

Abstract Submitted
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Cold Jet Plasma Studies by Cavity Ring Down Absorption Spectroscopy (CRDS) PATRICK DUPRÉ, The Ohio State University, SHENGHAI WU, TERRY MILLER — Reactive intermediates are of crucial importance both for combustion and atmospheric chemistry. We have set up a cold radical plasma source based on a pulsed slit jet supersonic expansion (5 cm long) and a transverse DC discharge. This source is inserted inside a CRDS cavity running in the near and mid infra-red ranges (the high resolution laser source is described in the second paper). We will present results obtained in the rotational temperature range of 15 to 30 K on various species including the metastable nitrogen (transition: $B^3\Pi_g(v' = 2) \leftarrow A^3\Sigma_u^+(v'' = 4)$), hydroxyl radical (first overtone), methyl radical (fundamental transition of the antisymmetric CH stretch mode) and preliminary results on the weak $\tilde{A} - \tilde{X}$ transition of methyl peroxy (CH_3O_2). Density number of certain of these unstable species can reach $\sim 4 \times 10^{14}/\text{cm}^3$ inside the throat.¹ Sensitivities better than 40 ppb/pass/ $\sqrt{\text{Hz}}$ have been reached.

¹S. Wu, P. Dupré and T.A. Miller, Phys. Chem. Chem. Phys. 2006, 8, 1682

Patrick Dupré
The Ohio State University, Columbus

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