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Measurement of OH, NO, O and N atoms in helium plasma jet for **ROS/RNS** controlled biomedical processes¹ SEIYA YONEMORI, TAKU KA-MAKURA, RYO ONO, The University of Tokyo — Atmospheric-pressure plasmas are of emerging interest for new plasma applications such as cancer treatment, cell activation and sterilization. In those biomedical processes, reactive oxygen/nitrogen species (ROS/RNS) are said that they play significant role. It is though that active species give oxidative stress and induce biomedical reactions. In this study, we measured OH, NO, O and N atoms using laser induced fluorescence (LIF) measurement and found that voltage polarity affect particular ROS. When negative high voltage was applied to the plasma jet, O atom density was tripled compared to the case of positive applied voltage. In that case, O atom density was around 3×10^{15} [cm⁻³] at maximum. In contrast, OH and NO density did not change their density depending on the polarity of applied voltage, measured as in order of 10^{13} and 10^{14} [cm⁻³] at maximum, respectively. From ICCD imaging measurement, it could be seen that negative high voltage enhanced secondary emission in plasma bullet propagation and it can affect the effective production of particular ROS. Since ROS/RNS dose can be a quantitative criterion to control plasma biomedical application, those measurement results is able to be applied for in vivo and in vitro plasma biomedical experiments.

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