DETECTION OF NO AND S-NITROSOCOMPOUNDS USING MID-IR CAVITY RING-DOWN SPECTROSCOPY

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Metabolic reactions of S-nitrosothiols have received much attention in biochemistry and medicine since S-nitrosocompounds can act not only as donors of nitric oxide (NO) in an organism but can themselves be involved in signal transduction. In the past few decades, the primary means of detecting S-nitrosocompounds in biological media has been through chemiluminescence detection of NO, a technique that limits the sensitivity to ppb levels and is not able to trace isotopologues of NO.

Here we present a cw-CRD instrument for detection of NO isotopologues released from S-nitrosocompounds with a sensitivity of 27 pptv of NO in 100 torr He (after averaging of $\sim$400 ringdowns). A mid-IR ec-QCL laser (Daylight Solutions) is used to excite the ringdown cavity of finesse $\sim$10000 and probe the NO fundamental ro-vibrational band in the 5.2 - 5.3 μm range.