



## **Quantification of atmospheric formaldehyde by infrared absorption spectroscopy**

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Formaldehyde is a toxic, carcinogenic compound that can contaminate ambient air as a result of combustion or outgassing of commercial products such as adhesives used to fabricate plywood and to affix indoor carpeting. Like many small molecules, formaldehyde has an infrared absorption spectrum exhibiting bands of ro-vibrational transitions that are well resolved at low pressure and therefore well suited for optical analysis of formaldehyde concentration. We describe progress in applying cavity ring-down spectroscopy of the  $2\nu_5$  band (the first overtone of the asymmetric C-H stretch, origin at 1770 nm) to the quantitative analysis of formaldehyde concentration in ambient air. Preliminary results suggest that a sensitivity of 1-2 ppb in a measurement interval of a few seconds, and 0.1-0.2 ppb in a few minutes, should be achievable with a compact, robust, and field-deployable instrument. Finally, we note that recent satellites monitoring snapshots of formaldehyde columns give insights into global formaldehyde production, migration and lifetime. The ability to monitor formaldehyde with a small and portable analyzer has the potential to aid in validation of these snapshots and to provide complementary data to show vertical dispersions with high spatial accuracy.