

Abstract Submitted
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Air Plasma Source for Biomedical Applications J. HENRIQUES, E. TATAROVA, F.M. DIAS, C.M. FERREIRA, B. GORDIETS, IPFN - IST, 1049-001 LX, PORTUGAL TEAM, LEBEDEV PHYSICAL INSTITUTE OF THE RUSSIAN ACADEMY OF SCIENCES TEAM — Plasma interactions with living matter are presently at the frontiers of plasma research and development. Plasmas contain numerous agents that influence biological activity. They provide essentially two types of biocidal species: reactive species, such as oxygen atoms that lead to lethality of micro-organisms through erosion, and UV radiation that can damage the DNA strands. In this work we investigate a surface wave (2.45 GHz) driven discharge plasma in air, with a small admixture of water vapor, as a source of ground state O(³P) oxygen atoms, NO molecules and UV radiation. A theoretical model describing both the wave driven discharge zone and its flowing afterglow is used to analyze the performance of this plasma source. The predicted plasma-generated NO(X) and O(³P) concentrations and NO(γ) radiation intensity along the source are presented and discussed as a function of the microwave power and water vapor percentage in the gas mixture. To validate the theoretical predictions, the relative concentrations of species have been determined by Mass Spectrometry, Fourier Transform Infrared Spectroscopy and Optical Spectroscopy. Acknowledgment: This work was funded by the Portuguese Foundation for Science and Technology, under research contract PTDC/FIS/108411/2008.

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