

## Metal Sputtering System (NORDIKO)

A sputtering system is a vacuum chamber, which after it is pumped out, is re-filled with a low-pressure Argon gas. A high voltage ionizes the gas, and creates what is known as the Crookes dark space near the cathode, which in our case, consists of a target made out of the metal we want to deposit. Almost all of the potential of the high-voltage supply appears across the dark space. The electric field accelerates the Argon atoms which slam into the metal target. There is an exchange of momentum and the metal atoms are ejected from the target and heads to the substrate (Silicon wafer for example), where it gets deposited. Our system is a three target system where three metals can be sputtered without breaking the vacuum.

### *Specifications:*

- **Wafer Size:** 2 Inch.
- **Different thin films:** Cr, Au, Ti, Pt, Co, Cu, Ag.
- **Substrate temperature:** Room temperature to 400 °C
- **Gases used in the system:** Ar for sputtering and Nitrogen for venting
- **Base pressure:** 10-5 mbar
- **Sputtering pressure:**  $2.6 \times 10^{-3}$  mbar.

### *Process Capabilities:*

- **Substrates used:** Si, glass, polymer, PDMS.
- **Substrate history:** It's a general purpose system not much of contamination issues
- **Substrate size:** Max. 2" diameter wafer.
- **Temperature of substrate:** Room temp to 350 °C
- **Substrate temperature:** Room temperature to 400 °C
- **Materials that can be deposited/grown:** Cr, Au, Ti, Pt, Co, Cu, Ag
- **Materials can be deposited but targets NOT available:** Any metal can be deposited apart from available targets mentioned above.
- **Gasses used:** Argon for sputtering, Nitrogen for venting and for other purposes of the system
- **Chamber base vacuum:** 10-5 mbar

