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Spectroscopic investigations of an atmospheric pressure microplasma source of singlet delta oxygen J.S. SOUSA, LPGP, CNRS-UPS, Orsay, France and IPFN-LA, IST, Lisboa, Portugal, G. BAUVILLE, B. LACOUR, P. JEANNEY, L. MAGNE, V. PUECH, LPGP, CNRS-UPS, Orsay, France — The atmospheric pressure generation of singlet delta oxygen (SDO) by microplasmas has been experimentally studied. The remarkable stability of microcathode sustained discharges (MCSD) has allowed us to operate DC glow discharges, free from the glow-to-arc transition, in $He/O_2/NO$ mixtures at atmospheric pressure. From optical diagnostics measurements we deduced the gas temperature (Tgas), the atomic oxygen (O) density profiles, the ozone (O_3) spatial distribution, and the yield of SDO. We observed that MCSD are similar to positive columns, with low values of E/N (5-10Td) and of Tgas (300-375K). In addition, our results show that the O is confined to the discharge chamber. Therefore, MCSD can efficiently generate large amounts of SDO. In fact, by operating arrays of several MCSD, SDO densities higher than 1.0 $10^{17}cm^{-3}$ have been effectively produced and transported over distances longer than 50cm. This opens opportunities for a large spectrum of new applications, making notably this plasma source very useful for many biological applications [1]. Furthermore, O_3 densities up to $10^{16}cm^{-3}$ have also been obtained. The effect of different parameters, such as gas flows and mixtures, and discharge current, are discussed in the study. [1] J. S. Sousa et al., these proceedings

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