of wind induced by the three voltage waveforms are compared. It's found that the wind speed created by the sinusoidal high voltage is much higher than that of the positive or the negative half-wave voltage. On the other hand, the speeds and the directions created by the positive and negative half-wave voltage are nearly the same. This phenomenon suggests that the surface charging significantly affects the wind speed. In addition, it is found that the wind directions have no relation to the directions of electric field. The same results are obtained by both the tabular DBD and the DC corona discharge actuators. It suggests that, when the active electrode is positive, the plasma is positively charged and accelerated by the electric field to move away from the active electrode. When the active electrode is negative, the negative ions are predominant, which also moves from the active electrode to the ground electrode under the electric field. Therefore the induced electric wind has the same direction with the positive voltage.

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