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Experimental and modeling investigation of DC Oxygen Discharge having Water Electrode KEI IKEDA, MIZUKI ANDO, NOZOMI TAKEUCHI, KOICHI YASUOKA, Tokyo Institute of Technology — Plasmas generated with water electrode have been developed for water purification. To investigate the plasma–water interactions in DC oxygen plasma, experimental and numerical modeling was conducted. The concentrations of hydrogen peroxide and acetic acid in the solution were compared with a discharge current between 1 to 7 mA. By adjusting the water vapor concentration within plasma, the reaction model coincided with the experimental results. Proposed 1D or 2D plasma models showed that the cross section for the current flow on the water electrode was a crucial factor and this modeling provided a practical procedure for considering vapor water evaporated from the water surface.

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