Standard operating condition

Volume ~ 28 L

Gas: P10, Isobutane, H, D

Pressure: 0.1 – 1 atm
Gas handler
Current gas flow scheme

Gas handler

- Needle valve
- Gate valve
- 1~2 m Braided plastic tube
- Pressure relief valve
- 5 m Alum. tube
- 0.5 L/s
- Down to (at least) 0.03 L/s
- Vent at the wall
- Data metrics 1404 valve controller
- Regulator
- Rotary Pump (Edwards E2M8)
- Flow Meter

TPC

- 1~2 m Alum. tube
- Vent at the wall
- Rotary Pump

Air
New gas flow scheme

Gas handler

- Needle valve
- Gate valve
- Pressure relief valve
- 1~2 m SS tube
- 1~2 m Alum. tube
- 5 m Alum. tube
- Rotary Pump (Edwards E2M8)
- Data metrics 1404 valve controller

TPC

- Dry N
- Vent at the wall
- H < 5%

H

Flow Meter

- e.g. 0.03 L/s
- e.g. 0.6 L/s

Flow Meter

- w/ Micrometer
- w/ Micrometer

Regulator

Ar

P10
Filling procedure

1. Pumping down the TPC (~0.1 Torr)
2. Fill up the TPC with Ar (~1 atm)
3. Pumping down again
4. Fill up with a flammable gas.
   • Pressures of 0.1-1.0 atm
   • We can make a gas mixture at this stage (e.g. Ar+H).
5. Close the valve
Vent procedure

We use the micrometer-needle valve line for evacuation.

1. Control the flow of Dry N and H (Set appropriate values of the micrometers.)
2. Open the pump valve.
Comments

• Interlock system for possible flash-back is needed
• All flexible hoses and piping systems must be electrically grounded.
• Remove the combustible materials (e.g., plastic tube).
• Ignition sources should be put away from the chamber, or on the floor.
• Relief valve should be connected to the vent.
• What is the threshold pressure of the relief valve?

• Read the reference “Hydrogen gas safety” (Los Alamos)
• Prepare precaution labels
• Flammable gas detector will be placed at the ceiling.

• Once the new system will be completed, we will perform a drive run with He.