

## **THE ASSISTED CORONA DISCHARGE: THE EFFECT OF USING MULTIPLE-ELECTRODE CONFIGURATIONS**

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Corona discharges are one of the more popular types of low-temperature plasmas because they are easy to form and maintain at atmospheric pressure. For this reason, they have been used in applications ranging from electrostatic precipitators to mass spectrometers and more recently have been suggested as electronic cooling devices and gas sensors. Traditionally, a positive corona discharge is generated in a two-electrode configuration using a sharp anode (or corona source) and a blunt cathode (or collecting electrode). The present research studies the effect of an additional collecting electrode on the discharge characteristics. Previous three electrode configurations have been symmetric, where two collecting electrodes were placed equidistant from the corona source and operated with identical potentials (typically ground). However, in our present research, we are exploring asymmetric configurations where the primary collecting electrode is closer to the source than the secondary collecting electrode, and there is a potential difference between these two electrodes. It was observed that the addition of a secondary collecting electrode caused a considerable increase in current from the corona source; in effect enhancing the initial corona discharge between the source and primary collecting electrode. In this work, we explore the properties of this 'assisted discharge' and study its implications for applications such as electrohydrodynamic gas pumps.