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No.	Records	Request
1	5630	laser
2	366	photoacoustic
3	132	laser and photoacoustic
4	32744	gas
* 5	26	#3 and gas

Record 1 of 26 - Analytical Abstracts
TI: Laser photoacoustic trace gas detection, an extremely sensitive technique applied in biological research.
AU: te-Lintel-Hekkert,-S; Staal,-MJ; Nabben,-RHM; Zuckermann,-H; Persijn,-S; Stal,-LJ; Voesenek,-LACJ; Harren,-FJM; Reuss,-J; Parker,-DH
AD: Univ. Nijmegen, Dept. Mol. and Laser Phys., 6525 ED Nijmegen, Netherlands
CP: Netherlands
SO: Instrum-Sci-Technol. Apr-Jun 1998; 26(2-3): 157-175
JN: Instrumentation-Science-and-Technology
IS: 1073-9149
CO: ISCTEF
PY: 1998
LA: English
PT: Journal
AB: Gas detection using IR laser based photoacoustic detection systems in biological systems is discussed with the use of two examples, namely, a CO2 laser based photoacoustic trace gas detection system to follow time-dependent patterns in N2 fixation of cyanobacteria Nodularia spumigena and a CO laser based system to monitor acetaldehyde emission from Docks Rumex palustris post-anoxia. The laser system and measuring protocol are described in detail.
IA: gases-A: detection of, in biological materials, by optoacoustic spectrometry
IM: biological-materials-M: detection of gases in, by optoacoustic spectrometry
SC: F-Clinical-and-Biochemical-Analysis
SS: 10000
COP: Copyright: The Royal Society of Chemistry
AN: 6008F00026
UD: 6008

Record 2 of 26 - Analytical Abstracts
TI: On the possibility of combining external cavity diode laser with photoacoustic detector for high sensitivity gas monitoring.
AU: Sneider,-J; Bozoki,-Z; Miklos,-A; Bor,-Z; Szabo,-G
AD: Res. Group Laser Phys. Hungarian Acad. Sci., 6724 Szeged, Hungary
CP: Hungary
SO: Int-J-Environ-Anal-Chem. 1997; 67(1-4): 253-260
JN: International-Journal-of-Environmental-Analytical-Chemistry
IS: 0306-7319
CO: IJEAA3
PY: 1997
LA: English
PT: Journal
AB: The laser system (schematic given) was fabricated in the Littman (grazing incidence) configuration. The output beam had a typical power of 20-30 mW and a spot size of 2 x 4 mm. The gaseous sample is held in a closed photoacoustic cell and changes in pressure in the cell were measured with a microphone. The system was tested with a mixture of high-purity synthetic air pre-mixed with 1% water vapour. Several of the absorption lines of the water were identified. The minimum detectable absorption coefficient was 3.5 x 10-8/cm. Measurements were also performed on pure acetylene and methane gases and the absorption lines here had a typical absorption coefficient of 10-5/cm in the 830-860 nm range. The cheapness, simplicity and stability of the combined system make it a promising candidate for high-sensitivity gas detection.
IA: gases-A: detmn. of, by photoacoustic spectrometry, external cavity diode lasers for
IM: air-M: detmn. of gases in, by photoacoustic spectrometry, external cavity diode lasers for
SC: D-Inorganic-and-Organic-Analysis
SS: 00000
CR: H1
COP: Copyright: The Royal Society of Chemistry
AN: 6008D00005
UD: 6008

Record 3 of 26 - Analytical Abstracts
TI: Development of a photoacoustic gas sensor for in situ and online measurement of gaseous water and toluene.
AU: Beenen,-A; Niessner,-R
AD: Tech. Univ. Munich, Inst. Hydrochem., 81377 Munich, Germany

REVIEWS OF CO2 LASER PHOTOACOUSTIC SPECTROSCOPY

L6 ANSWER 1 OF 2 HCA COPYRIGHT 1998 ACS
AN 119:33277 HCA
TI Atmospheric trace gas monitoring by **carbon dioxide laser photoacoustic spectroscopy**
AU Sigrist, Markus W.; Thoeny, Andreas
CS Inst. Quant. Electron., ETH Zurich, Zurich, CH-8093, Switz.
SO Proc. SPIE-Int. Soc. Opt. Eng. (1993), 1715(Optical Methods in Atmospheric Chemistry), 174-84
CODEN: PSISDG; ISSN: 0277-786X
DT Journal; General Review
LA English
CC 59-0 (Air Pollution and Industrial Hygiene)
Section cross-reference(s): 47, 79
AB A review with 23 refs. on the main theor. and expt. characteristics of gas phase laser photoacoustic spectroscopy for monitoring air pollution. Topics of discussion include: principles of gas-phase photoacoustics, exptl. arrangement for gas phase photoacoustics, and CO2 laser photoacoustic spectroscopy. A mobile CO2 laser photoacoustic system is detailed, with examples to demonstrate the potential of this technique.
ST **review laser photoacoustic spectroscopy air monitoring**; air pollution monitoring laser spectroscopy **review**
IT Air pollution
(monitoring, by gas phase laser photoacoustic spectroscopy)

L6 ANSWER 2 OF 2 HCA COPYRIGHT 1998 ACS
AN 113:120061 HCA
TI Atmospheric pollution monitoring using **carbon dioxide-laser photoacoustic spectroscopy** and other techniques
AU Meyer, P. L.; Sigrist, M. W.
CS Infrared Phys. Lab., Swiss Fed. Inst. Technol., Zurich, CH-8093, Switz.
SO Rev. Sci. Instrum. (1990), 61(7), 1779-807
CODEN: RSINAK; ISSN: 0034-6748
DT Journal; General Review
LA English
CC 59-0 (Air Pollution and Industrial Hygiene)
Section cross-reference(s): 79, 80
AB A review, with 182 refs., on methods for the detn. of air pollutants, including nonspectroscopic techniques such as gas chromatog. with flame ionization, photoionization, and electron capture detection, mass spectrometry, thermal cond., chemiluminescence, flame photometry, electrolytic cond., coulometry, and colorimetry; and various spectroscopic techniques, with the emphasis on CO2-laser photoacoustic spectroscopy.
ST **review** air pollutant detn methodol; photoacoustic spectroscopy air pollutant **review**
IT Air analysis
(pollutant detn. in, methods for)
IT Spectrochemical analysis
(photoacoustic, in air pollutant detn.)

SELECTED OTHER ABSTRACTS INVOLVING GASES

L7 ANSWER 1 OF 26 HCA COPYRIGHT 1998 ACS
AN 129:135338 HCA
TI **CO2 laser photoacoustic spectroscopy** and absolute absorption coefficients of short chain saturated fatty acid vapors
AU Fink, Thomas; Braun, Rudiger; Bicanic, Dane
CS Laser Photoacoustic Laboratory, Department of Physics and Agricultural Engineering, Wageningen Agricultural University, Wageningen, 6703 HD, Neth.
SO Instrum. Sci. Technol. (1998), 26(2 & 3), 189-202
CODEN: ISCTEF; ISSN: 1073-9149
PB Marcel Dekker, Inc.
DT Journal
LA English
CC 17-1 (Food and Feed Chemistry)
AB A resonant photoacoustic cell, capable of contamination free operation at temps. above that of the ambient, was constructed and used to det. abs. absorption coeffs. of C6:0 (hexanoic) and C8:0 (octanoic) fatty acid vapors at CO2 laser wavelengths. At atm. pressure, the max. absorption coeffs. at the 9R(32) line of the CO2 laser (1085.77 cm-1) are 8.0 atm-1 cm-1 (C6:0 at 332 K) and 8.9 atm-1 cm-1 (C8:0 at 342 K).
ST fatty acid short chain photoacoustic spectrometry
IT **Photoacoustic spectroscopy**
(**CO2 laser photoacoustic spectroscopy** and abs. absorption coeffs. of short chain satd. fatty acid vapors)
IT Short-chain fatty acids
RL: ANT (Analyte); ANST (Analytical study)
(**CO2 laser photoacoustic spectroscopy** and abs. absorption coeffs. of short chain satd. fatty acid vapors)
IT 124-07-2, Octanoic acid, analysis 142-62-1, Hexanoic acid, analysis
RL: ANT (Analyte); ANST (Analytical study)
(**CO2 laser photoacoustic spectroscopy** and abs. absorption coeffs. of short chain satd. fatty acid vapors)

L7 ANSWER 3 OF 26 HCA COPYRIGHT 1998 ACS
AN 128:94752 HCA
TI **CO2-laser photoacoustic spectroscopy** of deuterated ammonia
AU Petkovska, Ljubica T.; Miljanic, Scepan S.
CS Department Physical Chemistry, Vinca Institute Nuclear Sciences, Belgrade, 11001, Yugoslavia
SO Infrared Phys. Technol. (1997), 38(6), 331-336
CODEN: IPTEEY; ISSN: 1350-4495
PB Elsevier Science B.V.
DT Journal
LA English
CC 73-3 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 79
AB Photoacoustic (PA) coincidence absorption spectra of NH3 and its deuterated forms with C-dioxide laser emission were obtained. A simple isotope synthesis procedure was developed for that purpose. The strongest coincidence for the NH3 mol. was found with laser line

9R(30) at 1084.628 cm-1. Laser PA spectra of samples with different D content indicate that coincidences with laser lines 10R(14) and 10R(30) at 971.93 and 982.10 cm-1, resp., correspond to NH2D, while one with 10R(20) at 975.93 cm-1 is attributed to NHD2. The data obtained are discussed in relation to their uses in isotope chem. and anal. They are in agreement with results published by other authors.

ST laser photoacoustic spectroscopy deuterated ammonia

IT Deuterium isotope effect
(CO2-laser photoacoustic spectroscopy of deuterated ammonia)

IT IR spectra
(photoacoustic; CO2-laser photoacoustic spectroscopy of deuterated ammonia)

IT 7664-41-7, Ammonia, properties 13550-49-7, Ammonia-d3 13587-49-0, Ammonia-d 13780-28-4, Ammonia-d2
RL: OCU (Occurrence, unclassified); PRP (Properties); OCCU (Occurrence)
(CO2-laser photoacoustic spectroscopy of deuterated ammonia)

L7 ANSWER 8 OF 26 HCA COPYRIGHT 1998 ACS

AN 125:203229 HCA

TI Photoacoustic spectroscopy on trace gases with continuously tunable CO2 laser

AU Repond, Philippe; Sigrist, Markus W.

CS Institute of Quantum Electronics, ETH Zurich, Zurich, CH-8093, Switz.

SO Appl. Opt. (1996), 35(21), 4065-4085
CODEN: APOPAI; ISSN: 0003-6935

DT Journal

LA English

CC 59-1 (Air Pollution and Industrial Hygiene)
Section cross-reference(s): 79, 80

AB A novel photoacoustic (PA) system that uses a continuously tunable high-pressure CO2 laser as radiation source is presented. A min. detectable absorption coeff. of 10-6 cm-1 that is limited mainly by the desorption of absorbing species from the cell walls and by residual electromagnetic perturbation of the microphone electronics has currently been achieved. Although a linear dependence of the PA signal on the gas concn. has been obsd. over 4 orders of magnitude, the dependence on energy exhibits a nonlinear behavior owing to satn. effects in excellent agreement with a theor. model. The calibration of the laser wavelength is performed by PA measurements on low-pressure CO2 gas, resulting in an abs. accuracy of .+-.10-2 cm-1. PA spectra are presented for carbon dioxide, ammonia, ozone, ethylene, methanol, ethanol, and toluene in large parts of the laser emission range. The expected improvement in detection selectivity compared with that of studies with line-tunable CO2 lasers is demonstrated with the aid of multicomponent trace-gas mixts. prepd. with a gas-mixing unit. Good agreement is obtained between the known concns. and the concns. calcd. on the basis of a fit with calibration spectra. The perspectives of the system concerning air analyses are discussed.

ST photoacoustic spectroscopy air analysis; carbon dioxide laser air analysis

IT Air analysis
(photoacoustic spectroscopy on trace gases with continuously tunable CO2 laser)

IT 64-17-5, Ethanol, analysis 67-56-1, Methanol, analysis 74-85-1, Ethylene, analysis 108-88-3, Toluene, analysis 124-38-9, Carbon dioxide, analysis 7664-41-7, Ammonia, analysis 10028-15-6, Ozone, analysis
RL: ANT (Analyte); ANST (Analytical study)
(photoacoustic spectroscopy on trace gases with continuously tunable CO2 laser)

L7 ANSWER 9 OF 26 HCA COPYRIGHT 1998 ACS
AN 123:131617 HCA
TI Photoacoustic spectroscopy on gases with high pressure continuously tunable CO2 laser
AU Repond, P.; Sigrist, M. W.
CS ETH Zurich, Institute Quantum Electronics, Zurich, 8093, Switz.
SO J. Phys. IV (1994), 4(C7 8th International Topical Meeting on Photoacoustic and Photothermal Phenomena, 1994), 523-6
CODEN: JPICEI; ISSN: 1155-4339
DT Journal
LA English
CC 80-2 (Organic Analytical Chemistry)
Section cross-reference(s): 73
AB We present a novel photoacoustic detection system with a high pressure CO2 laser as radiation source. The laser is continuously tunable across wavelength ranges from 13 cm-1 to 18 cm-1. The narrow bandwidth of 0.017 cm-1 allows to resolve any fine structure in the absorption spectra of trace gases at atm. pressure. The absorption spectra of four gases are reported, demonstrating the great potential improvement in detection selectivity.
ST carbon dioxide laser photoacoustic spectroscopy; photoacoustic spectroscopy gas continuous tunable laser
IT Gas analysis
(photoacoustic spectroscopy on gases with high pressure continuously tunable CO2 laser)
IT Sensors
(gas, photoacoustic; photoacoustic spectroscopy on gases with high pressure continuously tunable CO2 laser)
IT 74-85-1, Ethylene, analysis
RL: ANT (Analyte); ANST (Analytical study)
(photoacoustic spectroscopy on gases with high pressure continuously tunable CO2 laser)
IT 124-38-9, Carbon dioxide, uses
RL: DEV (Device component use); USES (Uses)
(photoacoustic spectroscopy on gases with high pressure continuously tunable CO2 laser)

L7 ANSWER 10 OF 26 HCA COPYRIGHT 1998 ACS
AN 122:320992 HCA
TI Trace gas monitoring by laser-photoacoustic spectroscopy
AU Sigrist, M. W.
CS Institute Quantum Electronics, ETH, Zurich, CH-8093, Switz.
SO Infrared Phys. Technol. (1995), 36(1), 415-25
CODEN: IPTEEY; ISSN: 1350-4495
DT Journal
LA English
CC 59-1 (Air Pollution and Industrial Hygiene)
Section cross-reference(s): 51, 79, 80
AB Photoacoustic spectroscopy (PAS) with tunable IR lasers represents a promising tool for trace gas monitoring. The principles of PAS

applied to multicomponent gas mixts. are outlined. We present 3 photoacoustic (PA) systems and discuss typical results. A CO laser PA system was applied to the selective anal. of volatile org. compds. (VOCs) in motor vehicle exhausts and to the study of the dimerization of fatty acid vapors. As a 2nd instrument, an automated mobile CO2 laser PA system, was used for in situ air monitoring in industrial, urban and rural environments. A detection limit in the ppb-range can be achieved depending on mol. absorption cross sections and absorption interferences. Despite some cases which demonstrate the feasibility to differentiate even between isomers, the detection selectivity could often be substantially improved using a continuously rather than a line-tunable laser source. This is demonstrated by high-pressure CO2 laser which offers continuous tunability in the common CO2 laser emission branches with a linewidth of only 0.017 cm-1.

ST trace gas monitoring laser photoacoustic spectroscopy; exhaust gas monitoring laser photoacoustic spectroscopy; volatile org detn exhaust gas

IT Volatile substances
(org.; trace gas monitoring by laser-photoacoustic spectroscopy)

IT Air analysis
Exhaust gases
(trace gas monitoring by laser-photoacoustic spectroscopy)

IT 67-56-1, Methanol, analysis 124-38-9, Carbon dioxide, analysis 7664-41-7, Ammonia, analysis 7732-18-5, Water, analysis 10028-15-6, Ozone, analysis
RL: ANT (Analyte); ANST (Analytical study)
(detn. in air by laser-photoacoustic spectroscopy)

IT 50-00-0, Formaldehyde, analysis 71-43-2, Benzene, analysis 74-85-1, Ethylene, analysis 75-07-0, Acetaldehyde, analysis 95-47-6, o-Xylene, analysis 106-42-3, p-Xylene, analysis 107-02-8, Acrolein, analysis 108-38-3, analysis 108-88-3, Toluene, analysis 115-07-1, Propene, analysis
RL: ANT (Analyte); ANST (Analytical study)
(detn. in exhaust gases by laser-photoacoustic spectroscopy)

L7 ANSWER 11 OF 26 HCA COPYRIGHT 1998 ACS

AN 118:130814 HCA

TI Real-time and in situ determination of ammonia concentrations in the atmosphere by means of intermodulated stark resonant carbon dioxide laser photoacoustic spectroscopy

AU Sauren, Hans; Gerkema, Edo; Bicanic, Dane; Jalink, Henk
CS Dep. Chem., Queen's Univ., Kingston, ON, K7L 3N6, Can.

SO Atmos. Environ., Part A (1993), 27A(1), 109-12
CODEN: AEATEN; ISSN: 0960-1686
DT Journal
LA English
CC 59-1 (Air Pollution and Industrial Hygiene)
Section cross-reference(s): 79

AB A concept of intermodulated photoacoustic stark spectroscopy was used in an attempt to perform the interference-free field measurement of trace NH3 (3-40 ppb) concn. levels in the air with a time resoln. of 40 s.

ST ammonia detn air laser photoacoustic spectroscopy

IT Air analysis
(ammonia detn. in, in situ, intermodulated stark resonant carbon dioxide laser photoacoustic spectroscopy in)

IT 7664-41-7, Ammonia, analysis
RL: ANT (Analyte); POL (Pollutant); ANST (Analytical study); OCCU (Occurrence)
(detn. of, in air, in situ, intermodulated stark resonant carbon dioxide laser photoacoustic spectroscopy in)

L7 ANSWER 13 OF 26 HCA COPYRIGHT 1998 ACS
AN 116:240904 HCA
TI Photoacoustic air pollution monitoring with an isotopic carbon dioxide laser
AU Trushin, S. A.
CS Inst. Phys., Minsk, 220602, USSR
SO Ber. Bunsen-Ges. Phys. Chem. (1992), 96(3), 319-22
CODEN: BBPCAX; ISSN: 0005-9021
DT Journal
LA English
CC 59-1 (Air Pollution and Industrial Hygiene)
Section cross-reference(s): 79
AB The possibilities of using lasers based on rare isotopic species of CO2 to detect trace quantities of pollutants in ambient air by photoacoustic spectroscopy (PA) is discussed. The use of isotopic CO2-laser lines overcomes the background absorption of atm. CO2. The effect of water vapor continuum absorption is eliminated by decreasing the gas pressure in the PA cell. The spectroscopic anal. was performed within the framework of GEISA-84. Database shows that even at a 10%-measurement error detection sensitivities of 0.1-10 ppb V for NH3, C2H4, O3, HNO3, PH3, and ClO in ambient air can be achieved. A simple PA gas analyzer on the basis of a 13C16O2-laser with a NH3 sensitivity of .apprx.1 ppb and a time resoln. of 1.5 min is also described.
ST detn air pollutant carbon dioxide laser; photoacoustic air pollution laser monitoring
IT Air pollution
(monitoring, by laser photoacoustic spectroscopy, isotopic carbon dioxide active medium in)
IT Ultraviolet and visible spectrometry
(photoacoustic, air pollution monitoring by, isotopic carbon dioxide active medium in)
IT Spectrochemical analysis
(photoacoustic, air pollution monitoring by, isotopic carbon dioxide laser for)
IT 74-85-1, Ethylene, analysis 7664-41-7, Ammonia, analysis 7697-37-2, Nitric acid, analysis 7803-51-2, Phosphine 10028-15-6, Ozone, analysis 56509-27-4, Chlorine oxide
RL: ANT (Analyte); POL (Pollutant); ANST (Analytical study); OCCU (Occurrence)
(detn. of, in air, by isotopic carbon dioxide laser, photoacoustic air pollution monitoring in relation to)

L7 ANSWER 14 OF 26 HCA COPYRIGHT 1998 ACS
AN 116:220503 HCA
TI Determination of ammonia using carbon dioxide laser photoacoustic spectroscopy compared with conventional spectrophotometry
AU Solyom, Aniko M.; Angeli, Gyorgy Z.; Bicanic, Dane D.; Lubbers, Marcel
CS Analtron Appl. Res. Co., Budapest, H-1311, Hung.
SO Analyst (London) (1992), 117(3), 379-82
CODEN: ANALAO; ISSN: 0003-2654

DT Journal
LA English
CC 59-1 (Air Pollution and Industrial Hygiene)
Section cross-reference(s): 79
AB The potential of CO2 laser photoacoustic spectroscopy and the traditional Indophenol Blue colorimetric method for detecting gaseous NH3 were compared. The results obtained with the 2 independent techniques are comparable in the range of concns. studied.
ST ammonia detn air photoacoustic spectroscopy
IT Air analysis
(ammonia detn. in, by carbon dioxide laser photoacoustic spectrometry, comparison with colorimetry in relation to)
IT 7664-41-7, Ammonia, analysis
RL: ANT (Analyte); POL (Pollutant); ANST (Analytical study); OCCU (Occurrence)
(detn. of, in air, by carbon dioxide laser photoacoustic spectrometry, comparison with colorimetry in relation to)

L7 ANSWER 16 OF 26 HCA COPYRIGHT 1998 ACS
AN 116:161441 HCA
TI **Photoacoustic spectroscopy** of ozone with a 450-MHz tunable waveguide **carbon dioxide laser**
AU Sokabe, Noburu; Hammerich, Mads; Pedersen, Thorvald; Olafsson, Ari; Henningsen, Jes
CS Phys. Lab., H. C. Oersted Inst., Copenhagen, DK-2100, Den.
SO J. Mol. Spectrosc. (1992), 152(2), 420-33
CODEN: JMOSA3; ISSN: 0022-2852
DT Journal
LA English
CC 73-3 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 59
AB Photoacoustic absorption signatures have been obtained for ozone in 450-MHz tuning windows of a waveguide CO2 laser. Out of 42 obsd. absorption lines, 31 are assigned to the .nu.1 and the .nu.3 bands, and 7 to various hot bands of 160160160. Two lines are assigned to the .nu.3 band of the isotopomers 160160180 and 160180160, which were present in their natural abundance. Precise collision broadening measurements are reported for two lines of the 160160160 .nu.3 band.
ST IR spectra ozone
IT Spectrochemical analysis
(IR spectra, of atm., photoacoustic absorption signatures of ozone in relation to)
IT Infrared spectra
(of ozone)
IT Atmosphere
(ozone IR photoacoustic absorption signatures in)
IT 10028-15-6, Ozone, properties 26057-96-5, Ozone-1-180
RL: PRP (Properties)
(IR spectra of, photoacoustic absorption signatures in relation to)

L7 ANSWER 18 OF 26 HCA COPYRIGHT 1998 ACS
AN 107:182475 HCA
TI Laser-photoacoustic spectroscopy of air pollutants
AU Bernegger, S.; Meyer, P. L.; Sigrist, M. W.
CS Dep. Phys., Eidg. Tech. Hochsch., Zurich, Switz.
SO Report (1985), M-19, ETN-86-98571; Order No. N87-14787/2/GAR, 21 pp.

Avail.: NTIS
From: Gov. Rep. Announce. Index (U. S.) 1987, 87(8), Abstr. No. 714,205
DT Report
LA English
CC 59-1 (Air Pollution and Industrial Hygiene)
Section cross-reference(s): 79
AB A stationary step-tunable CO laser and a step-tunable CO2 laser installed in a trailer were used for photoacoustic spectroscopy (PAS) of pollutants. The photoacoustic chamber in both setups is a resonant cell which permits measurements in the flow mode. The high sensitivity which corresponds to a background-limited absorption coeff. of 0.00000001/cm, and the wide dynamic range of PAS are discussed. Good agreement between calcd. and measured spectra for the CO laser wavelength range is obtained for various pollutants. Problems which arise due to the simultaneous oscillation of adjacent CO laser transitions and due to the interfering water vapor adsorption are outlined. Spectral anal. of an HNO3/water vapor mixt. and its decompn. products is discussed. Excellent agreement between PAS spectra of certified gas mixts. and literature data for the CO2 laser transitions is obtained. An anal. of indoor air samples from the lab. and from a garage is presented.
ST laser photoacoustic spectroscopy air analysis
IT Air analysis
(pollutant detn. in, by laser-photoacoustic spectroscopy)
IT 124-38-9, Carbon dioxide, analysis
630-08-0, Carbon monoxide, analysis 7697-37-2, Nitric acid, analysis
RL: ANT (Analyte); POL (Pollutant); ANST (Analytical study); OCCU (Occurrence)
(detn. of, in air, by laser-photoacoustic spectroscopy)

L7 ANSWER 20 OF 26 HCA COPYRIGHT 1998 ACS
AN 106:22501 HCA
TI Carbon dioxide-laser photoacoustic spectroscopy applied to low-level toxic-vapor monitoring
AU Loper, G. L.; Gelbwachs, J. A.; Beck, S. M.
CS Chem. Phys. Lab., Aerospace Corp., Los Angeles, CA, 90009, USA
SO Can. J. Phys. (1986), 64(9), 1124-31
CODEN: CJPHAD; ISSN: 0008-4204
DT Journal
LA English
CC 59-1 (Air Pollution and Industrial Hygiene)
Section cross-reference(s): 80
AB A CO2-laser photoacoustic detector that can detect the hazardous hydrazine-based rocket fuels and selected toxic industrial compds. at concns. of <100 ppb in ambient air is based on the principles of photoacoustic spectroscopy and classical acoustics. The low-ppb-level detection capability of the method with respect to the hydrazines is demonstrated with both acoustically nonresonant and resonant photoacoustic cell designs. A flowing resonant photoacoustic cell, whose interior is coated with Teflon, is preferable for detecting highly adsorptive or reactive compds. Photoacoustic spectroscopy is useful in measuring adsorption or reaction losses of low-concn. gases on surfaces.
ST laser photoacoustic spectroscopy air analysis; vapor detn laser photoacoustic spectroscopy
IT Air analysis
(vapor detn. in, carbon dioxide laser photoacoustic detector for)

IT 75-35-4, Vinylidenechloride, analysis 79-01-6, Trichloroethylene, analysis 302-01-2, Hydrazine, analysstudy); OCCU (Occurrence)
(detn. of, in air, carbon dioxide laser photoacoustic detector in)