

Abstract Submitted
for the GEC18 Meeting of
The American Physical Society

In situ Measurements of Total Yield of Species Originating from Plasma Jets.¹ EK ADHIKARI, VLADIMIR SAMARA, University of Notre Dame, KEMO JAMMEH, Berea College, SYLWIA PTASINSKA, University of Notre Dame — Plasma reactive species which are directly originated in an atmospheric pressure plasma jet (APPJ) and/or indirectly produced in the cell can drive a plethora of biochemical reactions. To quantify the total yield of these species under different experimental conditions, we developed in situ optical absorption technique and used ferrous sulfate (Fricke) solution in which species were detected under plasma irradiation. We observed that the total yield increased at higher plasma frequencies and voltages, but the yield per pulse decreased at higher frequencies, indicating the formation of plasma species with various lifetimes. We also performed calculations of yields for particular plasma species which can be produced during irradiation and suggested several scenarios to identify which species formed in APPJs can be the most probably to be involved in chemical reactions. Furthermore, we compared the trends in DNA damage with the yields of species produced in Fricke solution to obtain a better understanding of plasma species involved in DNA damage.

¹This material is based upon work supported by the U.S. Department of Energy Office of Science, Office of Basic Energy Science under Award Number DE-FC02-04ER15533.

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Date submitted: 13 Jun 2018

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