Anhang 7[53]
(Art. 2 Abs. 5)

Immissionsgrenzwerte

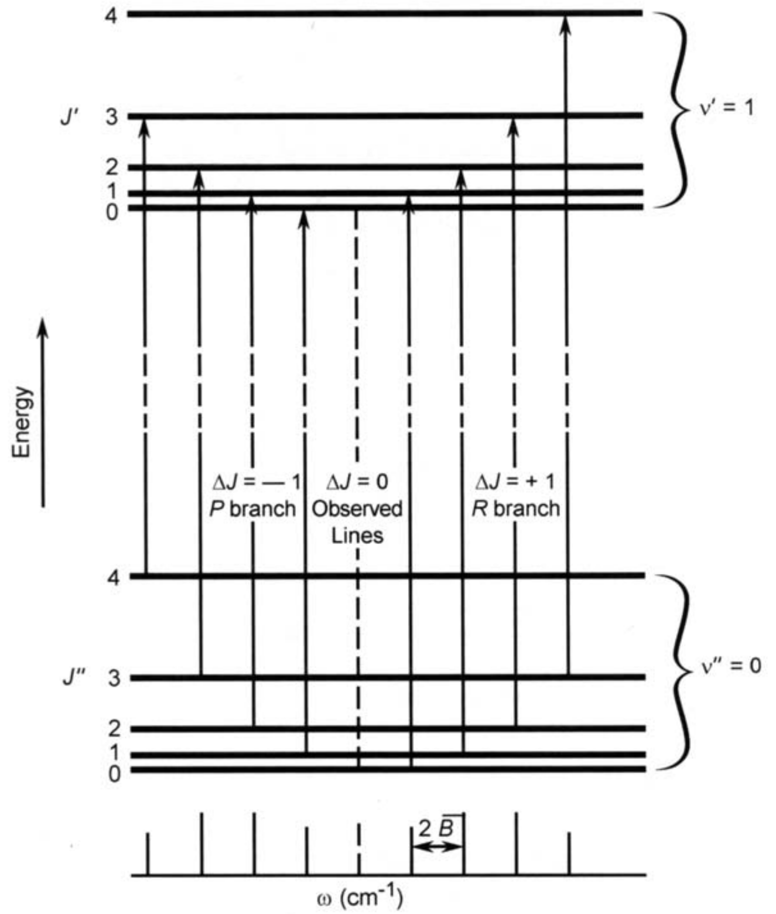
Schadstoff	Immissionsgrenzwert		Statistische Definition
Schwefeldioxid (SO_2)	30 µg/m³	11 ppb	Jahresmittelwert (arithmetischer Mittelwert)
	100 µg/m³	38 ppb	95% der ½-h-Mittelwerte eines Jahres ≤ 100 µg/m³
	100 µg/m³	38 ppb	24-h-Mittelwert; darf höchstens einmal pro Jahr überschritten werden
Stickstoffdioxid (NO_2)	30 µg/m³	13 ppb	Jahresmittelwert (arithmetischer Mittelwert)
	100 µg/m³	44 ppb	95% der ½-h-Mittelwerte eines Jahres ≤ 100 µg/m³
	80 µg/m³	35 ppb	24-h-Mittelwert; darf höchstens einmal pro Jahr überschritten werden
Kohlenmonoxid (CO)	8 mg/m³	7 ppm	24-h-Mittelwert; darf höchstens einmal pro Jahr überschritten werden
Ozon(O_3)	100 µg/m³	51 ppb	98% der ½-h-Mittelwerte eines Monats ≤ 100 µg/m³
	120 µg/m³	61 ppb	1-h-Mittelwert; darf höchstens einmal pro Jahr überschritten werden
Schwebestaub (PM10)[1)]	20 µg/m³		Jahresmittelwert (arithmetischer Mittelwert)
	50 µg/m³		24-h-Mittelwert; darf höchstens einmal pro Jahr überschritten werden
Blei (Pb) im Schwebestaub (PM10)	500 ng /m³		Jahresmittelwert (arithmetischer Mittelwert)
Cadmium (Cd) im Schwebestaub (PM10)	1,5 ng/m³		Jahresmittelwert (arithmetischer Mittelwert)
Staubniederschlag insgesamt	200 mg/m² × Tag		Jahresmittelwert (arithmetischer Mittelwert)

Hinweis:
mg = Milligramm: 1 mg = 0,001 g
µg = Mikrogramm: 1 µg = 0,001 mg
ng = Nanogramm: 1 ng = 0,001 µg
Das Zeichen «≤» bedeutet «kleiner oder gleich».

1) Feindisperse Schwebestoffe mit einem aerodynamischen Durchmesser von weniger als 10 µm.

53 Bereinigt gemäss Ziff. II der V vom 15. Dez. 1997, in Kraft seit 1. März 1998 (AS **1998** 223).

Rotations-Vibrationsübergänge



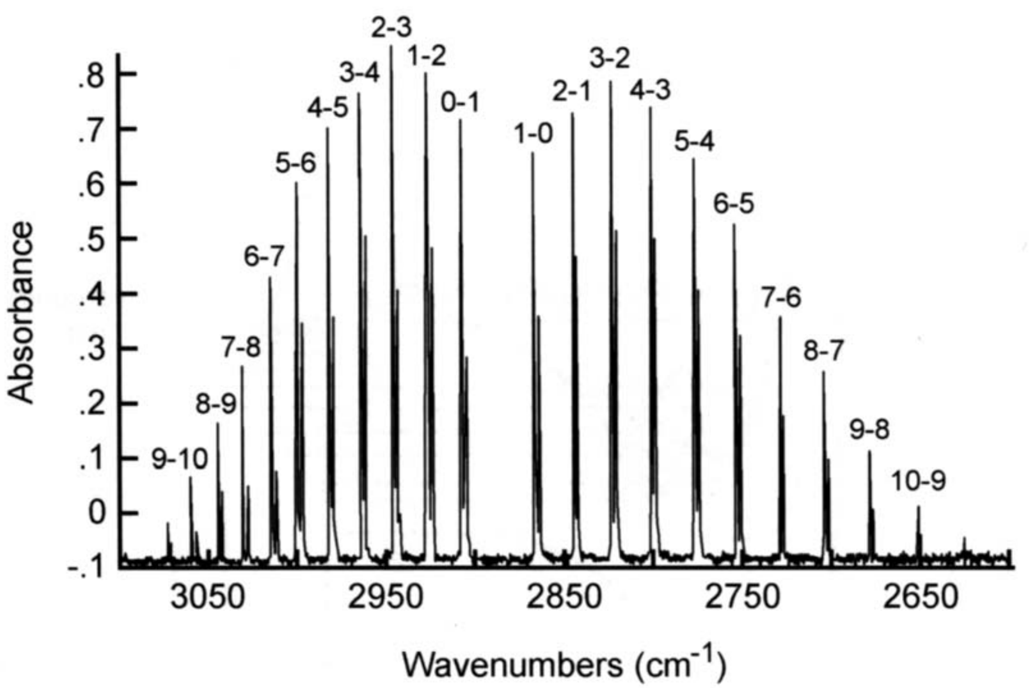
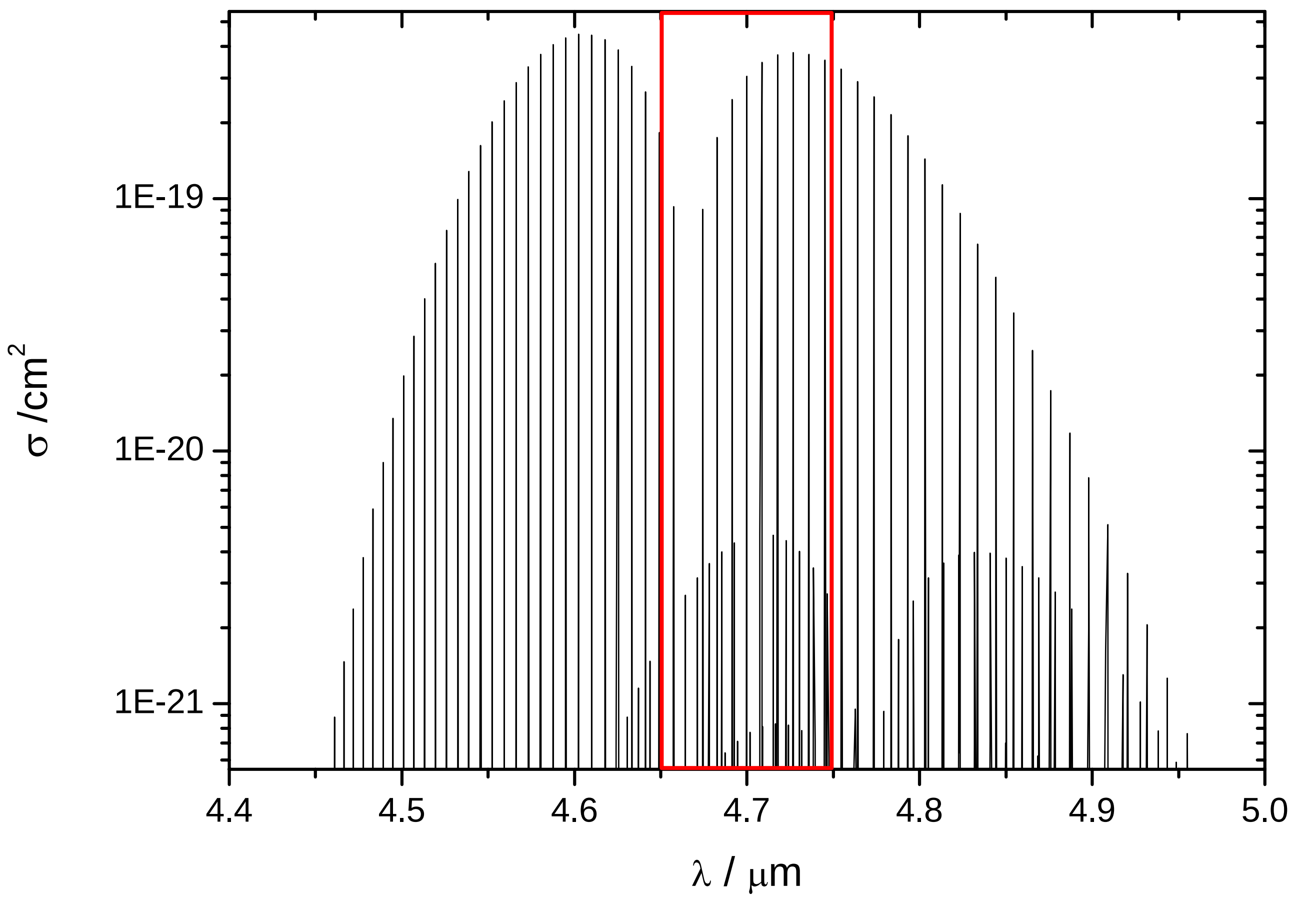
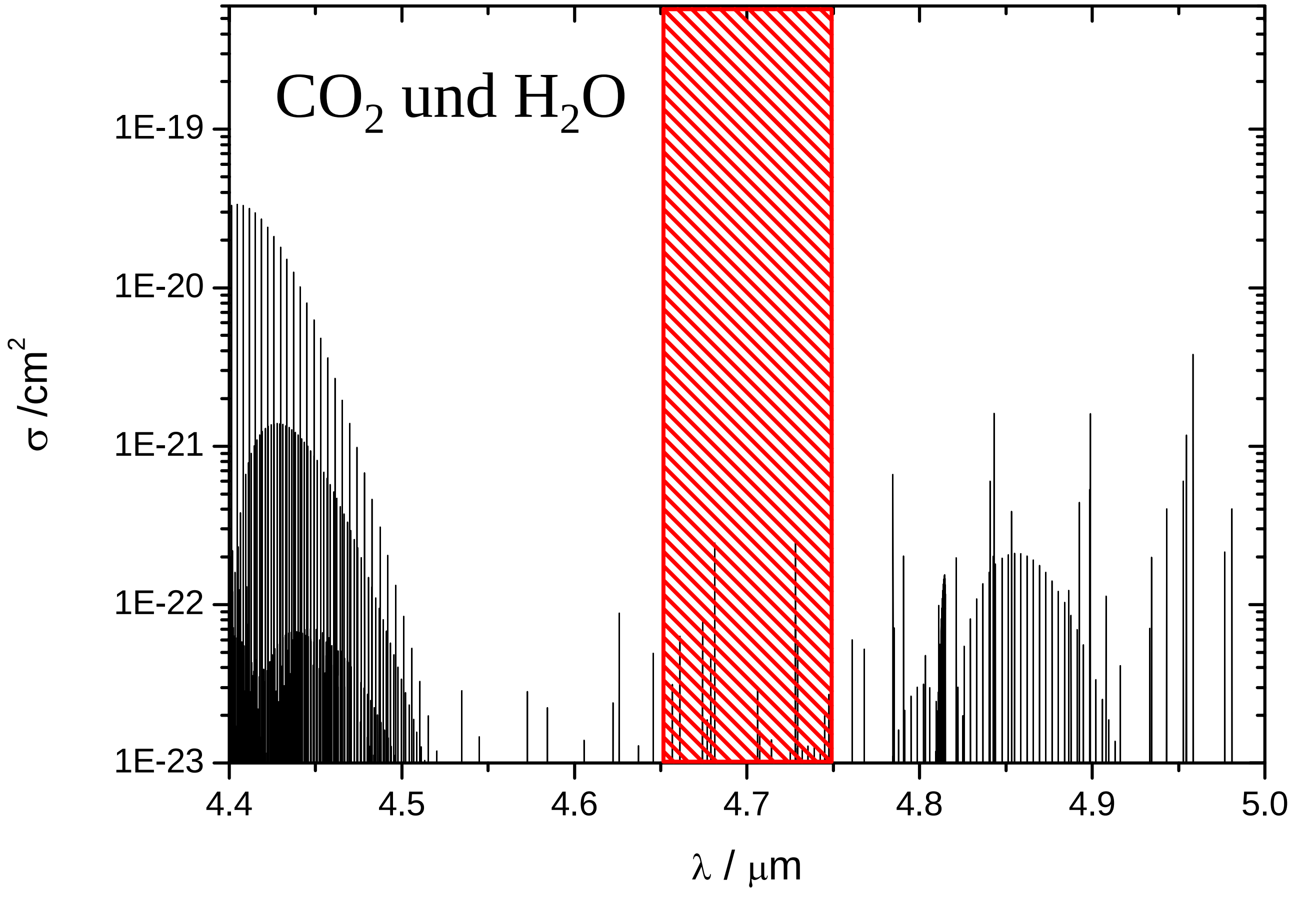


FIGURE 3.4 Vibration–rotation spectrum of 0.18 Torr HCl at room temperature using a path length of 19.2 m. Resolution is 0.25 cm^{-1}. The rotational transitions are shown as (initial *J*, final *J*) (from B. J. Finlayson-Pitts and S. N. Johnson, unpublished data).

CO Vibration-Rotation





CO-Messgerät (NDIR, Gas-Filter-Correlation)

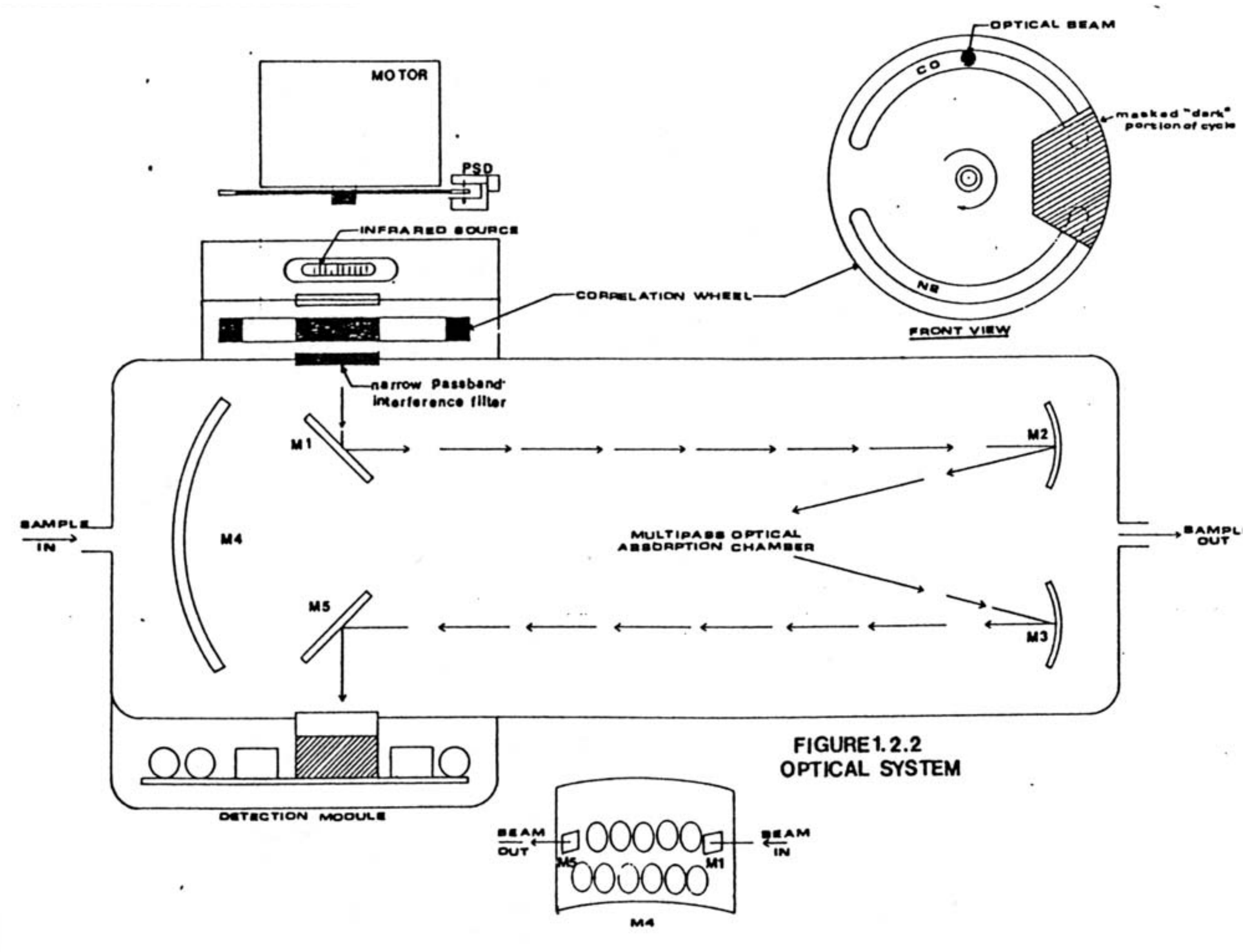
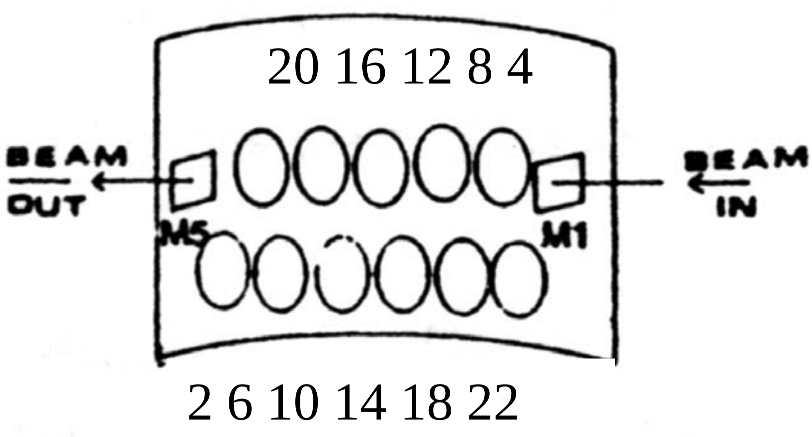
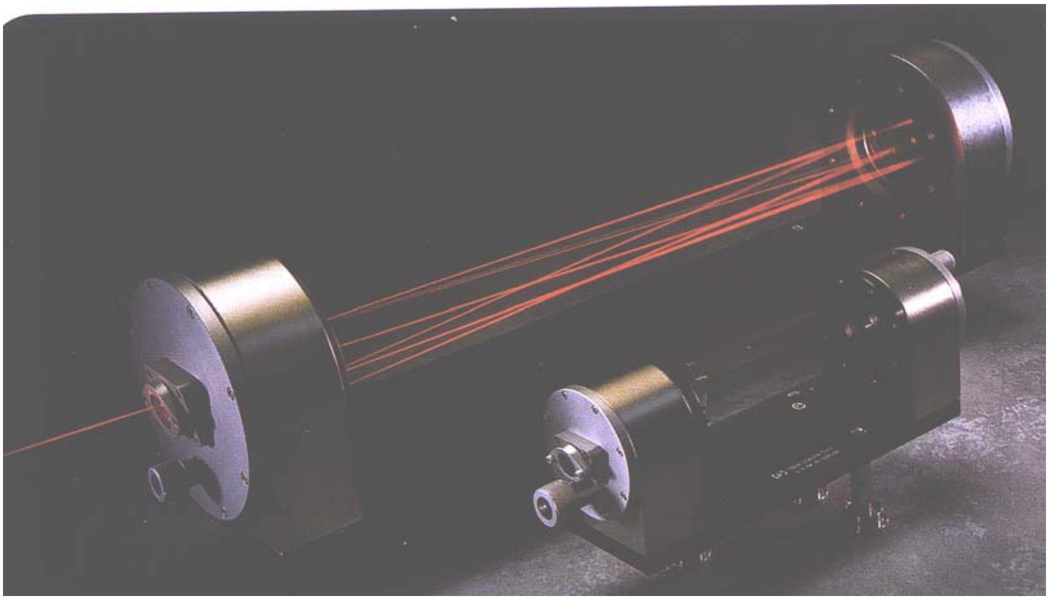


FIGURE 1.2.2
OPTICAL SYSTEM

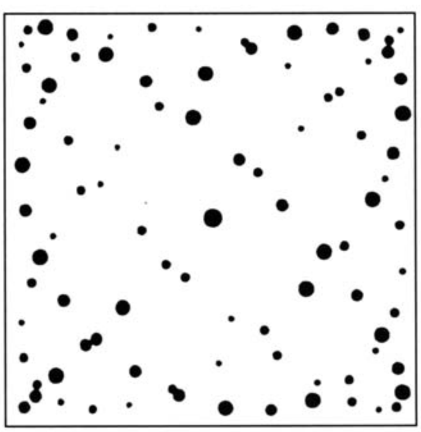


Multipass cell



182 passes, $L_{optisch}$ = 100m, L = 55cm

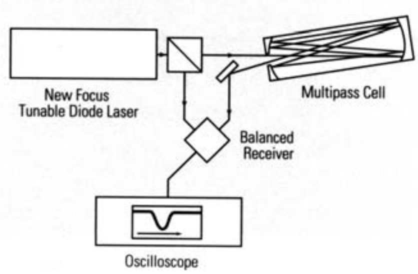
This is the standard 91-SPOT PATTERN that can be observed when the cell is aligned with a visible laser. The diameter of each spot is proportional to beam intensity at that point.

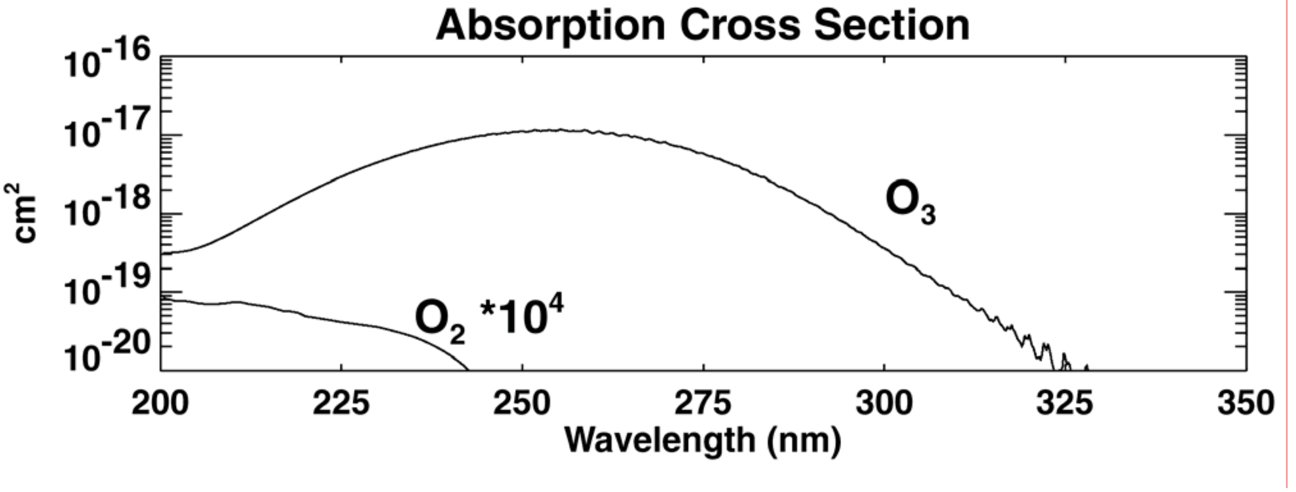


LASERS & INSTRUMENTS

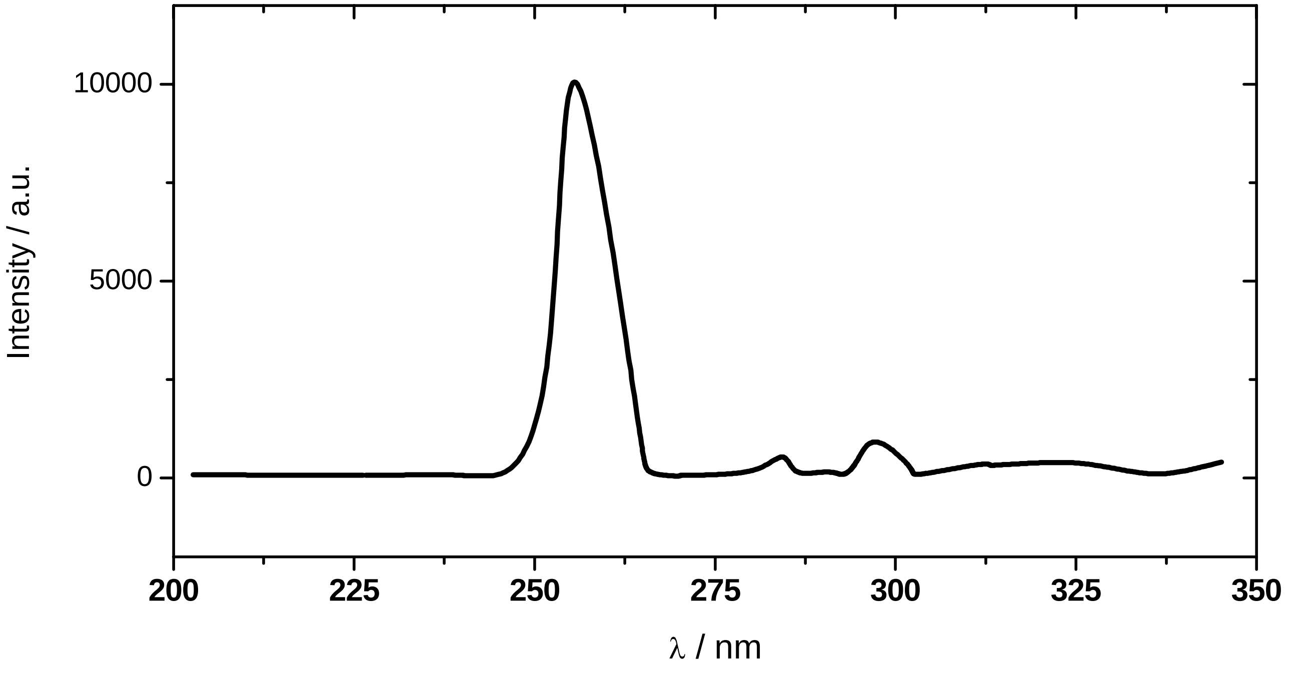
Absorption Spectroscopy

Absorption spectroscopy has never been simpler than with our tunable lasers (page 18), multipass cells, and balanced receivers (page 68). After passing through the multipass cell, the probe beam is focused onto one of the detectors in the balanced receiver; the other detector senses a reference beam.

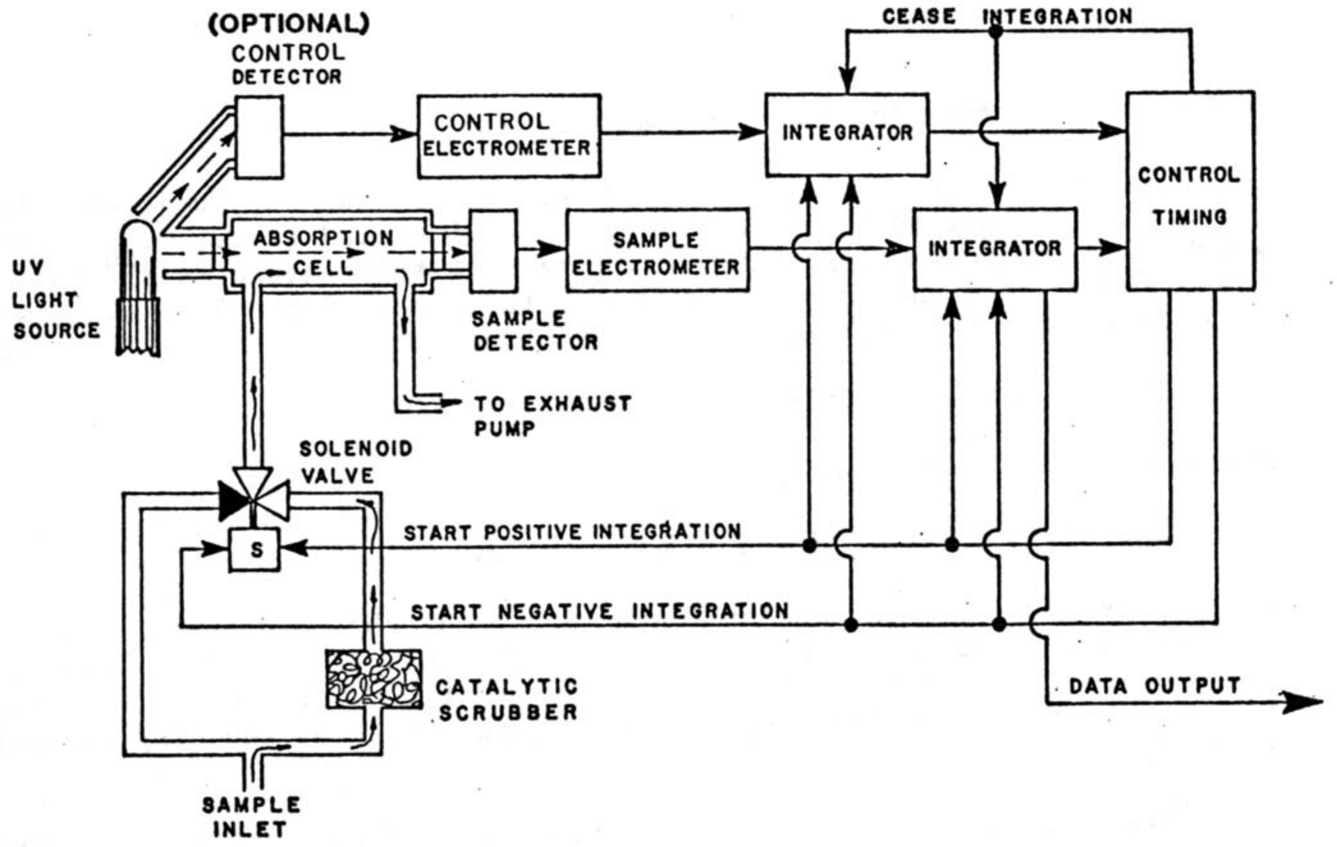



Absorption Cross Section
10-16
10-17
10-18
10-19
10-20
cm2
O3
O2 *104
200
225
250
275
300
325
350
Wavelength (nm)

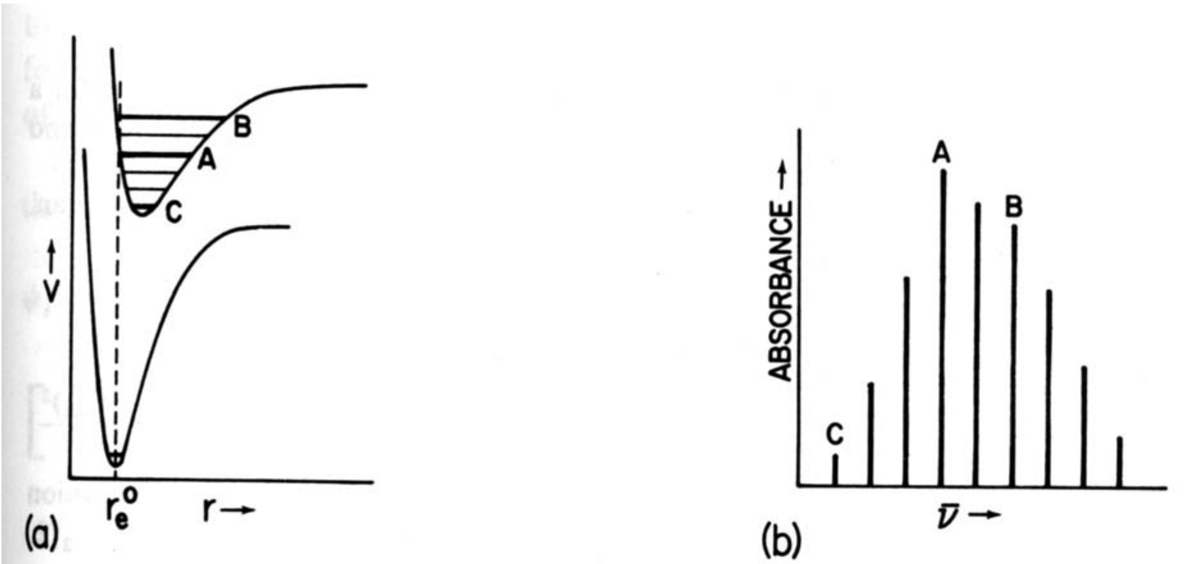
Hg-Lampe


10000
5000
0
Intensity / a.u.
200
225
250
275
300
325
350
λ / nm

O_3-Messgerät



Franck-Condon



Molekülorbitale

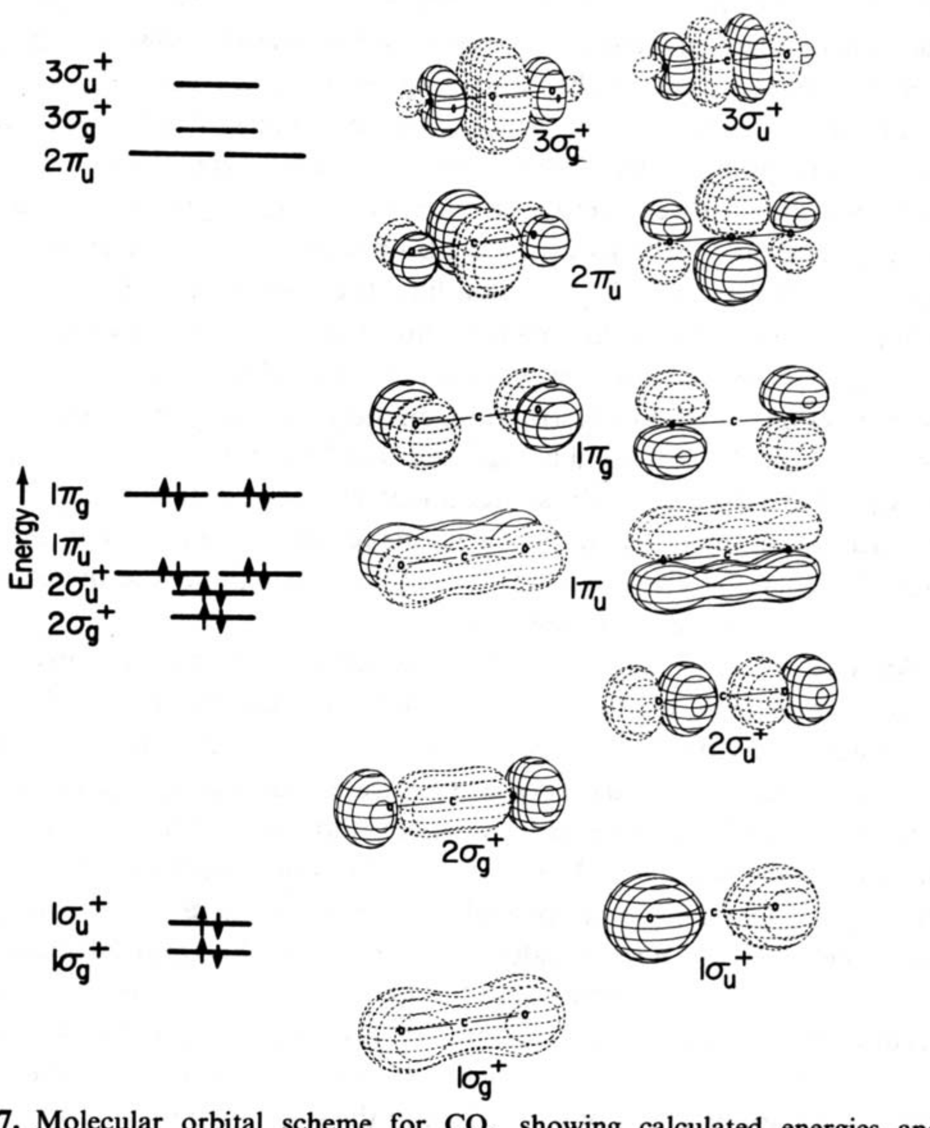
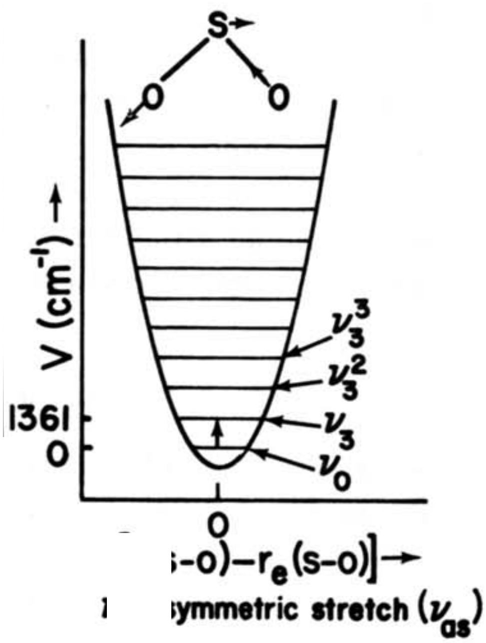
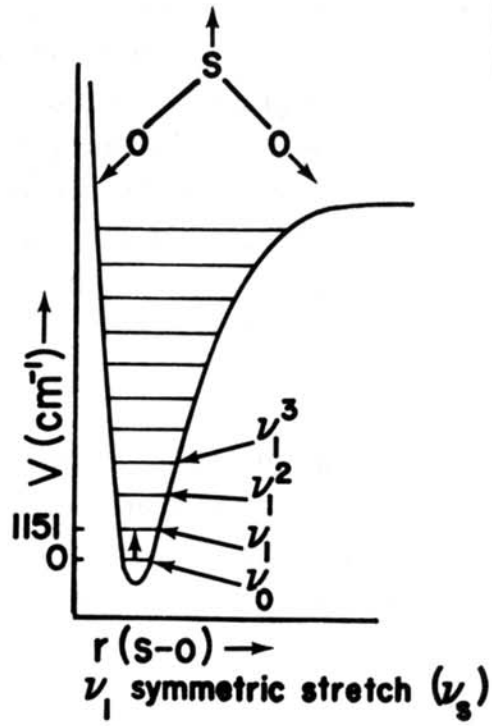
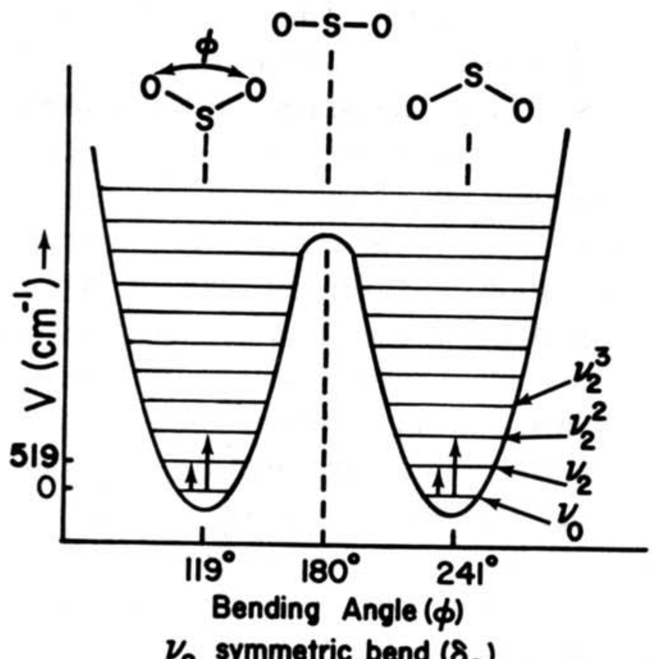


Fig. 4-27. Molecular orbital scheme for CO_2 showing calculated energies and orbitals. Solid and dashed lines correspond to regions of the wave function of opposite sign. The contours indicated correspond to electron densities of 0.0675 electrons/Å^3 for one-electron wave functions and were chosen merely for satisfactory visual display of the orbitals. Contour diagrams reproduced from W. L. Jorgensen and L. Salem, *The Organic Chemist's Book of Orbitals*, Academic Press, N.Y., 1973.

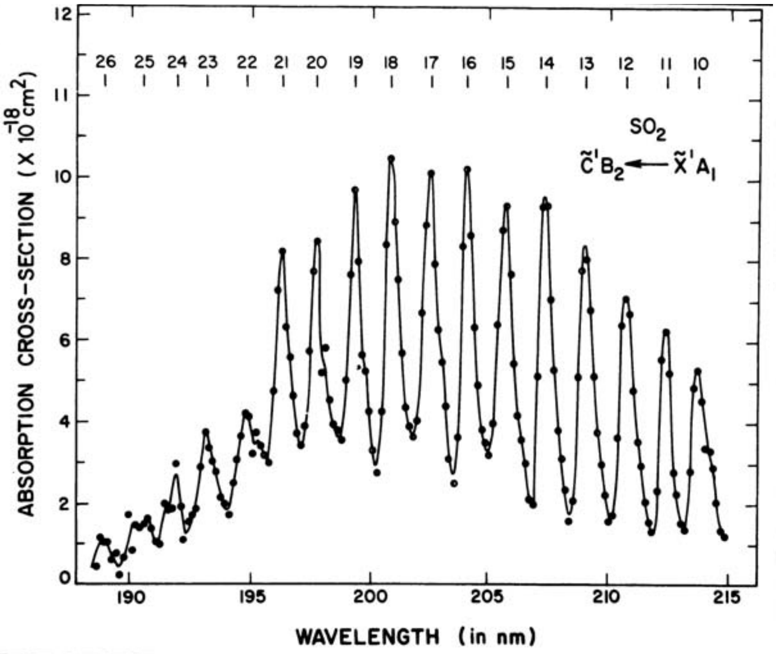
SO_2 Vibrationen

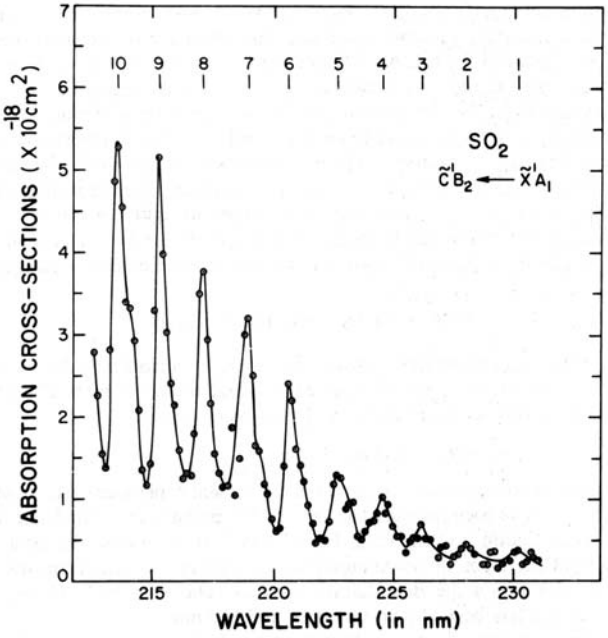


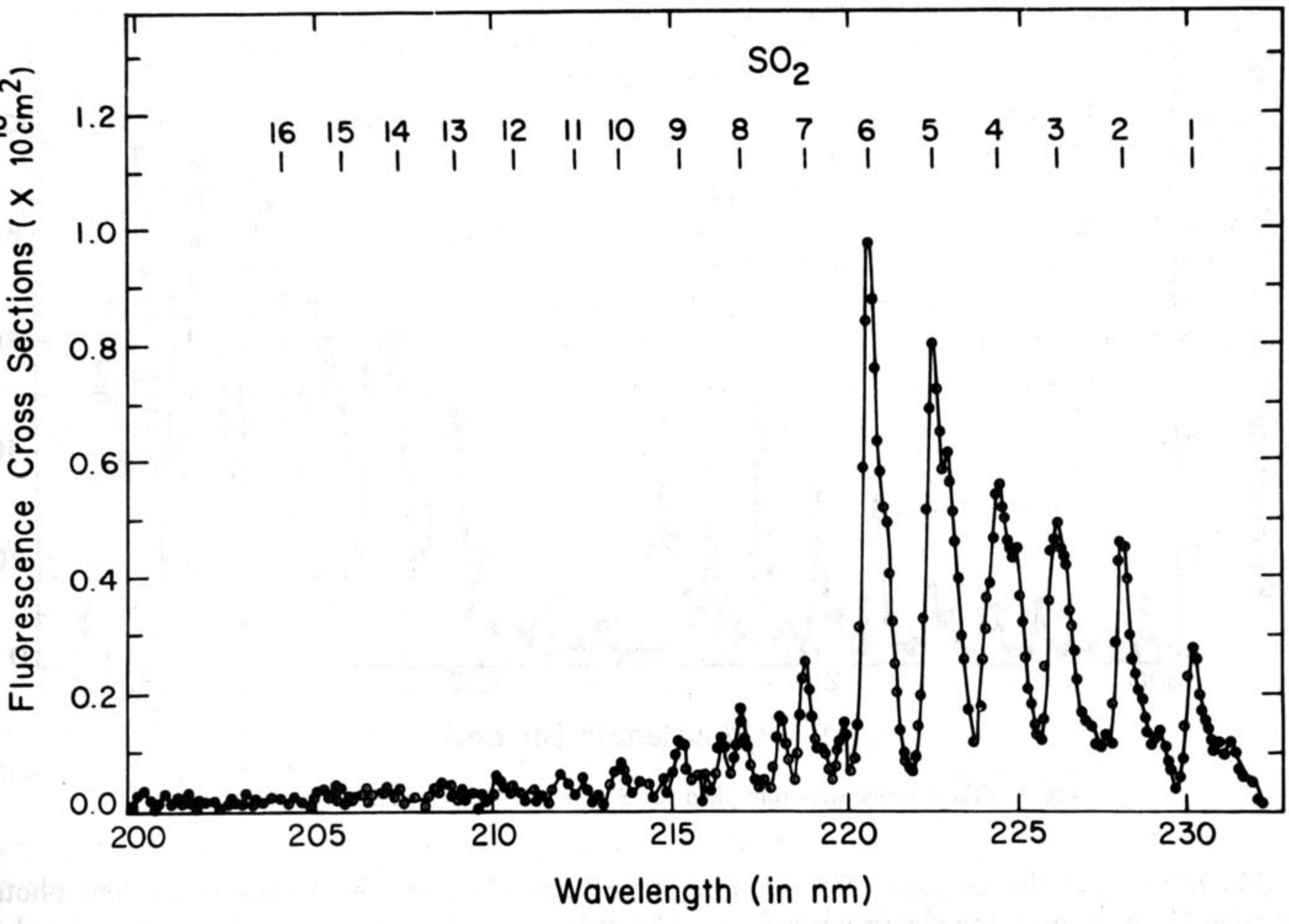




SO_2-Absorption

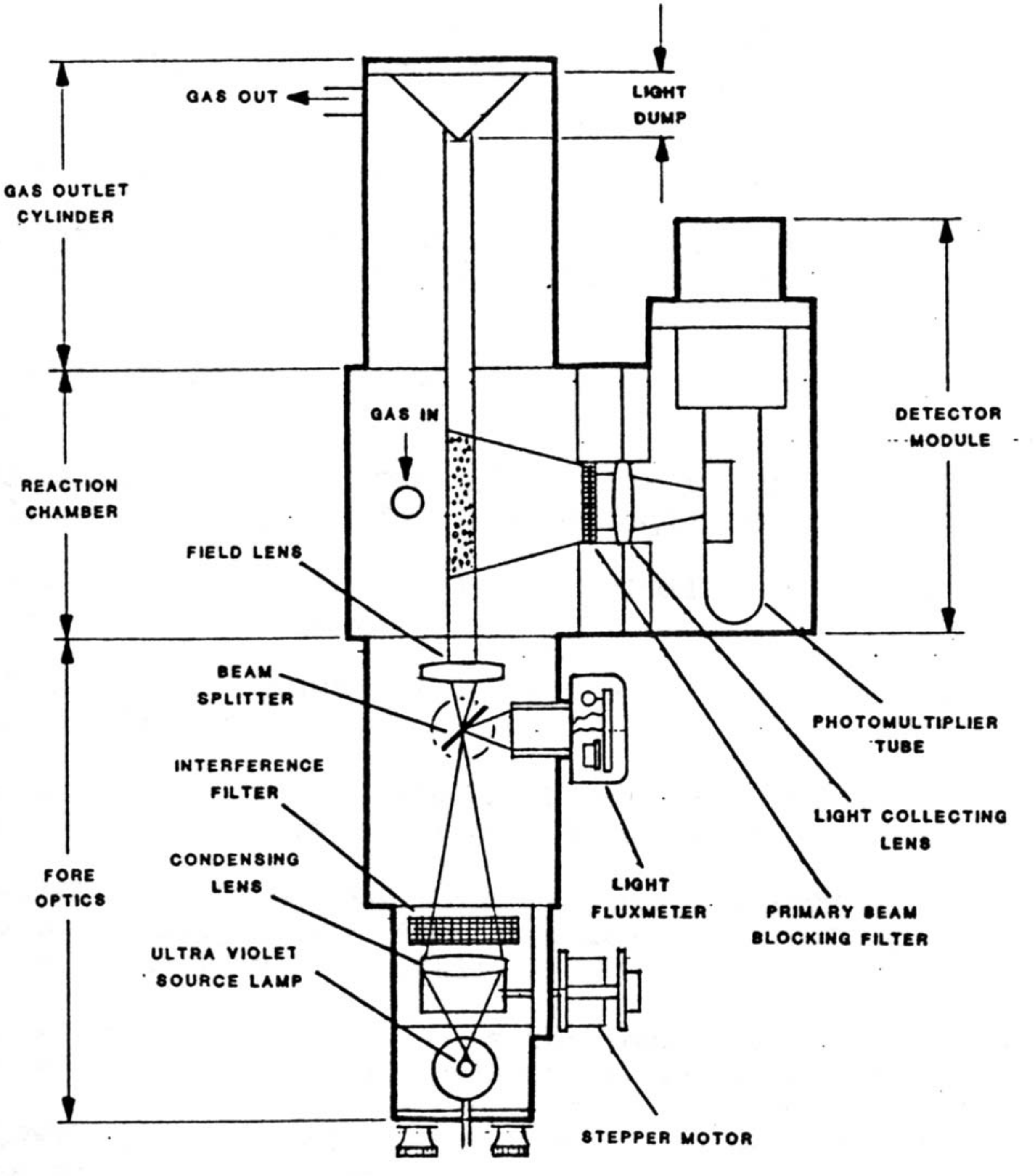






S.M. Ahmed and V. Kumar, *J. Quant. Spectrosc. Radiat. Transfer*, **47**, 359 (1992)

SO_2-Gerät


GAS OUT
LIGHT
DUMP
GAS OUTLET
CYLINDER
DETECTOR
MODULE
GAS IN
REACTION
CHAMBER
FIELD LENS
BEAM
SPLITTER
PHOTOMULTIPLIER
TUBE
INTERFERENCE
FILTER
LIGHT COLLECTING
LENS
CONDENSING
LENS
FORE
OPTICS
LIGHT
FLUXMETER
PRIMARY BEAM
BLOCKING FILTER
ULTRA VIOLET
SOURCE LAMP
STEPPER MOTOR

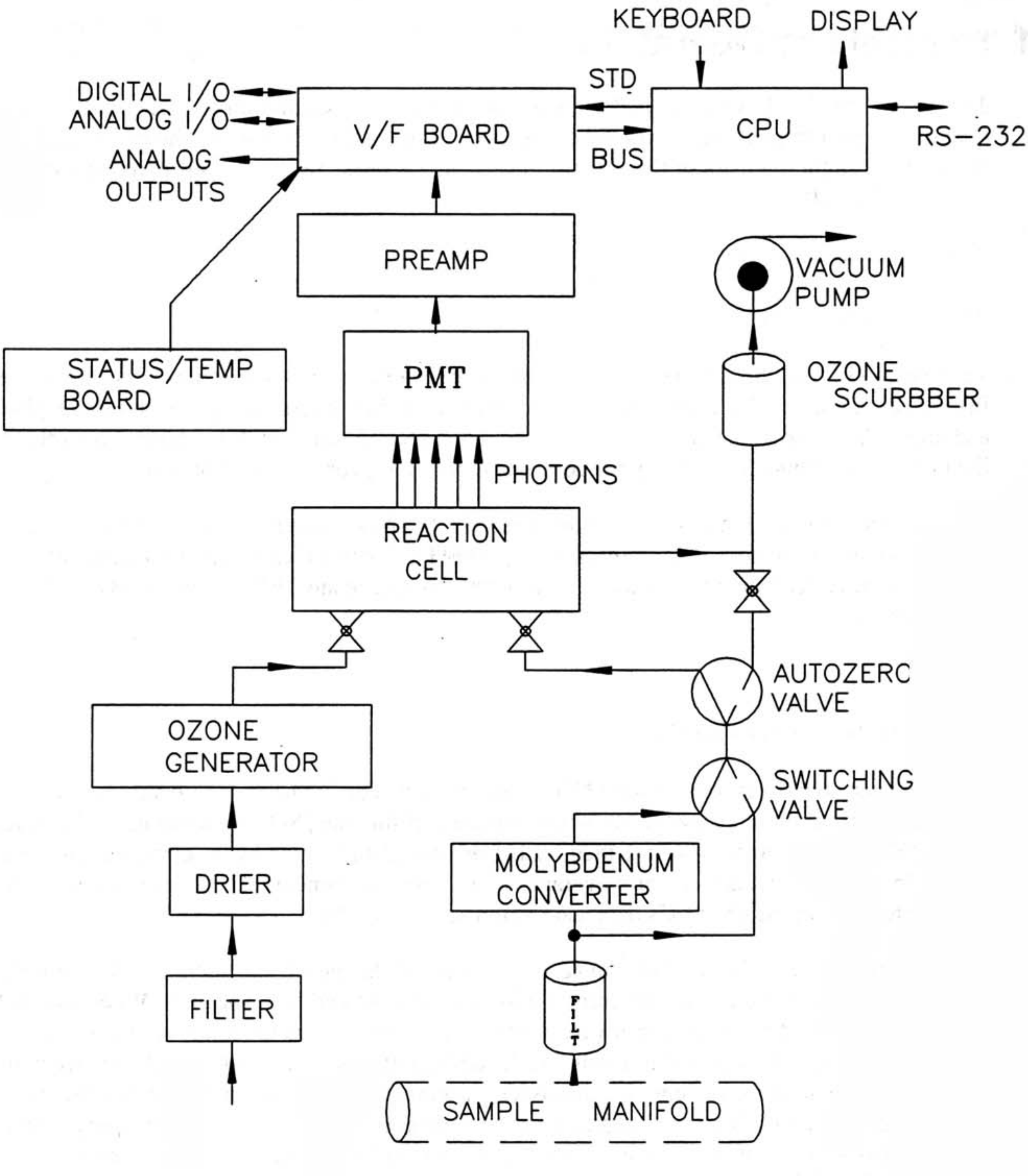


Figure 4-1: Block Diagram

PM10-Messgerät

DASIBI ENVIRONMENTAL CORP. Beta Gauge Front View **TM911003**

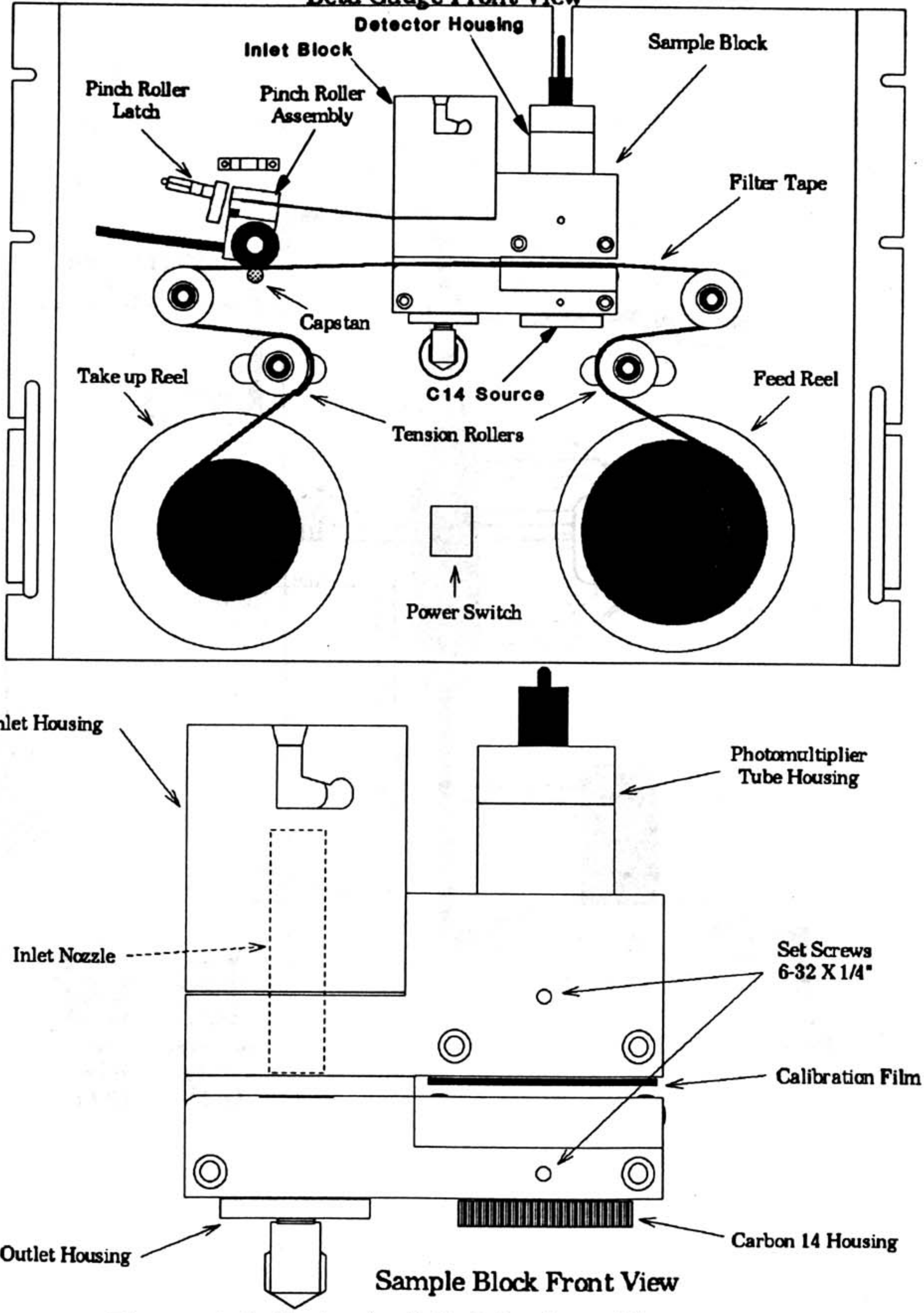


Figure 3-2 Mechanical Module Assembly

TEOM

$$M_{Filter} = K_o \{\frac{1}{f_1^2} - \frac{1}{f_o^2}\} \quad (1)$$

where:

M_{Filter} the weight of the filter registered by the instrument

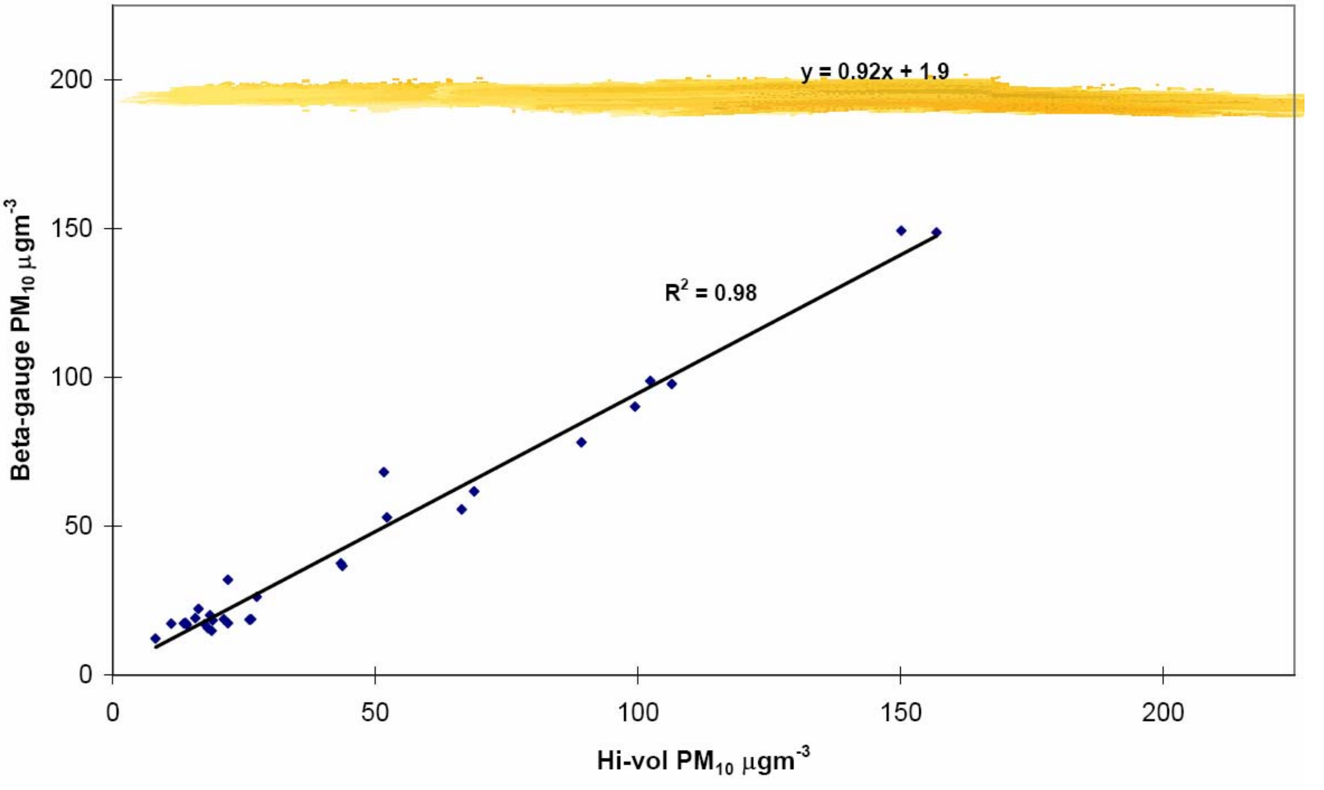
K_o the calibrating constants specific to the device, i.e. instrument constants determined from the relationship between frequency and mass

f_o the frequency when no mass filter is present

f_1 the frequency when a mass filter is present.

Vergleich PM_{10}

NZ Wilton



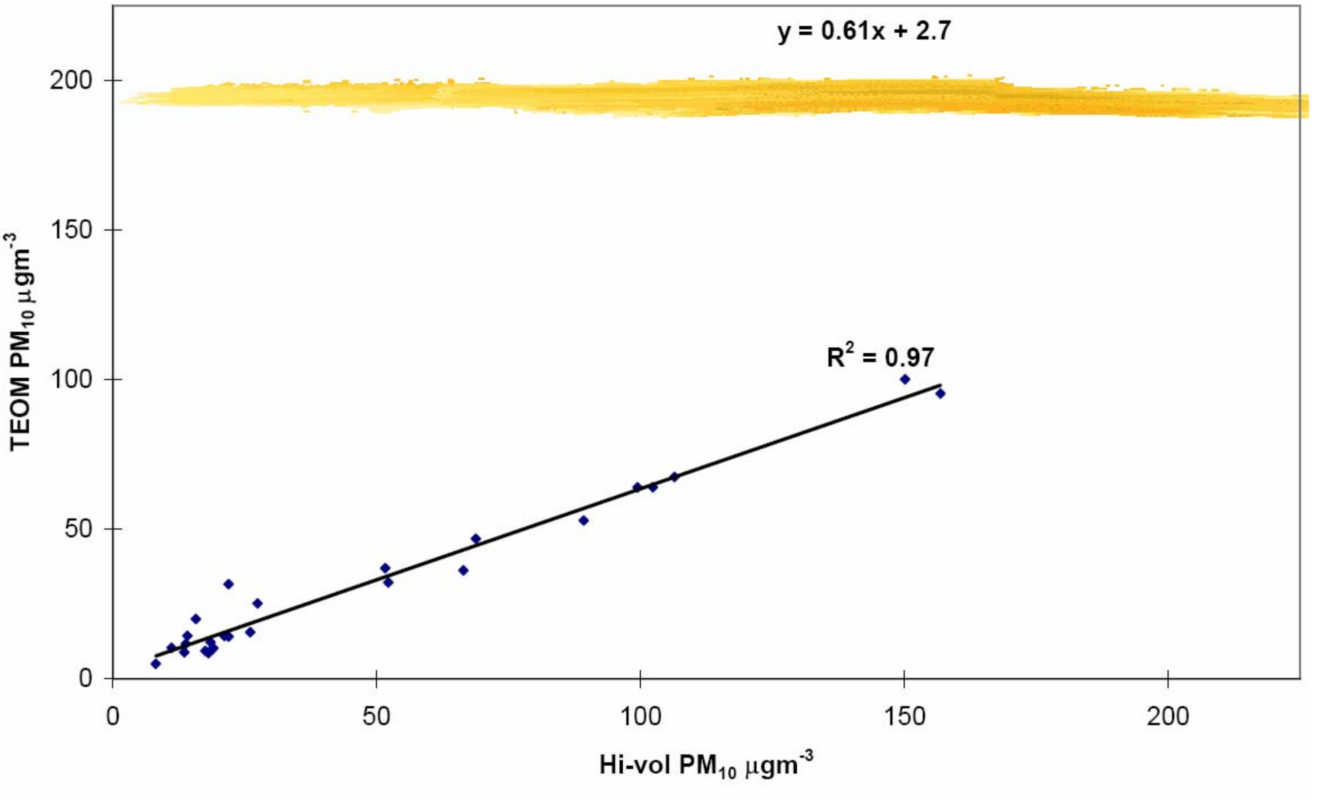
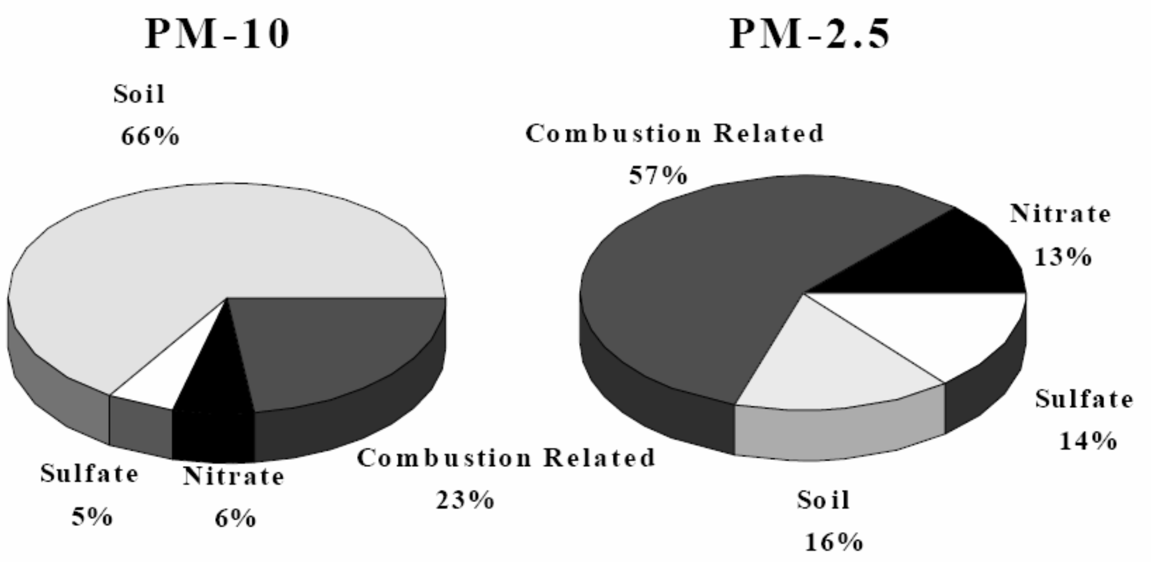


Figure 5

Phoenix

Comparison of PM-10 and PM-2.5 Sources
(Based on Ambient Measurements)



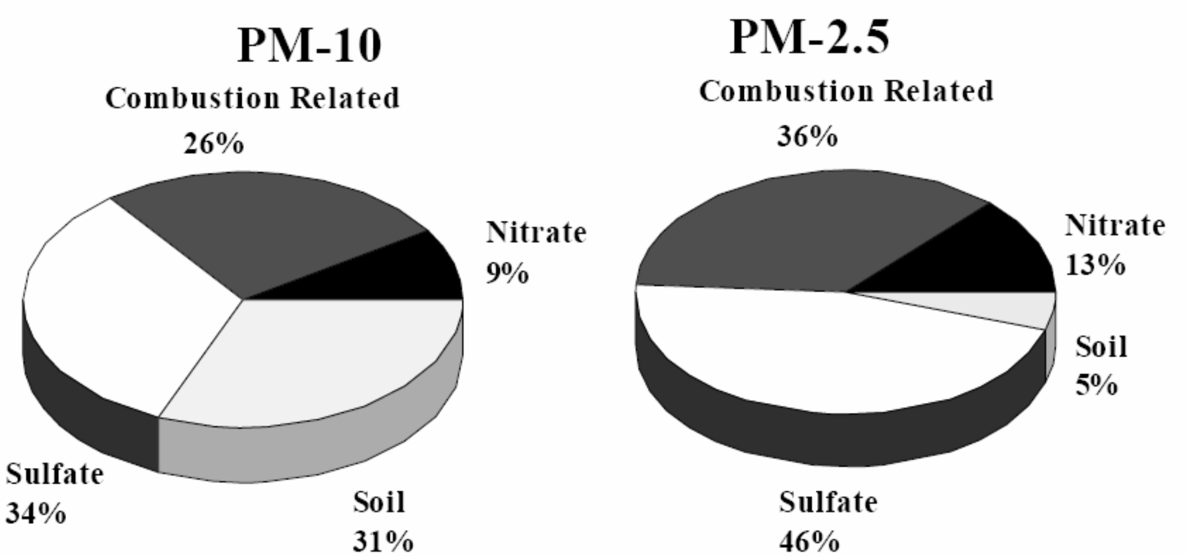
Ref: Adapted from Heloemmen, H., Purdue, L. and J. Bowser, in *Proceedings of Health Effects in Ambient Air* -AWMA Symposium, Prague, CZ, 23-25 April, 1997; Personal communication John G. Watson, Desert Research Institute, Reno, NV, May, 1997

6/5/97 DRAFT

Figure 4

Washington, DC

Comparison of PM-10 and PM-2.5 Sources
(Based on Ambient Measurements)



Ref: Adapted from IMPROVE, Cooperative Center for Research in the Atmosphere CSU, Ft. Collins, CO, July 1996

6/5/97 DRAFT