

Abstract Submitted
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Investigation of the Capillary Plasma Electrode (CPE) Discharge¹ JOSE L. LOPEZ, VALENCIA JOHNSON, WEIDONG ZHU, CMST - Saint Peter's College, KURT H. BECKER, Polytechnic Institute of New York University — The Capillary Plasma Electrode (CPE) discharge is able to produce stable atmospheric pressure nonequilibrium plasmas. The CPE discharge is essentially a barrier-electrode discharge with perforated dielectrics. Discharge from this configuration, aside from exhibiting a diffuse mode of operation, also exhibits a distinct mode namely, “the capillary jet.” As the frequency of the source is increased above a few kilohertz, one first observes the diffuse mode, but a certain frequency is then reached at which the capillaries “turn on” and bright plasma jets are observed to emerge from the capillaries. The distinction between the diffuse and capillary modes is dramatic. The capillary jets seem to overlap so that the discharge appears uniform when the electrode contains an array of capillaries. This current work explores these modes of operation by characterizing the electrical and optical emission properties of this discharge by correlating a multi-capillary discharge and a single capillary discharge reactor.

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