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Study on the radical production in atmospheric pressure plasma jets operated by nanosecond pulses YOUBIN SEOL, BYUNGKEUN NA, HONGYOUNG CHANG, Korea Advanced Institute of Science and Technology — Applications of plasma discharges for bio-medical uses are rapidly growing area. Atmospheric pressure plasmas have various advantages in bio-medical applications from sterilization to coagulation or skin regeneration. Atmospheric pressure plasma jets are one of the common atmospheric pressure plasma sources, which have unique virtue in the utility and the local treatment. The radicals produced from plasma discharge have important roles in plasma - bio interactions. It can enhance the cell proliferation and also cause cell death. The pulsed operation of plasma was introduced for bio-treatment, which can reduce the heat and enhance the radical production with better power efficiency. In pulsed plasma jets, the pulse characteristics changes the plasma operation and the radical productions. Currently, using nanosecond pulses are growing with its high efficiency. The experiment was performed by changing the pulse width in nanosecond range and measuring the radical production. The effect of the pulse characteristics on the radical production was studied. The computational simulations of chemical reactions were also accomplished which supplements the experimental results.

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