

Abstract Submitted  
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**1 D Simulation of Capacitively Coupled Water Vapor Plasma**

ZIANE KECHIDI<sup>1</sup>, None, A.H. BELBACHIR TEAM, M. ANNOUN COLLABORATION, W.W. GRAHAM COLLABORATION — The results of a 1D simulation of a capacitively coupled water vapor discharge is reported. The simulated plasma consists of two electrodes separated by gap distance of 1 mm operating at 13.56 MHz with 26 species and 62 dominant reaction channels. The input parameters under which the plasma can be created is explored and space and time profiles of the electron densities are presented. The model finds that plasma ignition cannot be obtained in the present configuration and at pressures of greater than 0.1 atmosphere. The model has also be used to demonstrate the impact of rotational and vibrational excitation of water molecules in suppressing electrical breakdown.

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