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Spectroscopic investigations of an atmospheric pressure singlet oxygen plasma source JOAO SANTOS SOUSA, LPGP, CNRS-UPS, 91405 Orsay, France and IPFN, IST, 1049-001 Lisboa, Portugal, GERARD BAUVILLE, BERNARD LACOUR, PASCAL JEANNEY, LIONEL MAGNE, VINCENT PUECH, LPGP, CNRS-UPS, 91405 Orsay, France — Microcathode sustained discharges (MCSD) offer the possibility to produce DC non-thermal plasmas at high gas pressure. The remarkable stability of MCSD has allowed us to operate glow discharges, free from the glow-to-arc transition, in He/O2/NO mixtures, at atmospheric pressure, with low values of E/N [1]. As a result, these MCSD can efficiently generate large amounts of O2(1D) and O3, which makes them very useful for many biological applications [2]. From optical measurements we deduced the gas temperature, the O density profiles, the O3 spatial distribution, and the yield of O2(1D). The gas temperature in the MCSD was determined from the high resolution spectra of O2 atmospheric band at 760 nm. The O density profiles were measured by Two-photon Absorption Laser Induced Fluorescence spectroscopy, while the O3 density distributions have been obtained by UV absorption spectroscopy. The density of the O2(1D) was evaluated from IR emission at 25cm downstream from the MCSD. 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., Appl. Phys. Lett. 93, 011502 (2008) [2] J.S. Sousa et al., these proceedings

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