

# Fluo in Paris

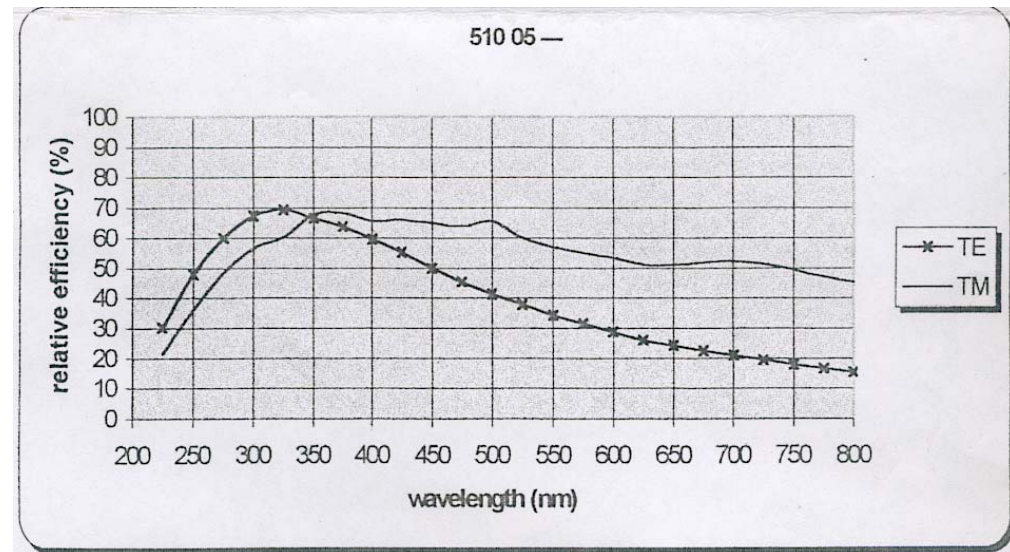
## The Jobin-Yvon



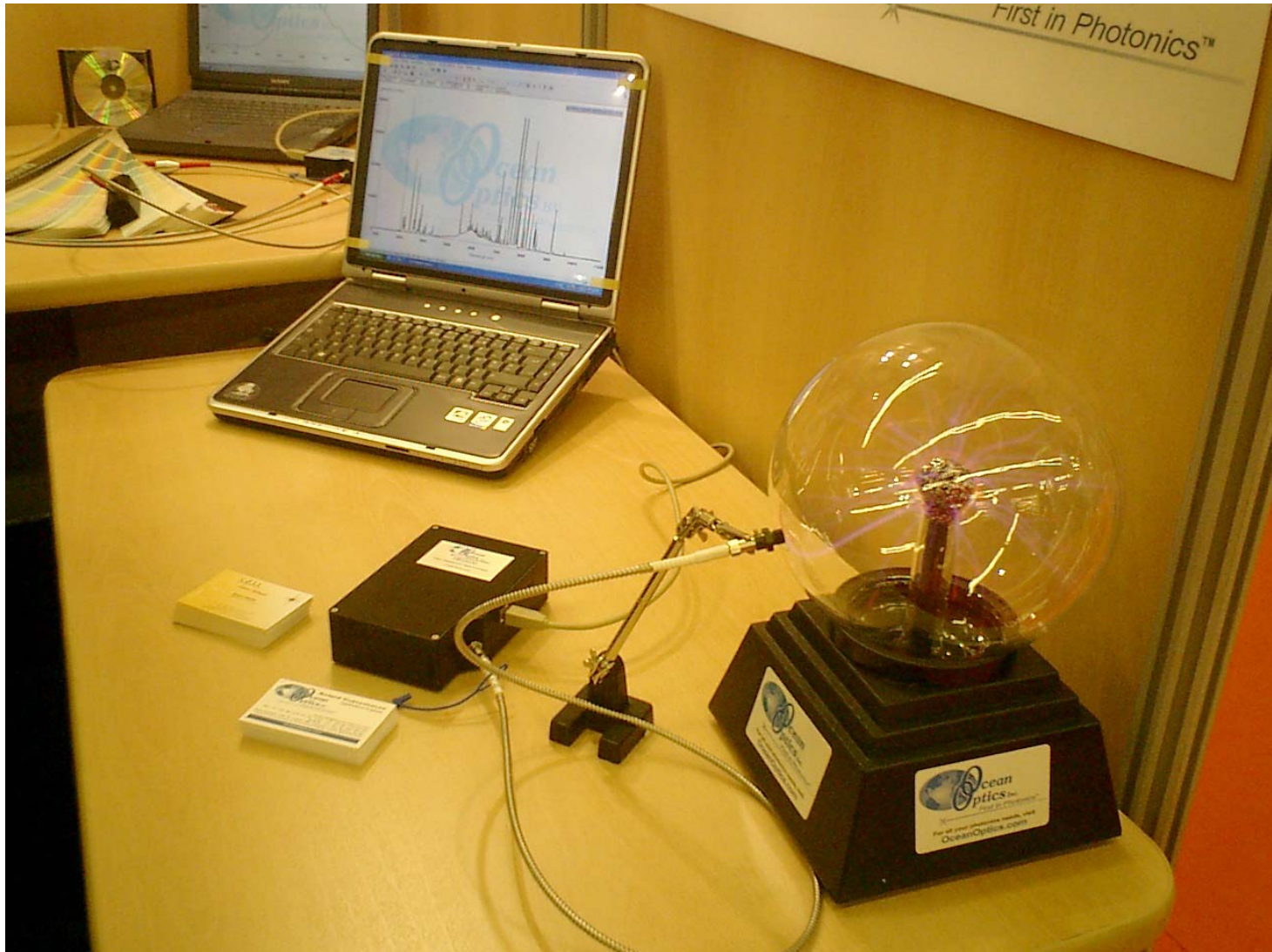
# Jobin-Yvon II

## OPTICAL & MECHANICAL CHARACTERISTICS

Type	Czerny-Turner
Focal	250 mm
Aperture	F/4
Grating	Plane, engraved 58 mm x 58 mm
Counter	in Å for 1200 turns/mm
Resolution	0.3 nm for 1200 turns/mm and slits: vert. 2 mm, hor. 0.05 mm
Accuracy	0.1 nm
Calibration	± 0.5 nm
Reproducibility	0.1 nm
Dispersion in the exit slit plane	3 nm/mm
Mechanical range	0 to 1200 nm
Blaze l	300 nm
Blaze angle	11°25'
Configuration	quasi-littrow



# ANOTHER ONE



Gorodetzky Airlight 03

# REQUIREMENTS

## THIS IS A PRECISION CROSS-SECTION MEASUREMENT

- **BEAM**
  - source strength
  - cuts in energy
  - geometry ( $d\Omega$ )
- **DETECTOR**
  - geometric efficiencies
  - grating efficiency
  - PMTs efficiencies (Arisaka)
  - Electronics dead time
- **VARIABLES**
  - Pressure easy
  - Flux  $O_3$  dissipation
  - Temp necessary?
  - $O_2$  / N constant?
  - Impurities water how to produce?  
how to measure?  
Does it dissolve  $O_2$ ?
  - $CH_4$  ...?
  - $O_3$  ...?
  - Ar,  $CO_2$ , Ne, He,  $H_2$ ,  $N_2O$ ...?

# WHY THE $^{90}\text{Sr}$ SOURCE?

- 1) first, we thought of an  $e^-$  beam, but the drawbacks were
  - $E < 100 \text{ keV}$
  - needs a differential pumping
  - $10^{10} e^-$  is  $\approx 1 \text{ nA}$ . Difficult to go lower; pile-up problems
- 2) Then, we thought of a  $^{90}\text{Sr}$  source
  - solid angle comp. say it is OK
  - $dE/dx$  seems OK  $E > 500 \text{ keV}$

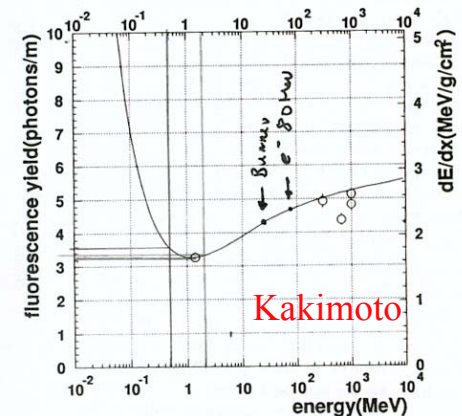
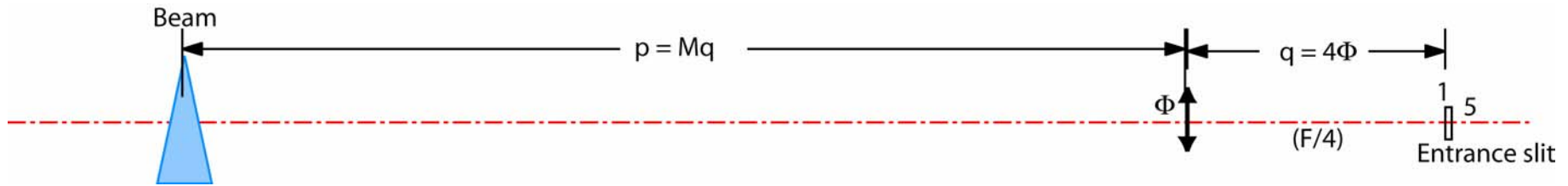
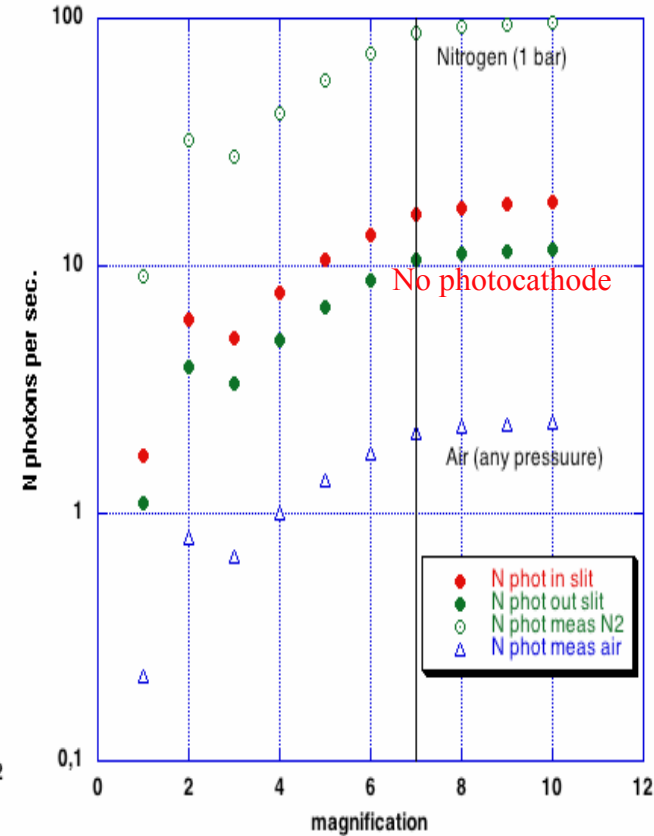
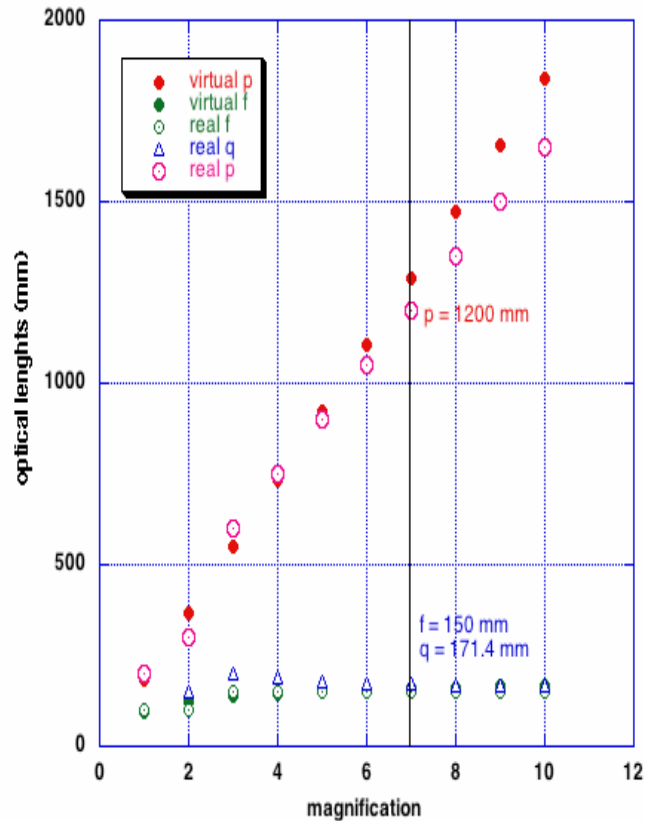
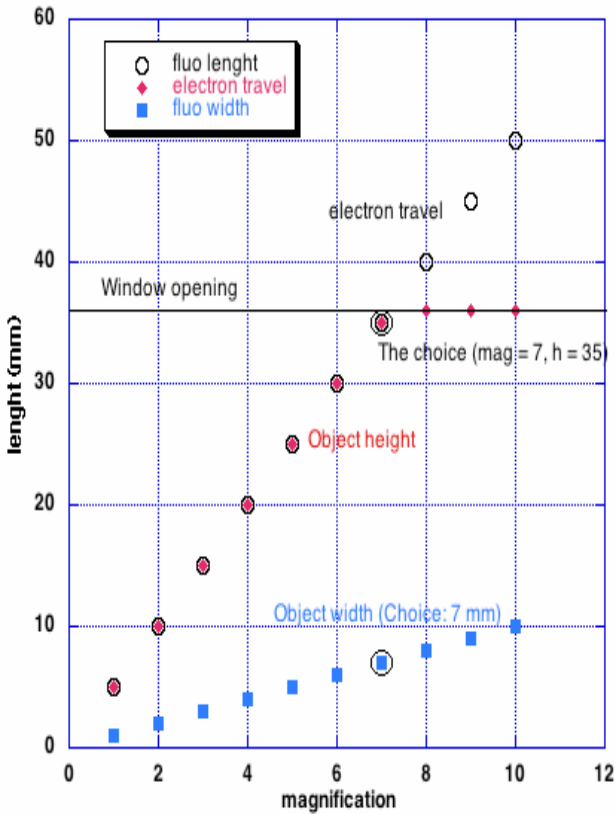


Fig. 7. Energy dependence of nitrogen fluorescence between 300 and 400 nm in dry air at a pressure of 760 mm Hg. The  $dE/dx$  curve is shown as a solid line. The scale of the fluorescence yield is adjusted so that the 1.4 MeV point lies on the  $dE/dx$  curve.

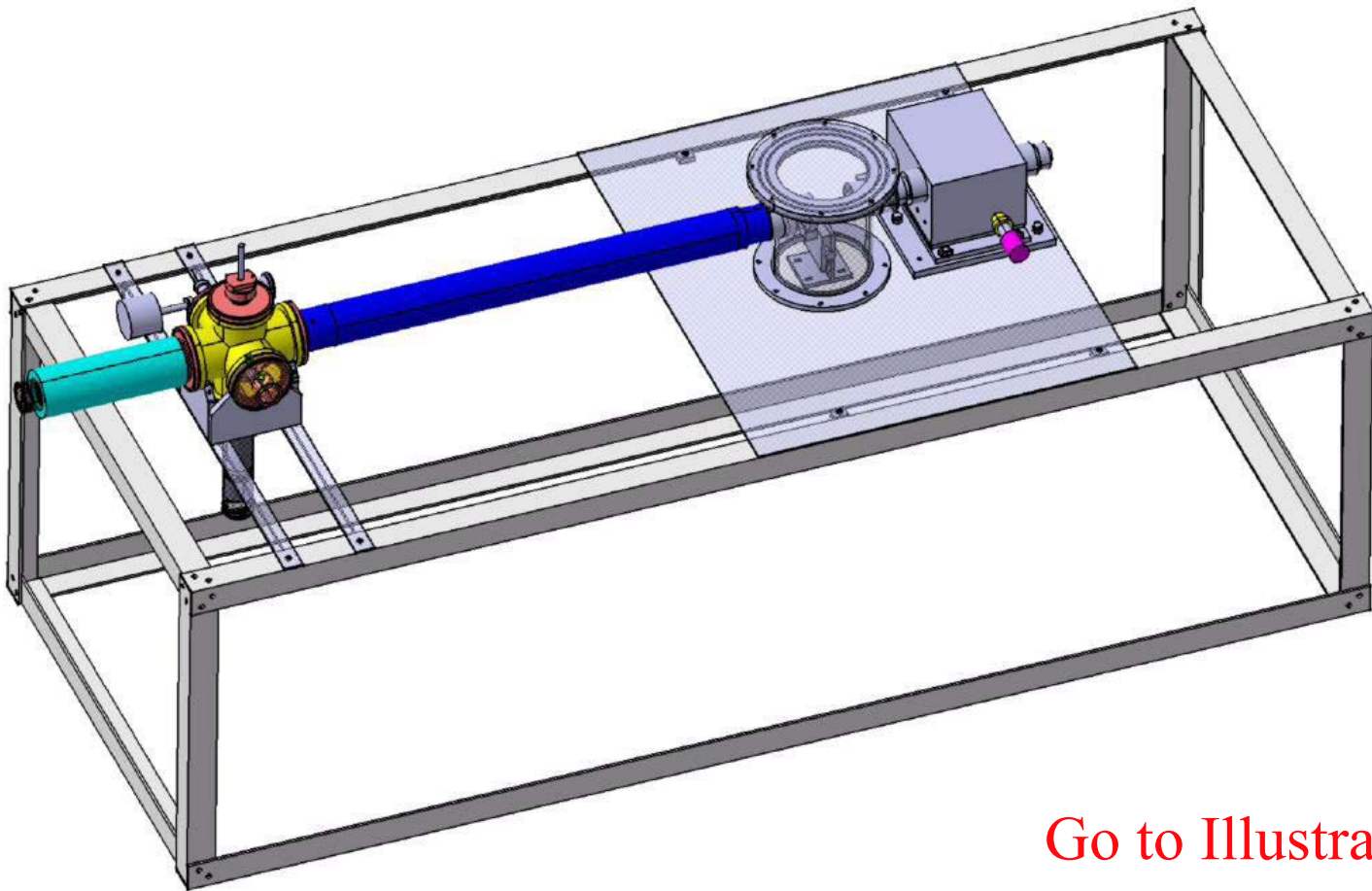
# BASIC GEOMETRY



# Bench parameters

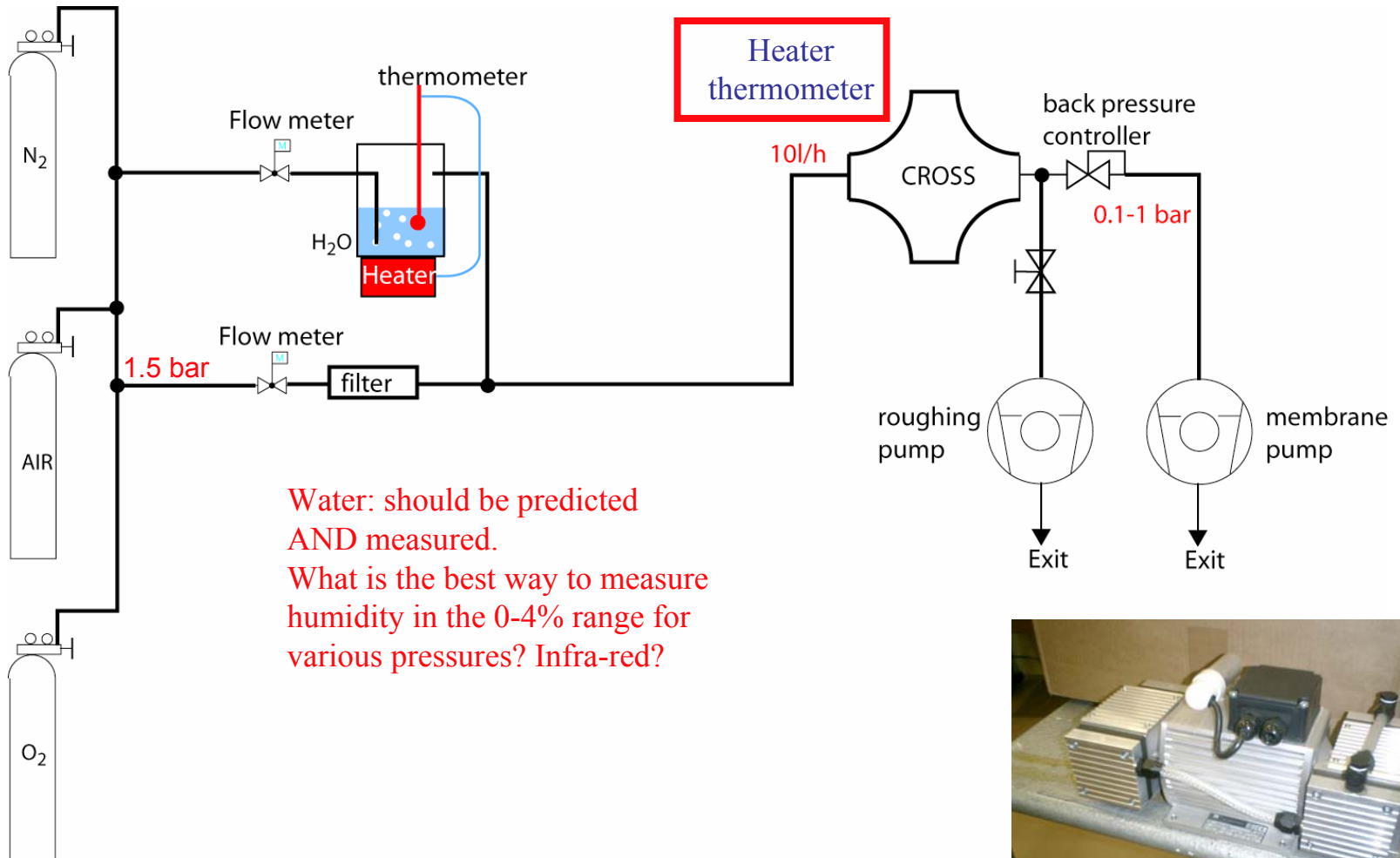


# What it looks like



Go to Illustrator

# Gas system



# STATUS

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This is a typical « homemade » bench

Until a few years ago, the physicist would go to the mechanics and give him his sketches.

Such a bench would have been made in 6 months.

Now, the mechanics accepts only « quality » and « certified » plans. This requires these plans to be made. The direct link with the physicist is weakened and it takes 2 years to accomplish the same task.

We are now assembling everything and should begin to see the ~~light~~ fluorescence end of january 04

# LIGHT PULSER

