Abstract Submitted
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Absolute atomic oxygen and nitrogen densities in radio-frequency driven atmospheric pressure cold plasmas: synchrotron vacuum ultraviolet high-resolution Fourier-transform absorption measurements[1] K. NIEMI, D. O'CONNELL, York Plasma Institute, University of York, UK, N. DE OLIVEIRA, D. JOYEUX, L. NAHON, Synchrotron Soleil, France, J.P. BOOTH, Laboratoire de Physique des Plasmas-CNRS, Ecole Polytechnique, France, T. GANS[2], York Plasma Institute, University of York, UK — Reactive atomic species play a key role in emerging cold atmospheric pressure plasma applications, in particular in plasma medicine. Absolute densities of atomic oxygen and atomic nitrogen were measured in a radio-frequency driven non-equilibrium plasma operated at atmospheric pressure using vacuum ultra-violet (VUV) absorption spectroscopy. The experiment was conducted on the DESIRS synchrotron beamline using a unique VUV Fourier-transform spectrometer. Measurements were carried out in plasmas operated in helium with air-like N_2-O_2 (4:1) admixtures. A maximum in the O-atom concentration of 9.1 10^{20} m^{-3} was found at admixtures of 0.35 vol%, while the N-atom concentration exhibits a maximum of 5.7 10^{19} m^{-3} at 0.1 vol%.

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