How low do you need to pump?

- E. beam: just clear anything & transfer
  - E-beam, just clear anything & transfer
  - fusion board
  - fusion board
- Water (front door)
- Water (front door)
- Hard gold
- Aluminum
- Vaper

(melt)

Porous Leader (substrate)

incident
\[
\frac{5}{\phi} \text{ m/s} \quad \frac{3}{\phi} \text{ L/s} \\
\text{Melt Ar} \text{ at low flow} \text{ Al}_2 \text{ O}_3
\]

- Keep low enough to deposit

- Melt \text{ LiO} \text{ SiO}_2 \text{ to reduce}

- Keep \text{ P} low enough to float

\text{Si} \text{ to get a much more uniform glass}

---

\[ \text{L/s} \text{ m/s} \]

\[ \frac{D}{\text{cm}^2} = \frac{\text{g/cm}^3 \times \text{cm}^3}{\text{g} \text{ cm}^3} \]

\[ \text{m}^3 \text{ cm}^{-1} \text{ cm} \times \text{s} \]

\[ \Phi \text{ flux} = \phi \text{ molec. imp./s} \]
Some metals have volatile halogen compounds, e.g., AlCl₃, WF₅, SiF₄, others do not, e.g., Au, Cu.

To make a mask where you don't want the metal, deposit a non-conducting process (e.g., CVD).

Remove mask and etch metal.

Deposit metal and pattern in oxide.

Deposit Cu, Sn, Au.

Dry etch pattern in oxide.

Remove mask and etch metal.

Some metals have volatile halogen compounds.

E.g., AlCl₃, WF₅, SiF₄, others do not, e.g., Au, Cu.

Harden PE surface to avoid bumping a sidewall.

Strengthen a sidewall.