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Plasma-generated reactive oxygen species for biomedical applications J.S. SOUSA, LPGP, CNRS-UPS, Orsay, France, M.U. HAMMER, J. WINTER, H. TRESP, M. DUENNBIER, S. ISENI, plasmatis, INP, Greifswald, Germany, V. MARTIN, V. PUECH, LPGP, CNRS-UPS, Orsay, France, K.D. WELTMANN, INP, Greifswald, Germany, S. REUTER, plasmatis, INP, Greifswald, Germany — To get a better insight into the effects of reactive oxygen species (ROS) on cellular components, fundamental studies are essential to determine the nature and concentration of plasma-generated ROS, and the chemistry induced in biological liquids by those ROS. In this context, we have measured the absolute density of the main ROS created in three different atmospheric pressure plasma sources: two geometrically distinct RF-driven microplasma jets (μ-APPJ [1] and kinpen [2]), and an array of microcathode sustained discharges [3]. Optical diagnostics of the plasma volumes and effluent regions have been performed: UV absorption for O_3 and IR emission for $O_2(a^1\Delta)$ [4]. High concentrations of both ROS have been obtained (10^{14}–10^{17}cm^{-3}). The effect of different parameters, such as gas flows and mixtures and power coupled to the plasmas, has been studied. For plasma biomedicine, the determination of the reactive species present in plasma-treated liquids is of great importance. In this work, we focused on the measurement of the concentration of H_2O_2 and NO_X radicals, generated in physiological solutions like NaCl and PBS.

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Joao Santos Sousa
LPGP, CNRS-UPS, Orsay, France

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