

Abstract Submitted
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Characterization of an RF cold atmospheric pressure plasma jet for use with open channel microfluidics test bed¹ JOSH MORSELL, STEVEN SHANNON, North Carolina State University — One major challenge in the field of atmospheric pressure plasmas is understanding the plasma interaction with complex, multi-phase interfaces. To study this, an open channel microfluidics test bed has been developed as a controllable surface for characterizing atmospheric plasma sources and their interactions with multiphase interfaces. The 120 microchannels on each bed are 100um wide with a 100um pitch. Each pair of channels is gathered in reservoirs and allows for a spatial resolution of 400um. The source characterized in this work is an RF cold atmospheric pressure plasma jet modified from a source being developed at the University of Minnesota. The source consists of a needle electrode inside a quartz tube with a grounded cuff at its end. Multiple gas channels allow for feed and shielding gas as required. Power is delivered via a tunable matching network and 13.56MHz power supply driven by a function generator for pulsing. Source characterization will consist of spatially resolved OES methods as well as electrical characterization through VI probe and directional couplers. The microchannel spatial measurements will be used as comparison to OES and as initial work to understand plasma interaction with complex, multi-phase interfaces.

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