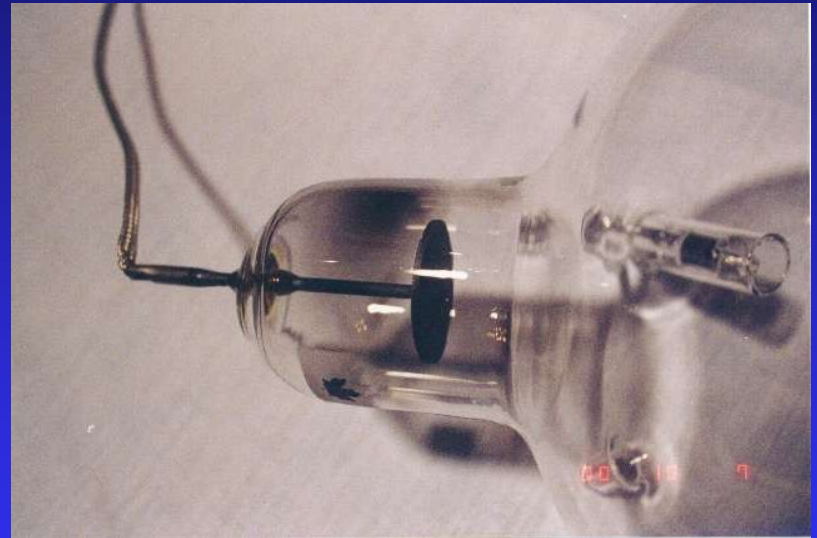
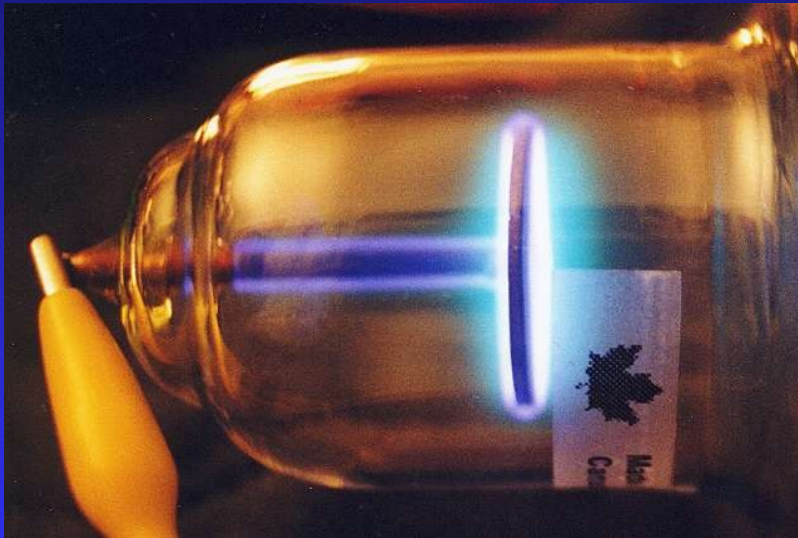
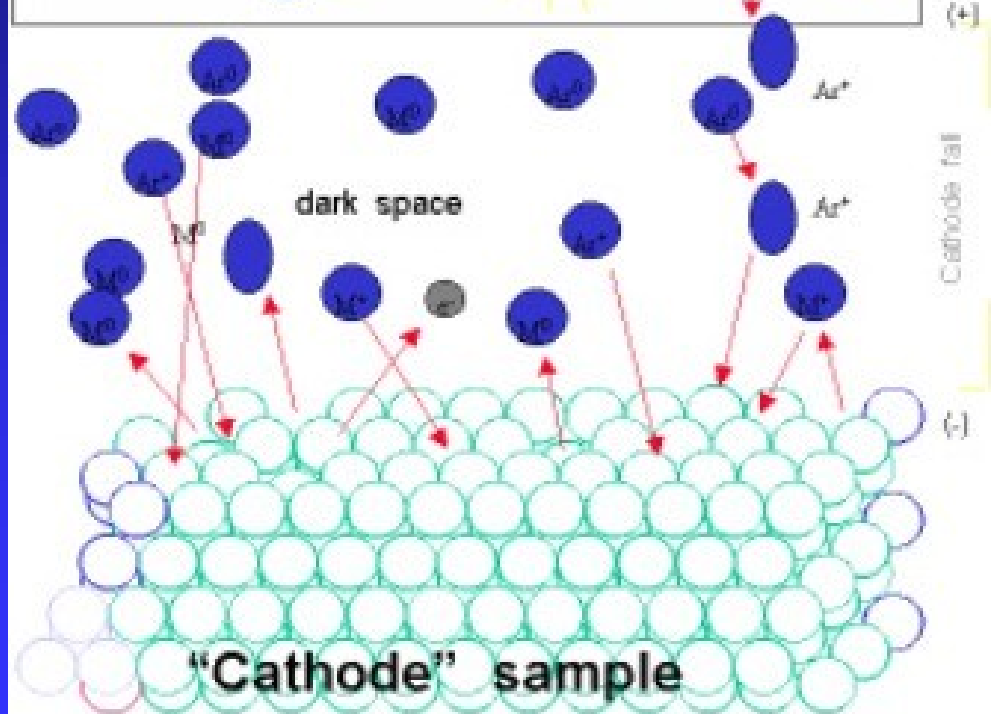
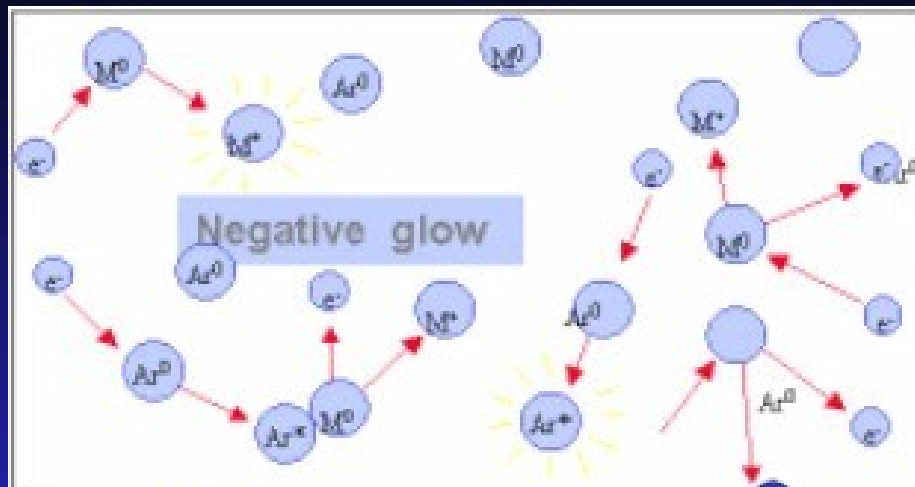


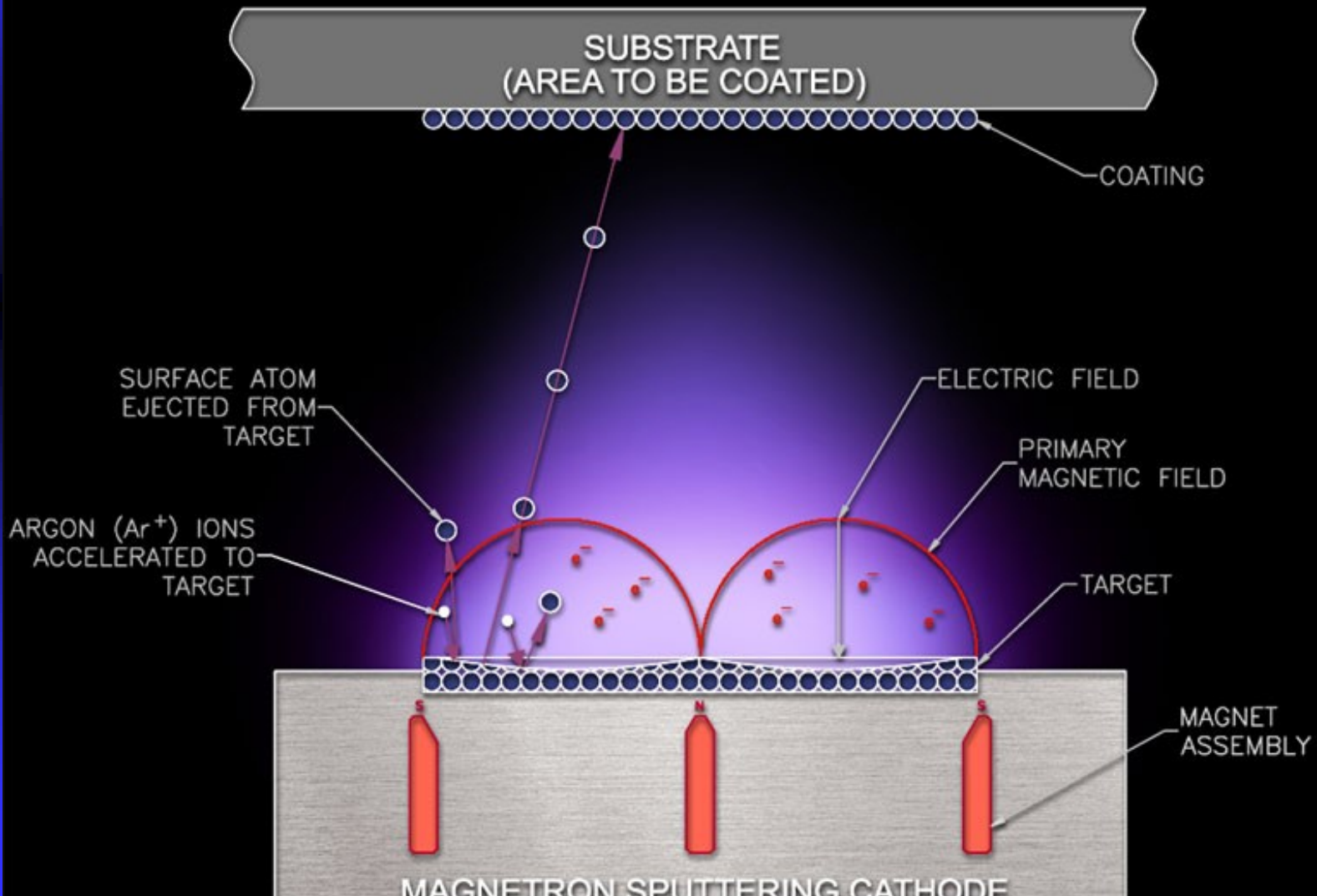
# Aplikácie javov na katóde tlecieho výboja

- katódové rozprašovanie





# Magnetron



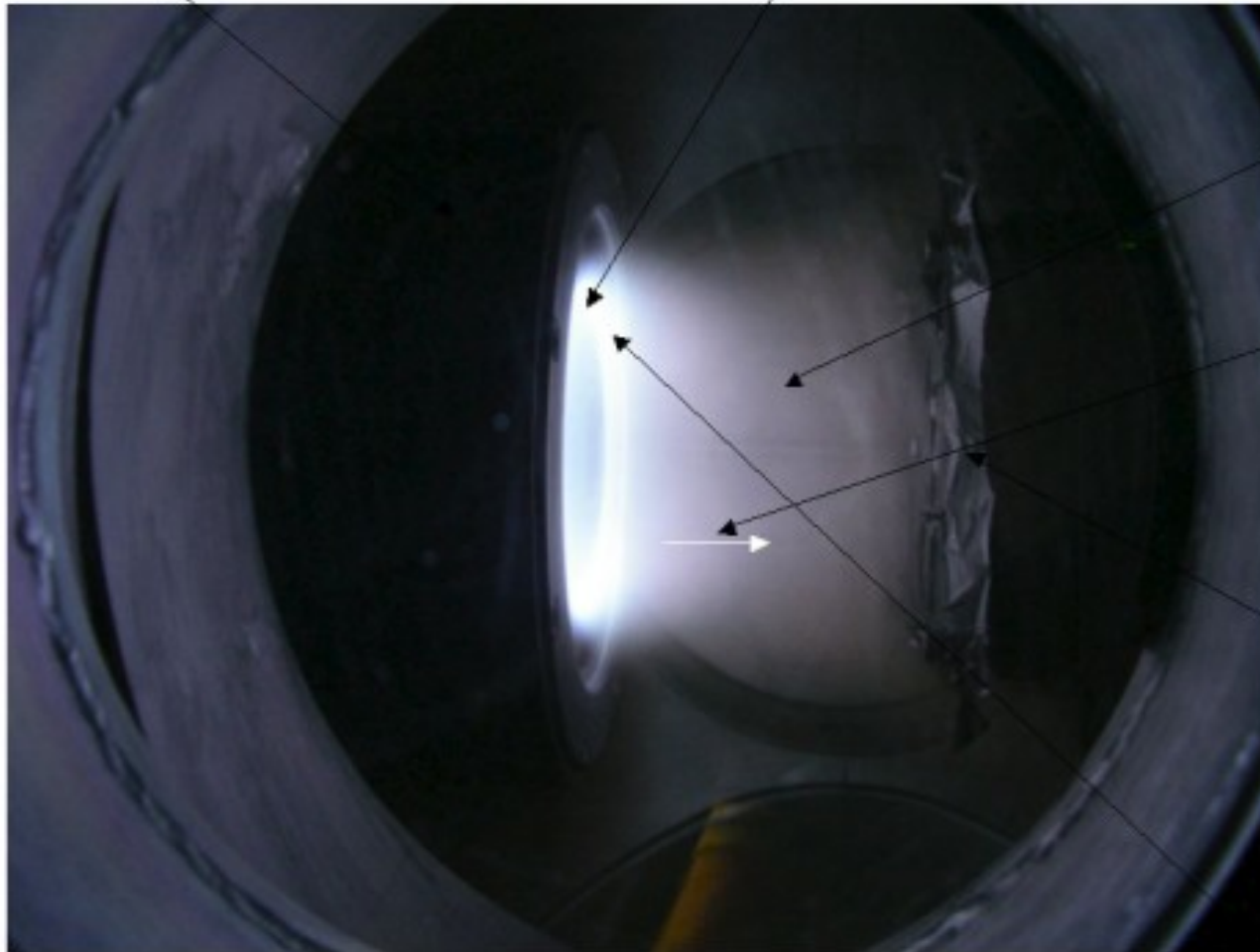
Magnetron  
source

Titanium target

Excited argon  
gas

Sputtered  
atoms in  
direction  
of arrow

Metal  
substrate

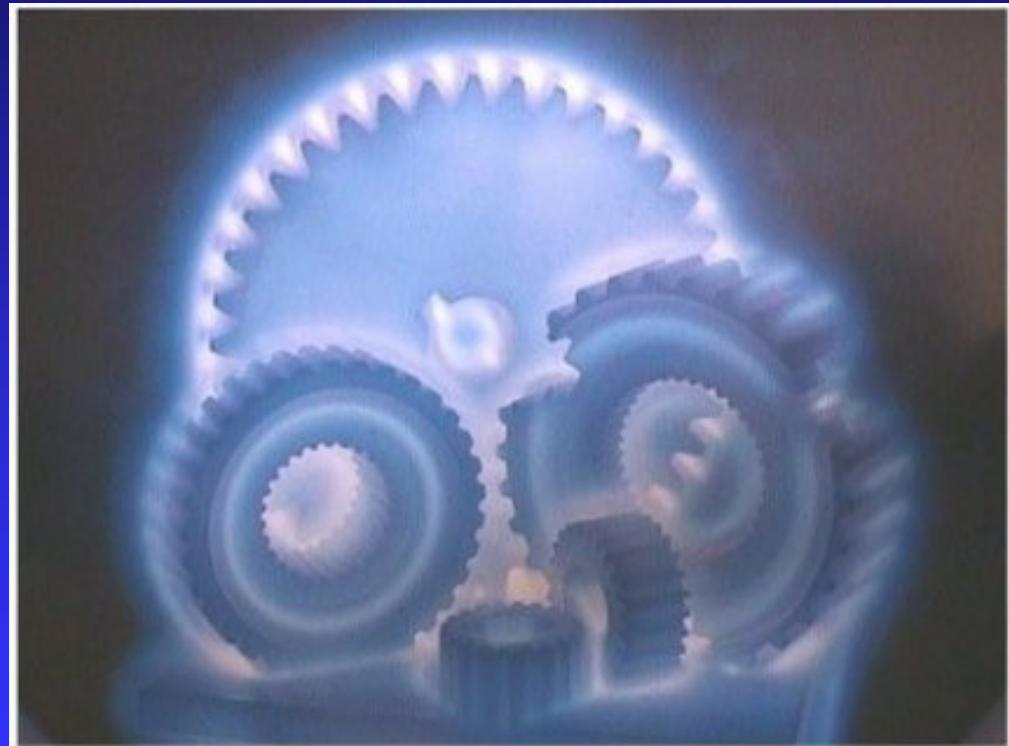


Bright plasma ring – electrons trapped in the magnetic field which emanates from a set magnets behind the target

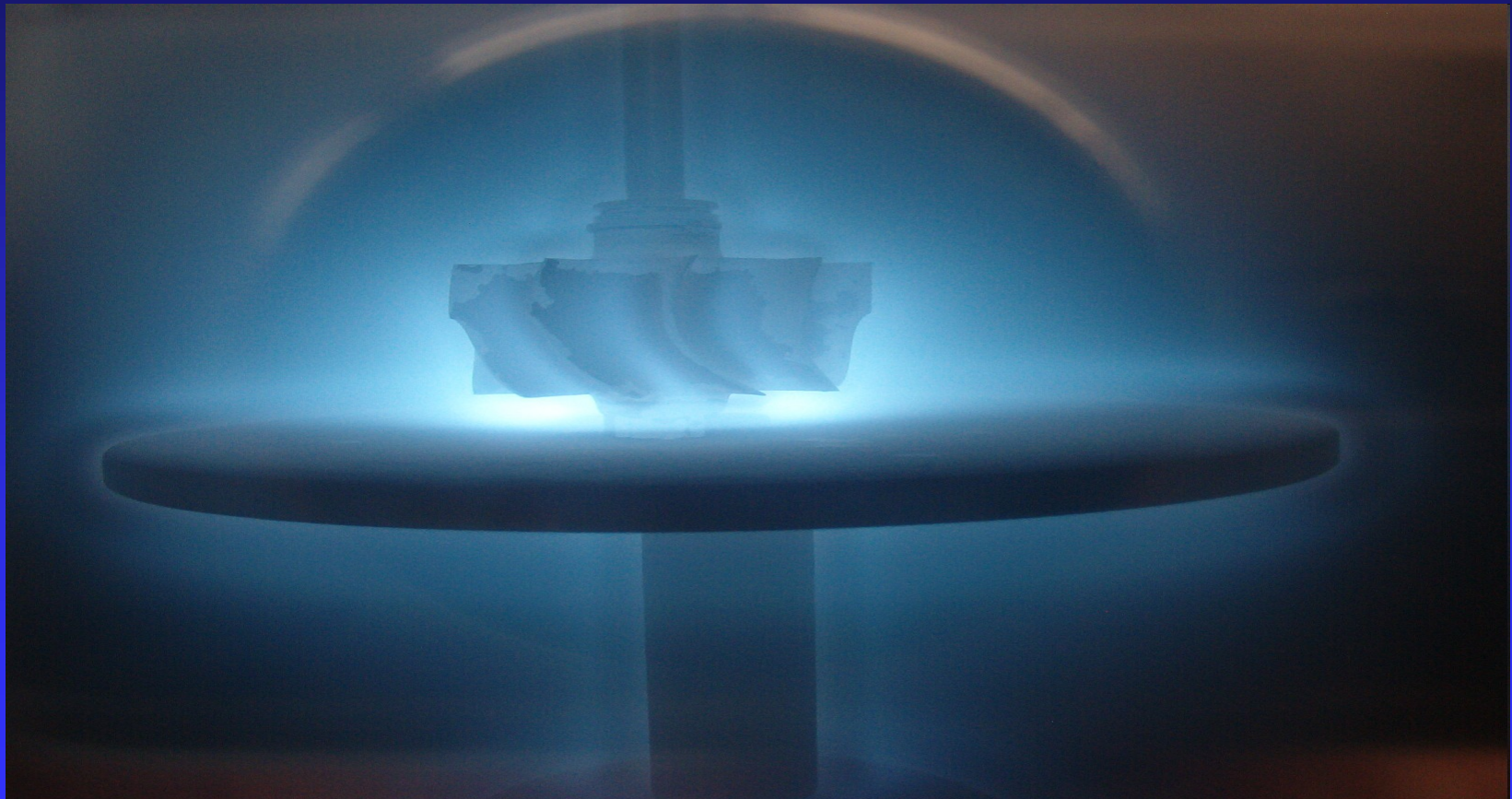
## ■ Terčíky:

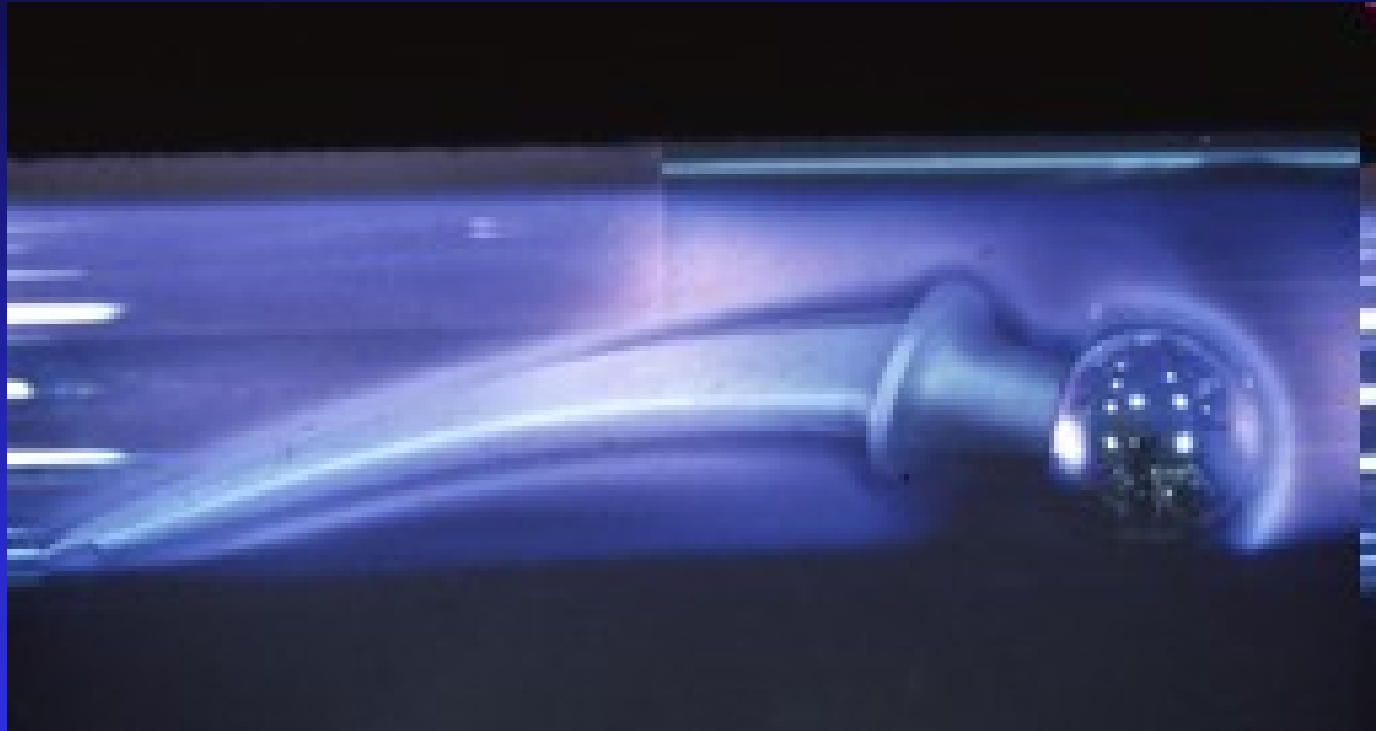


# Plazmová nitridácia:



# Plazmová nitridácia:



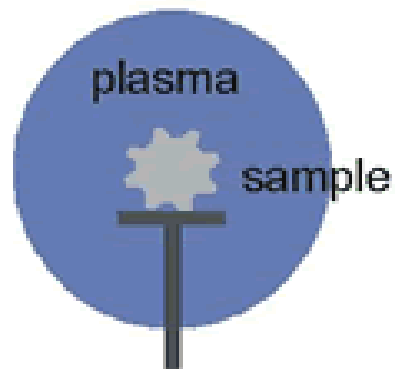




# Plazmová implantácia

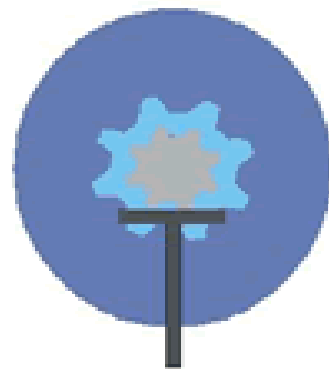
## Plasma Immersed Ion Implantation

- The plasma immersion ion implantation process is of potentially great significance for the modification of surfaces, since in principle it permits the implantation of ions into a surface without the usual line-of-sight restrictions of ion-beam techniques.



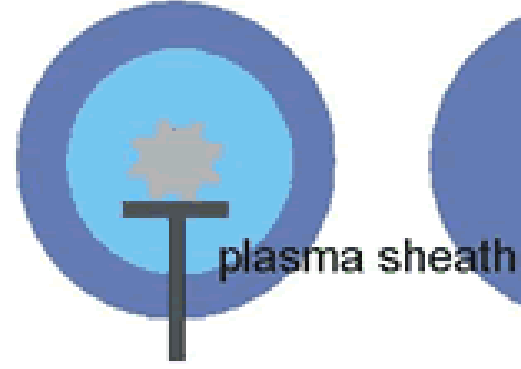
$t = 0, U = 0$

sample immersed  
in plasma

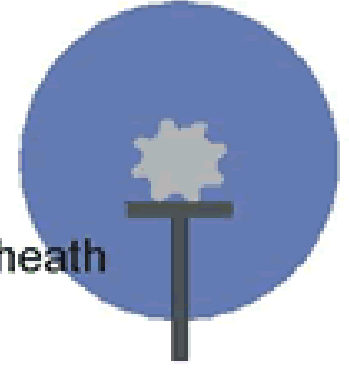


$t = t_1, U = U_0$

voltage pulse  $U_0$  from  $t_1$  to  $t_2$   
displacement of electrons ( $\sim 1$  ns)  
acceleration of ions ( $\sim 100$  ns)  
plasma sheath expansion ( $\sim 10 \mu\text{s}$ )



$t_1 < t < t_2, U = U_0$



$t > t_2, U = 0$

Plasma  
regeneration

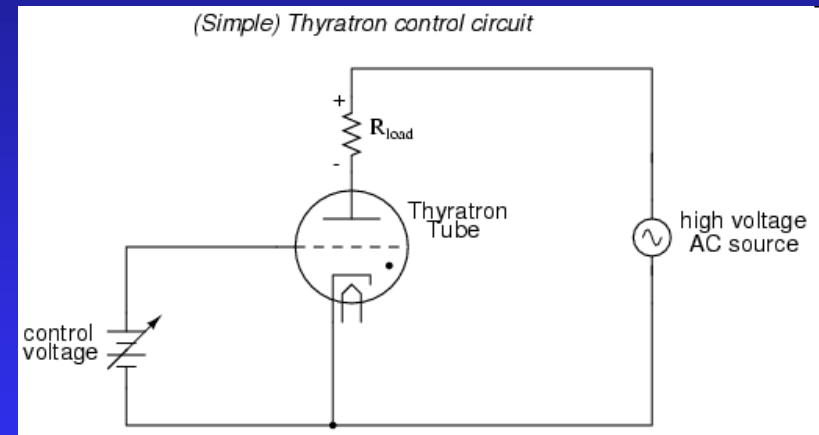
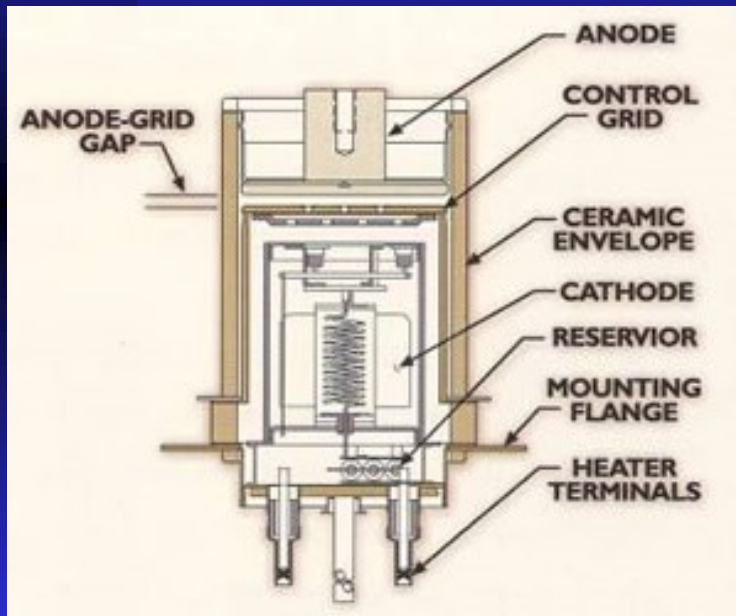
**A large vacuum chamber (1m diameter & 2m length) with plasma produced by the impact ionization of neutrals by thermionic electrons.**

**A magnetic cusp to enhance plasma density.**

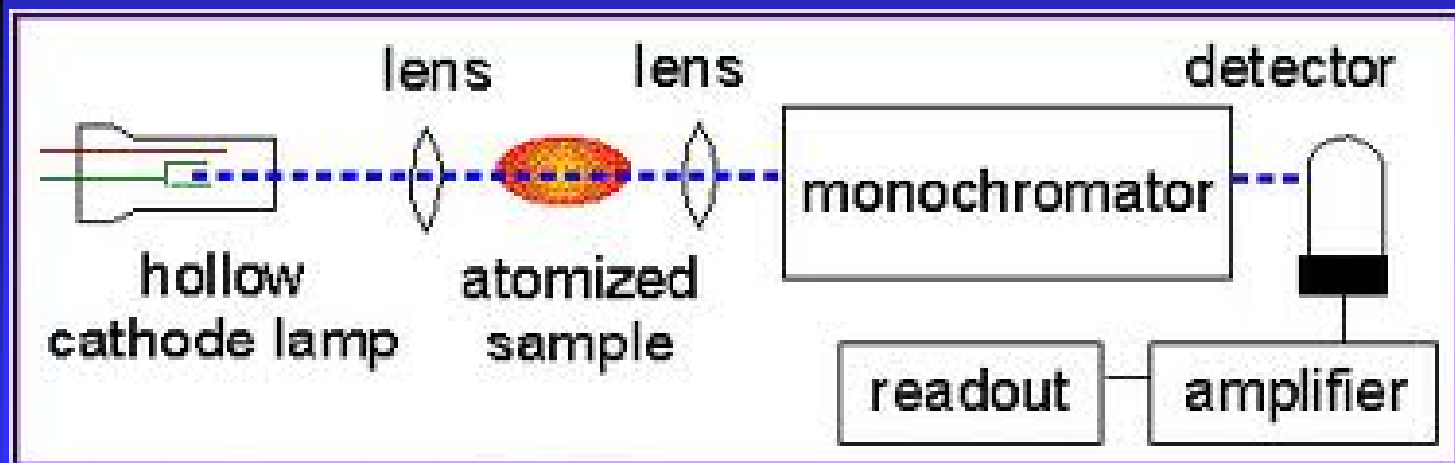
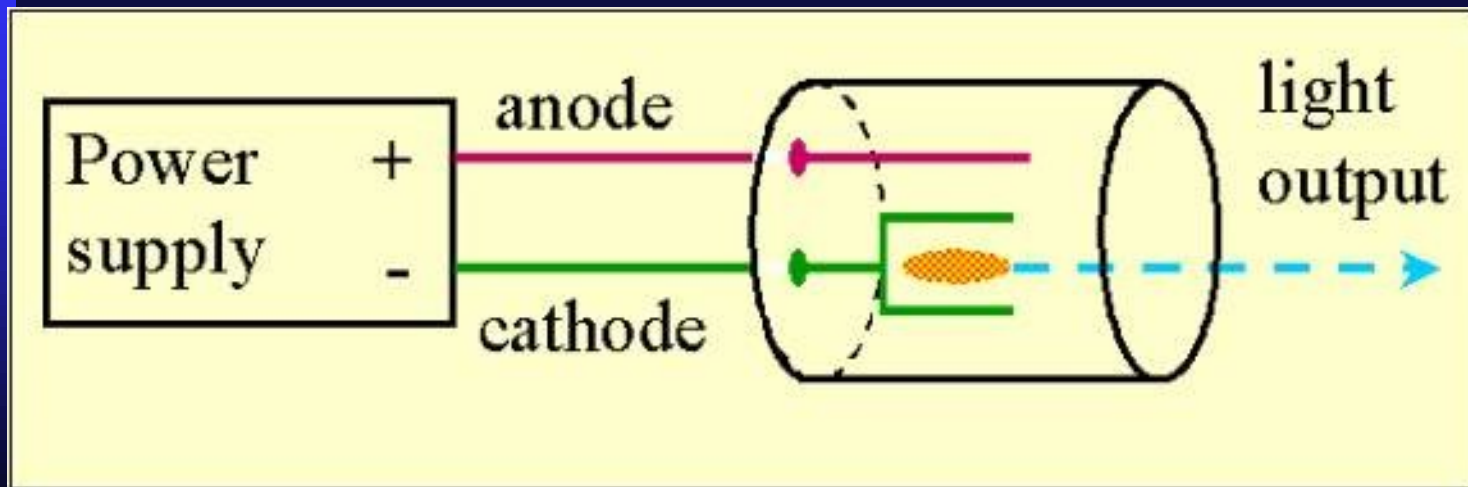
**A 50 kv DC supply with a hard tube modulator**



# Tyratrón - spínacia plynom plnená elektrónka na báze t.v. na spínanie VN



## Tlečí výboj s dutou katodou:



# Zdroje plazmy pre výrobu mikročipov



# Iónové reaktívne motory

