

Roaring Spring

Compositions

Name Excimer LOG

School EMG 101 MSC

Grade 11/95

9¾ in. x 7½ in. 100 Leaves

Roaring Spring • Roaring Spring, PA 16673



0 70972 77230 4

FILLING PROCEDURE: 1) EVACUATE EXCIMER TANK

2) IF GAS LINES ARE CONTAMINATED, EVACUATE LINES BY PRESSING SOLENOID VALVE WHILE VACUUM PUMP IS ON. FLUSH LINES W/ He a FEW TIMES \Rightarrow EVACUATE

3) ADD ~~80 mbar~~ 100 Mbar ~~He~~ Xe

2) 80 Mbar HCL MIX

3) 2420 NEON

2600 mbar total.

9³/₄ in. x 7¹/₂ in.

11/8/95

- ① Laser head is connect to power supply
- ② The cable to vacuum pump was loose but was fixed.
- ③ The buffer gas line and regulators are flushed throughly for three times
- ④ Refill gas chamber with He to 2,600. mbar to test the seal. @ 5:30 pm.
- ⑤ The 'remote control' defeating device is still missing.
- ⑥ Water line is not finished yet.
- ⑦ The Halogen filter has been replaced.

11/9/95

- ① Pressure reading is 2,540. mbar @ 9:01am this morning. That may suggest a leak of 60 mbar in 16 hrs. Let's sit it until 5:00pm today to check if the pressure continue to drop to \sim 2510 mbar.

11/9/95

- ① Side window of the vacuum pump has condensation which might be water drops.
- ② The oil level looks too low and also dirty. The oil has to be changed soon.
- ③ $P \approx 2530$ mbar @ 4:34 pm \Rightarrow The system might not be leaking. It needs to be observed over night.

11/10/95

- ① $P \approx 2500$ mbar @ 8:50 am.
 \Rightarrow leak rate ≈ 50 mbar per day.
- ② Drain the vacuum pump oil. The oil looks extremely dirty (looks greenish actually).
- ③ flush the pump twice with fresh oil.
- ④ Refill the pump with fresh oil to $3/4$ of the height on the window.
- ⑤ Fill the gas chamber with He to 2600 mbar @ 10:00 am. Wait and see for the weekend.

~~11/9/95~~ 11/10/95

⑥ $P = 2,600$ mbar still !! @ 4:16 pm.

11/13/95

① $P = 2,560$ mbar @ 8:55 am.

The leak rate is estimated ≈ 10 mbar/day.

11/14/95

① $P = 2,525$ mbar @ 8:40 am.

11/16/95

① $P = 2,495$ mbar @ 10:13 am.

11/20/95

① $P = 2,400$ mbar @ 11:56 am.

② The leak rate is estimate 20 mbar/day, according to the past 10 days' observation.

12/08/95

① $P = 2080$ mbar @ 9:07 am.
Leak rate ≈ 20 mbar/day.

12/08/95 ① Skinner valves for buffer & Noble gases have been replaced.

② Refilled gas chamber with He to 2600 mbar, @ 10:31 am.

④ Connected the noble gas & Halogen gas lines

⑤ Flush them for three times

⑥ Refilled the laser with He to 2,500. mbar (mistake) to ~~test~~ check leakage. @ 3:35 pm

⑦ Regulator reading

gas	prime	secondary
HCl	600 psi	44 psi
He	2,300 psi	39 psi
Xe	300 psi	46 psi
Ne	200 psi	52 psi

⑧ The HCl Regulator looked rusted & ~~was~~ sticky.

12/11/95

① $P = 2600$ mbar in chamber \Rightarrow leaking

② HCl has prime pressure 300 psi
secondary pressure 72 psi
 \Rightarrow leaking

③ Xe 150 psi primary, \approx 100 psi secondary

④ He 1,200 psi primary, 42 psi secondary.

@ 8:50 am.

⑤ Take out the two valves installed last week and inspect for leakage.

⑥ Both valve assemblies have been cleaned and re-installed.

⑦ Refill the laser with He to 2,600. mbar @ 2:00 pm: The room feels warm.

12/12/95

① $P = 2,580$. mbar @ 3:00 pm.

② Passivation: 200 mbar HCl + He mixture in ~~1,500~~ ^{1,300} mbar He, @ 4:24 pm. ($P_t = 1,500$ mbar)

12/13/95

- ① No leak has been found over night,
- ② No visually abnormal symptom was obvious.

③ Refill 200 mbar HCl + He mixture in 1,300 mbar He @ 8:47 am. # of fills

④ Usage of Halogen filter 2/125
↑
life #

⑤ Refill chamber with 100 mbar HCl + He mixture in 2,500 mbar He.

⑥ Plumbing has not been quite finished yet. Continue tomorrow.

⑦ Halogen filter 4/125

12/14/95

① Plumbing looks finished.

② Needle valve is set to 2 l/min @ 58 psi intake pressure. 2 l/min is more than enough for 20 Hz operation.

③ P = ~~2585~~ 2585 psi @ 2:20 pm.

12/14/95

④ Refill The laser with 100 mbar HCl + He in ~~2400~~ 2,500 mbar He.

⑤ Run the laser @ 20.5 KV & 20 Hz from 2:33 pm.

→ ⑥ Refill The laser with laser gas

⑦ Power = ~~576~~ 576 mV @ 20 Hz & 20.5 KV @ 3:35 pm
Power = ~~454~~ 254 mV @ 2 Hz & 20.5 KV

⑧ 3.17 mV = 1 MJ ⇒ Power = 188 MJ @ 20 Hz
Power = 197 MJ @ 2 Hz

⑨ Laser being running for 1 hr.

Power = 556 mV (175 MJ) @ 20 Hz & 20.5 KV
Power = 526 mV (166 MJ) @ 2 Hz & 20.5 KV

Pressure = 2620 mbar in chamber

⑩ Shut-down @ 4:41 pm.

⑪ P = 2620 mbar @ 4:57 pm.

12/15/95

- ① $P = 2620$ mbar @ 8:22 am.
- ② Switch-on the power supply,
- ③ Power = 596 mV @ 2 Hz & 20.5 kV
Power = 614 mV @ 20 Hz & 20.5 kV
- ④ Shut down @ 8:36 am.
- ⑤ Halogen filter usage = 6/125
- ⑥ The broken 75 Ω power resistor has been replaced
Power = 582 mV @ 2 Hz & 20.5 kV @ 4:04 pm
Power = 608 mV @ 20 Hz & 20.5 kV
- ⑦ Run for about an hour to test stability
- ⑧ Power = 560 mV @ 20 Hz & 20.5 kV @ 4:50 pm
- ⑨ Pressure = 2620 mbar still.

12/18/95

- ① $P = 2595$ mbar
- ② Power = 582 mV @ 20 Hz & 20.5 kV

12/19/95

- ① $P = 2585$ mbar
- ② Power = 582 mV @ 20 Hz & 20.5 kV
- ③ There is suspicious noise from laser head. It sounds like bad bearing on the gas circulator. However, the noise went away after the circulator is running for 5 min's.

12/20/95

- ① $P = 2590$ mbar ~~is~~ cold.
- ② Power = 608 mV @ 20 Hz & 20.5 kV

12/21/95

- ① $P = 2580$ mbar cold
- ② Power = ~~608~~ 618 mV @ 20 Hz & 20.5 kV

12/22/95

- ① $P = 2580$ mbar cold
- ② Power = 574 mV @ 20 Hz & 20.5 kV (running) 8:45 am
- ③ Power = 558 mV @ 20 Hz & 20.5 kV 11:03 am
 $P = 2600$ mbar warm.

~~12/27/95~~

12/29/95

- ① $P = 2500$ mbar @ 11:30 am.
- leak rate \approx ~~100~~ 100 mbar/15 days.
 ≈ 6 mbar/day.

- ② Power = 522 mV @ 20 Hz & > 0.5 kV
 \downarrow
164 mJ/pulse

1/9/96

- ① $P = 2,430$ mbar @ 4:20 pm.
- ② leak rate ≈ 170 mbar/26 day ≈ 5 mbar/day.

1/31/96

- ① $P = 2,310$ mbar @ 9:40 am
- ② Leak rate ≈ 190 mbar/32 days

3/7/96

- ① Pump out the gas inside
- ② Back fill chamber with 1,500 mbar He.

3/10/98

- ① pressure is found dropped to 900 mbar
oops!
- ② pump it down
- ③ flush gas line & regulator 4 times
- ④ Back fill with Ne to 1,500 mbar.

3/30/98

- ① Pressure has dropped to 1,100 mbar
- ② evacuate the gas chamber and
refill it ~~to~~ with Ne to 1,500 mbar.

3/14/00

Inspector of gauges both are
reading just below 1000 mbar
(the low one 960). The last
thing Chen did was to fill
to 1500 mbar Ne. This should be
the first fill

Inspector of gases. Ne (blue)
is still counted. The He is also
counted. The Xe (yellow) is
not