

ALTI LLC

ACTIVATED LIGHT TECHNOLOGY INDUSTRIES



Applications of Cavity Ring-Down Spectroscopy

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NO₂ Air
Pollution



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The ALTI Solution

- Combination of Thermal Decomposition and Cavity Ring Down Spectroscopy (TD-CRDS)
- Scrubber technology removes common false positives

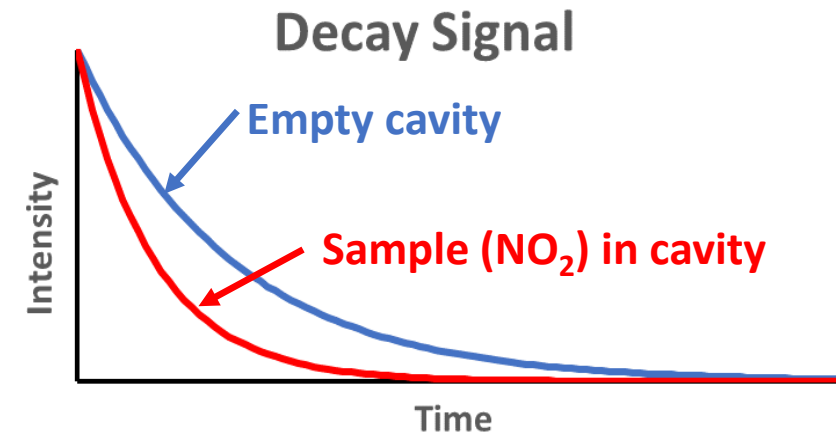
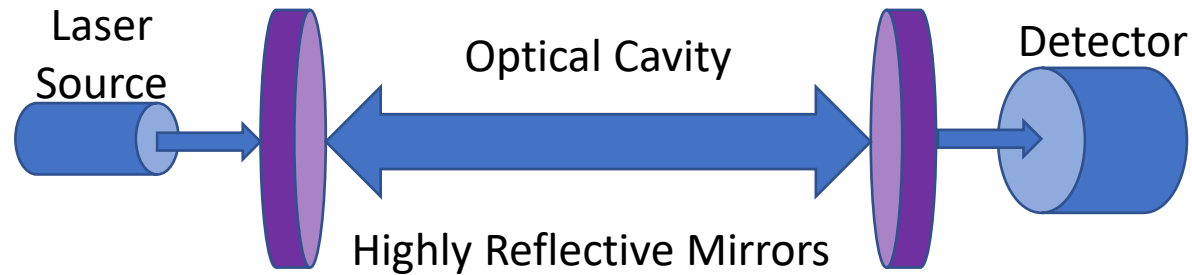


ALTI-LLC Explosive trace detector Analyzer

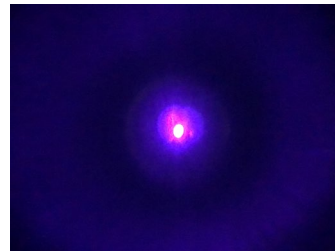


Cavity Ring-Down Spectroscopy

- A cavity between two mirrors reflects violet laser light thousands of times to measure NO_2



Picture: laser light after 150 m in cavity, Current path-length up to 1 km

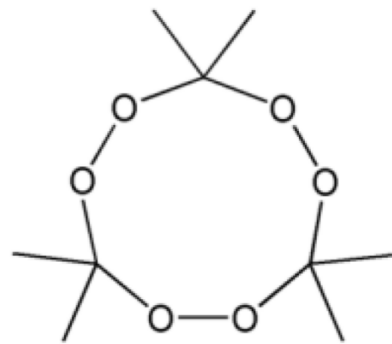


NO_x ozone slide

- **NO₂ is easily measured by CRDS**
- **NO can be generated and can titrate ambient ozone.**
- **Ozone can be used to titrate ambient NO.**
- **Other components of NO_y can be detected as well.**



Demonstrated: Peroxide Containing Explosives to NO₂



TATP



NO



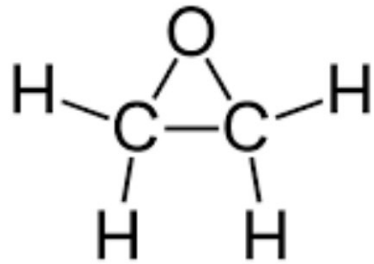
Nitric Oxide



Peroxide-based explosives decompose and reacts with NO forming NO₂



Preliminary: Etylene Oxide to NO₂



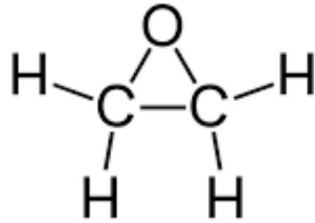
Ethylene Oxide + Nitric Oxide

EtO ... decomposes and reacts with NO forming NO₂



Ultra Low Detection Limits via Radical Chain Reaction

Chemicals react to form



Radicals

+

Nitric oxide (NO)

+

Fuel

+

Oxygen



Nitrogen Dioxide (NO₂)

Amplified 100-10,000 times

Investigating potential to decrease detection limit to sub-ppt



Actinite

Reduces bad odors and air pollution including EtO

Examples:

- **Forest fire smoke**
- **Pet waste**
- **Foot odor**
- **Sewage**
- **Samples Available at our booth**



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Thank You

A solid blue horizontal bar at the bottom of the slide.