

Abstract Submitted
for the GEC09 Meeting of
The American Physical Society

Determination of Absolute Number Densities of OH Radicals in an Atmospheric Microwave Plasma Jet Using Cavity Ringdown Spectroscopy¹ CHUJI WANG, NIMISHA SRIVASTAVA, Mississippi State University, THEODORE S. DIBBLE, State University of New York College of Environmental Science and Forestry, MSU TEAM², SUNY-ESF COLLABORATION — Identification and quantification of reactive plasma species in the downstream part of an atmospheric plasma jet remain less explored; and how far a reactive species can exist in the downstream and its formation mechanism remain little known. The objective of this work was to employ the UV-cavity ringdown spectroscopy technique to explore how far OH radicals can exist in the downstream zone of a small-scale (3 - 12 mm) atmospheric argon microwave plasma jet. We report on observation of the OH radicals existing in far downstream of the plasma jet column. The “far” downstream is characterized by the ratio of the distance from the jet orifice to the length of the jet column. In this work, the far downstream is referred to as the location, where the ratio is > 3 . Absolute number densities of the OH radicals in the far downstream part as well as in the jet column were measured. Discussion of the source of the OH radicals is also given.

¹Supported by National Science Foundation, grant # CTS-0626302.

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Date submitted: 12 Jun 2009

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