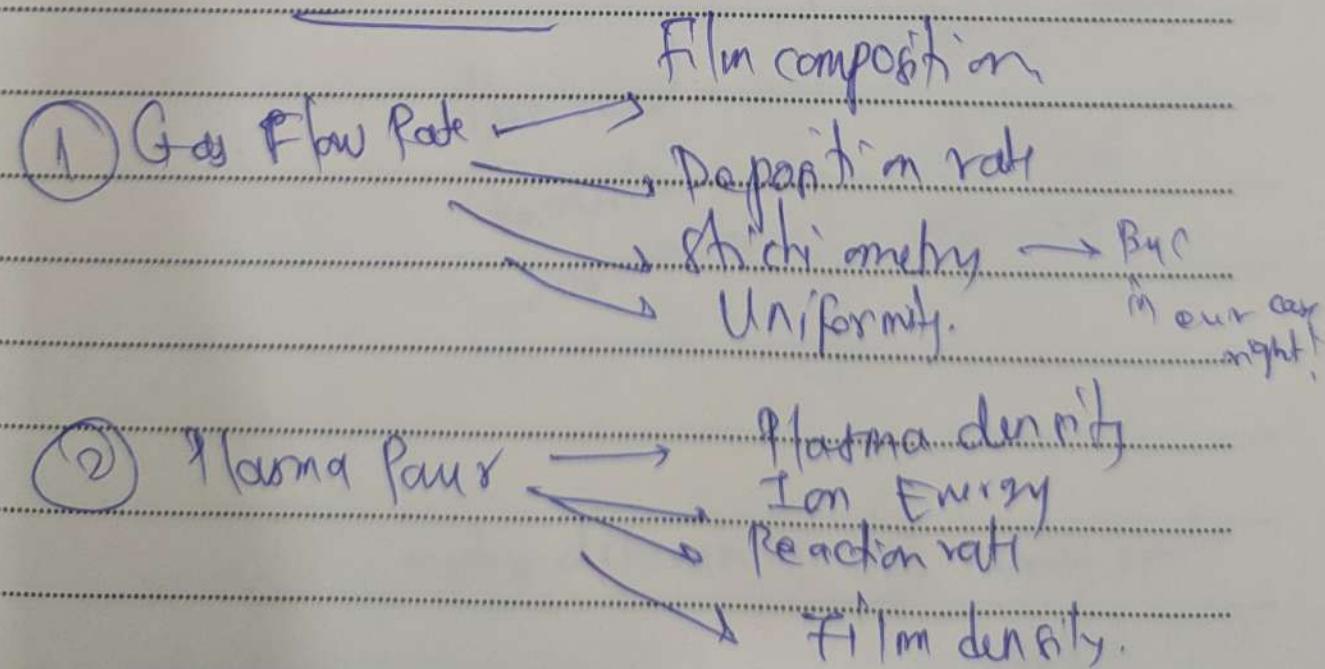


- ↓ initial pressure PC VP 10^{-2} mbar
 Base Pressure ↓ multistage 5×10^{-2} mbar
 up stream Operating Pressure
- * Gas flow rate (ccm) + has to be controlled
 - * Plasma Power (RF power, microwave power, etc)
 - * Substrate Temp (500°C)
 - * DC Bias (self biased).
 ↳ to attract Fe

What controls what?



③ Chamber Pressure
→ mean free path of particles
→ collision frequency
→ plasma uniformity
→ film microstructure.

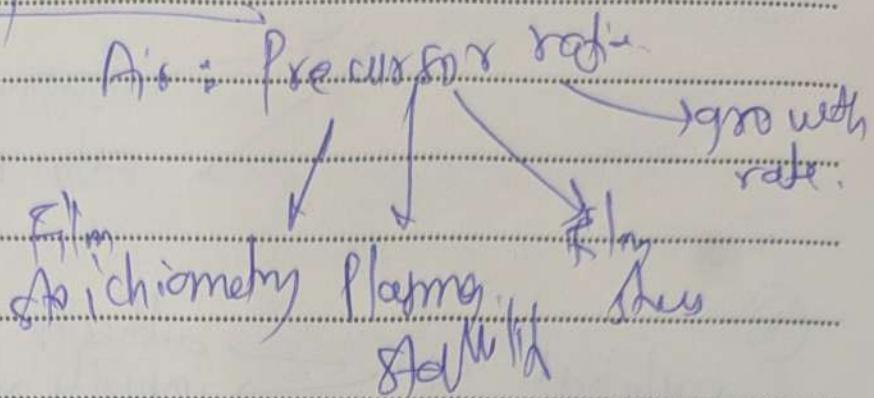
④ Substrate temp.
→ adhesion
→ impurity removal
→ film crystallinity
→ film stress.

⑤ DC Bias → Adhesion
→ film density
→ surface roughness

⑥ DRS → optical emission spectra
for Argon.
what it gives:
theoretical
char. Peak in
visible, IR
UV region.

⑦ Builid. Temp → vapour pressure
→ precursor concentration
→ deposition rate.

Gay Composition ratio



All the parameters control :-

- ① Film thickness
- ② Film composition
- ③ Film density
- ④ Surface roughness
- ⑤ Electrical / optical properties
- ⑥ Mechanical stress

PCVD. 1

Working parameters again:-

Plasma power, Gas flow Rate, chamber

Pressure, substrate temp, substrate bias,

precursor delivery conditions

changes