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Comparsion of mass spectra measurements and kinetic modelling of high pressure He-Air glow discharges K.R. STALDER, Stalder Technologies and Research, Redwood City, USA, R.J. VIDMAR, University of Nevada, Reno,USA, W.G. GRAHAM, Queens University Belfast, UK , Y.A. GONZALVO, Hiden Analytical Ltd, Warrington, UK — The results of a chemistry code are compared with mass spectrometry measurements of positive and negative ion species for helium-air systems excited in the 30-50 kHz range. A 6 mm O.D. DBD with a 1.0 mm diameter inner wire electrode, operated at a flow of helium 3-10 $l.min^{-1}$ into air was interfaced to a Hiden Analytical HPR-60 molecular beam mass spectrometer (MBMS). This consists of a quadruple mass spectrometer with a differentially pumped three-stage inlet system [1]. The kinetics of a parallel plate APGD, operating in static helium with 10000 ppm of air, have been modeled using a code [3,4] which includes 461 reactions and tracks 58 species including neutral atoms and molecules, metastable species, vibrationally-excited N_2 and O_2, electrons, positive and negative ions, and various water cluster ions. The results show interesting similarities with the main discrepancies existing in the effects of water clustering. [1] E.Stoffels et al., Plasma Sources Sci. Technol.15 501 (2006) [2] Y. Aranda-Gonzalvo et al J.Vac.Sci.Technol.A 24 55 (2006) [3] R.J. Vidmar, IEEE Trans. Plasma Sci. 18, 733 (1990) [4] K.R. Stalder et al., J.Appl. Phys. 99, 093301 (2006).

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