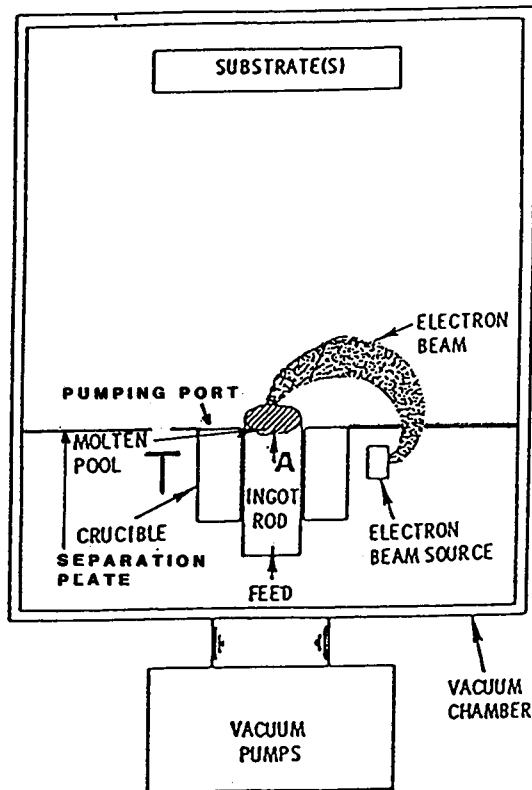


II. Evaporation



Vaporization

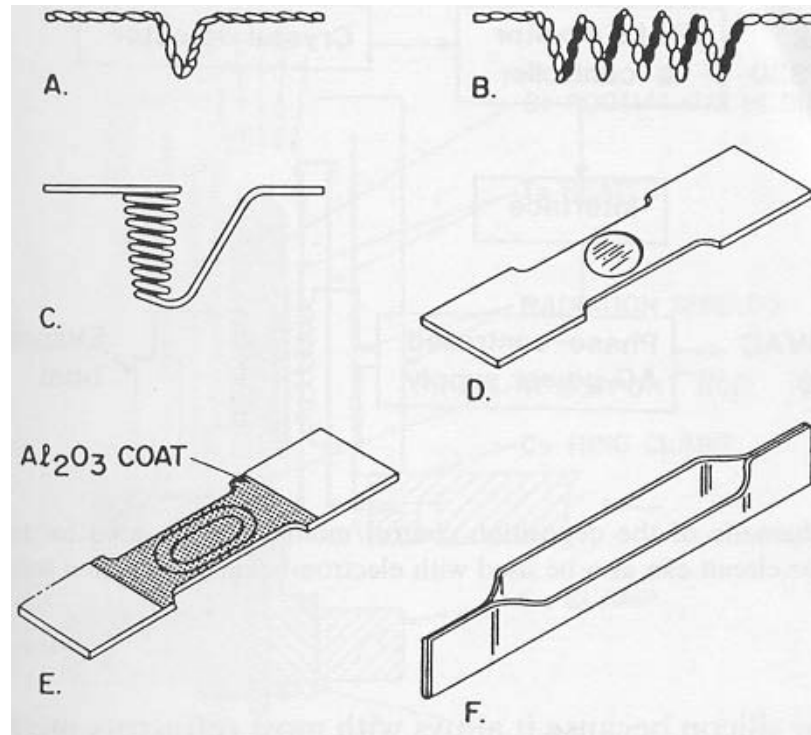
$<10^{-5}$ torr

Long mean free path
 $5/P(\text{mtorr})$ cm

Line-of-sight transport

Evaporation Source

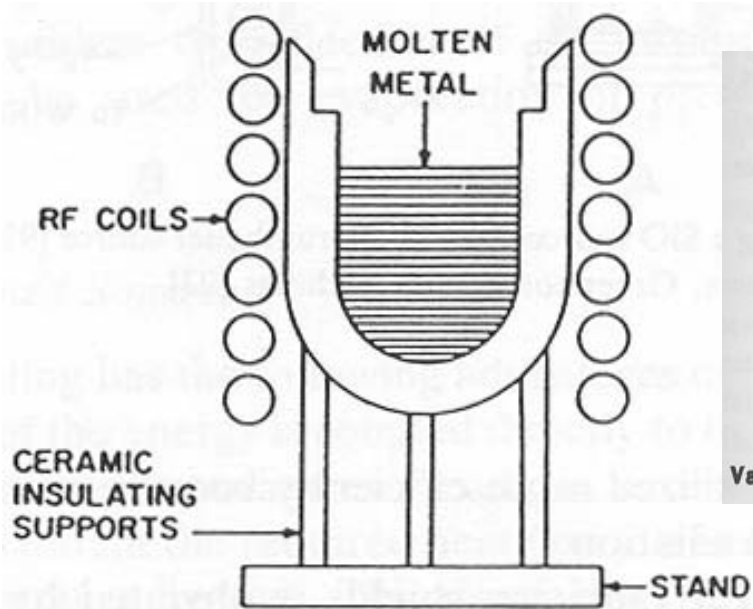
Resistance heating



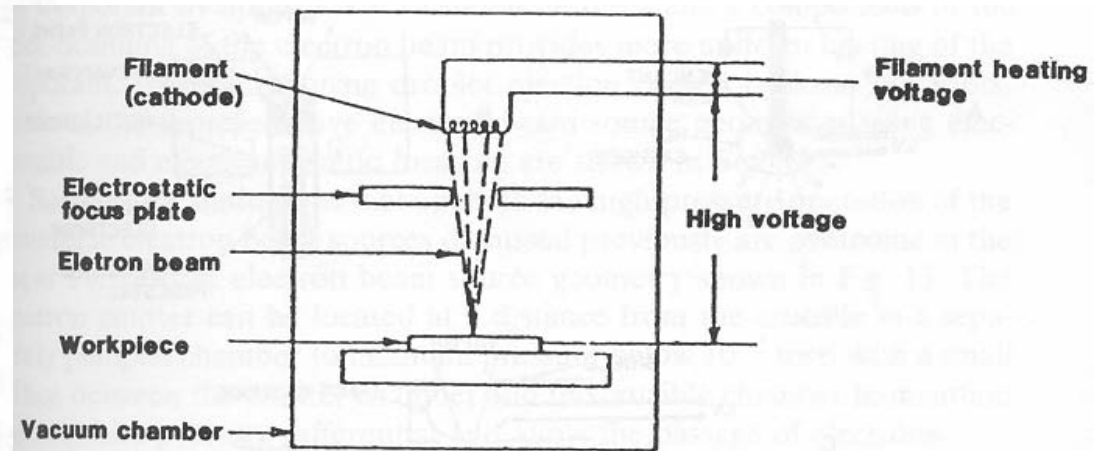
Source stability & compatibility

Evaporation Source

Induction



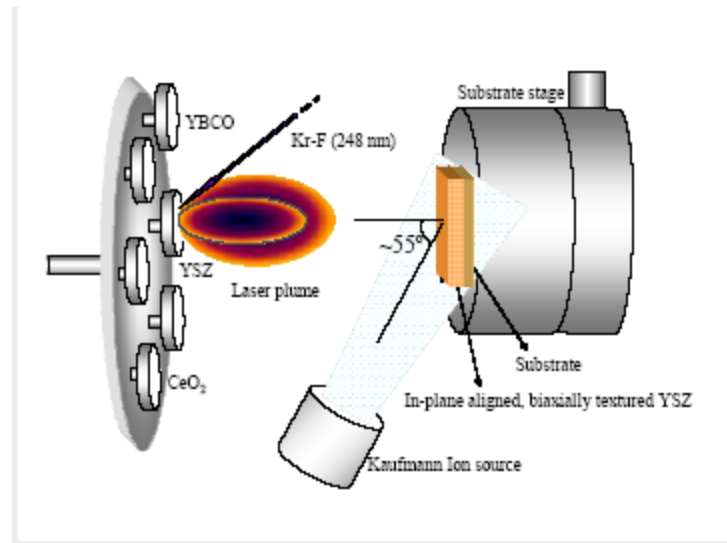
Electron-beam



Variations

Other Evaporation Source

Laser (pulsed laser ablation/deposition, PLD)



Neocera

Rapid removal of materials due to absorption of UV irradiation energy-
“explosive” evaporation

Non-equilibrium deposition

Anisotropic flux; droplets, target usage

Variations

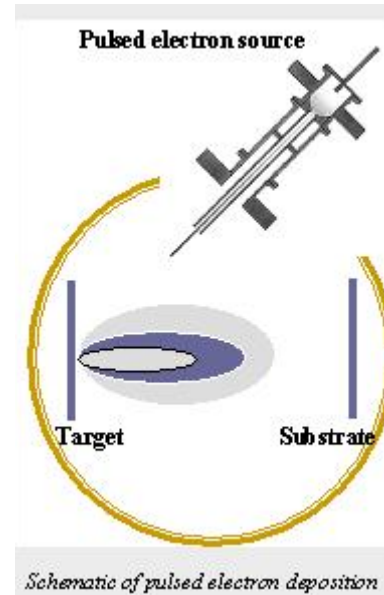
Other Evaporation Source

Electron (PED)

Sublimation

Evaporation method

Reactive



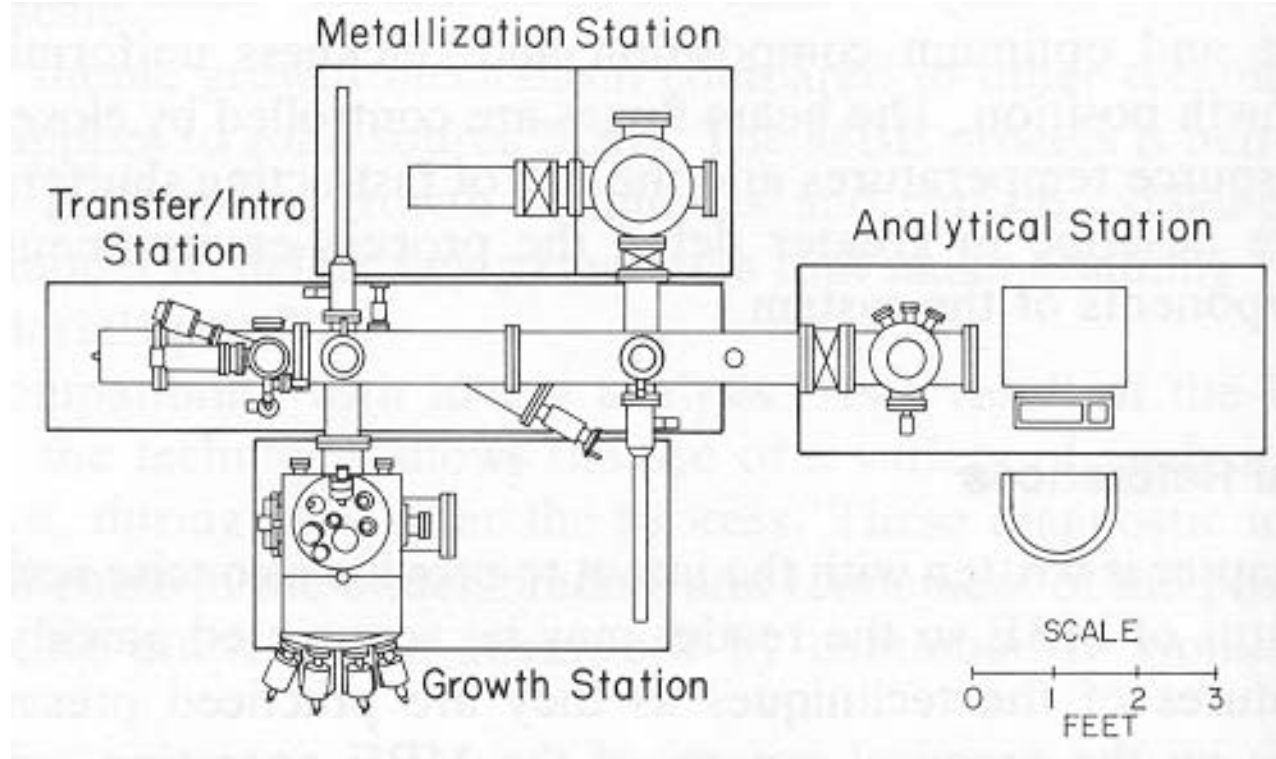
Neocera

100ns pulse

High power e-beam
(10^8 W/cm^2)

Ablation range on
target: microns

Molecular Beam Epitaxy (MBE)



Source

Refined UHV evaporation
Low growth rate, 2D growth
in-situ analysis

Effusion (Knudsen) cell
Dissociation (Cracker) source
E-beam