

Abstract Submitted  
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**Optical emission spectroscopy study of a medium pressure Nitrogen flowing afterglow from a ~1kW microwave excited plasma source**  
ROBERT CARMAN, PETER HA, Department of Physics and Astronomy, Macquarie University, Sydney, Australia, ROD BOSWELL, CORMAC CORR, Research School of Physics and Engineering, The Australian National University, Canberra, Australia — Nitrogen flowing afterglows in the medium pressure range (1-10torr) are of topical interest for applications in semiconductor film growth and biological decontamination. The spatio-temporal decay characteristics of a 2.54GHz microwave excited flowing N<sub>2</sub> plasma have been investigated, after a T-junction was introduced in the plasma path to optically isolate the plasma source and afterglow. The results from optical emission spectroscopy studies ( $\lambda=200-1000\text{nm}$ ), including gas temperature estimates deduced from high resolution spectra, are compared with a simple kinetic model for key atomic and molecular nitrogen species, and are correlated to gas pressure, and gas flow rates.

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