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Measurement of O and OH radical produced by an atmospheric-pressure helium plasma jet nearby rat skin[1] SEIYA YONEMORI, RYO ONO, The University of Tokyo — Atmospheric-pressure helium plasma jet is getting much attention because it enables many kinds of plasma applications including biomedical application such as sterilization and cancer treatment. In biomedical plasma applications, it is though that active species like ions and radicals play important role. Especially, OH radical and O atom is very chemically reactive that they are deemed as major factors in cancer treatment. In this study, O and OH density distribution and its temporal behavior nearby rat skin were measured to demonstrate actual application. Plasma discharge was under AC10 kVp-p, 10 kHz with 1.5 slm (standard litter per minute) of helium gas flow. OH density was around 1 ppm and O atom density was around 10 ppm at maximum. We also measured time-evolution of OH and O atom density. Both OH and O density was almost constant between discharge pulses because lifetime of active species could be prolonged in helium. And density distribution of both species varied depending on helium flow rate and water concentration on the surface; on rat skin or on the grass surface. Those results suggest the production mechanisms and provision mechanisms of O atom and OH radical by an atmospheric-pressure helium plasma jet.

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Seiya Yonemori
The University of Tokyo

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