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Atmospheric Pressure Plasma Jet (APPJ) and Dielectric Barrier Atmospheric Pressure Glow Discharge (DB-APGD) in Comparison S. REUTER, University of Duisburg-Essen, V. SCHULZ-VON DER GATHEN, Ruhr-University Bochum, H.F. DÖBELE, University of Duisburg-Essen — In this work two prominent types of low temperature atmospheric pressure plasma sources are compared. First, a plane-parallel 13.56 MHz RF-excited atmospheric pressure plasma jet (APPJ) operated with 2 m3/h helium feed gas containing 0.5 % molecular oxygen is investigated. Its stainless steel electrodes' area measures 8 x 4 cm² and the discharge gap is 1.1 mm. The effluent leaving the discharge through the jet's nozzle contains very few charged particles and a high oxygen radical density in the order of 1016 cm-3. By covering both electrodes with a dielectric, the APPJ is then modified to a dielectric barrier atmospheric pressure glow discharge (DB-APGD). The homogeneity of the respective discharges is investigated by phase-resolved optical emission intensity measurements as well as by voltage and current signal measurements. The atomic oxygen generation efficiency of both plasma sources is determined (according to [1, 2] by measuring the absolute atomic oxygen ground state density in the effluent by two-photon absorption laser induced fluorescence (TALIF) measurements. [1] K. Niemi, V. Schulz-von der Gathen, H.F. Döbele, Plasma Sources Sci. Tech. 14 (2005), 375; [2] K. Niemi, S. Reuter, V. Schulz-von der Gathen, H.F. Döbele, Proceedings of the 17th ESCAMPIG (2004), 157.

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