

Short instructions for coating with Balzers SCD/CED

WARNINGS

- Use protective (latex) gloves!
- Electrodes (for sputtering C) pushed until the end and do not pull the cables!!
- Use only original graphite filament: single or double. Using too thick floss may damage the coater!
- For the coating of thicker layers of graphite repeat the procedure.
- The Ar gas is always open - do not touch the valves!
- Water is always closed after coating with Au!

Carbon evaporation – C:

- Check that you've got the high cylinder and, if not replace it.
- Set the table for carbon.
- Set the switch in the "secret drawer" to "EVAP".
- Place the samples in the center of the stage at the height of 3-5 cm.
- Set the new graphite thread (in the form of S or 8).
- Cover the cylinder and close the aperture (position "Z").
- Turn on the coater - green button.
- When the vacuum is between 4×10^{-2} - 6×10^{-2} mbar, connected the electrical cables.
- You use the set of buttons for the "CARBON EVAPORATION":
 - Push the button "UP" to set the flow at ≈ 1.5 A (single thread) or 2.5 A (double thread) – degasing for 2s and push the "RESET" button.
 - Open the aperture ("O") and press the "FLASH" until it burns off.
- Turn off on the coater (green button).
- Clean cylinder (cloth + ethanol), remove carbon thread and write in the notebook.

Gold sputtering – Au:

- Check that you have the low cylinder, and if not replace it.
- Set the switch in the "secret drawer" to "SPUT."
- Open the water cooling device (45° turn)
- Place the samples in the center of the stage at the height of 5-6 cm.
- Close the cover - "SHUTTER CLOSED".
- Turn on the coater - green button.
- The "secret drawer" switch is set to "TIMER" and set the time of spraying (≈ 60 -100 s).
- When the vacuum is $\leq 10^{-1}$ mbar, a couple of times (with spaces), press the "rinsing" (2-4 times)
- When the vacuum $\approx 5 \times 10^{-2}$ mbar, button switches for high voltage "HV ON".
- Use the "current" potentiometer to set the flow between 16-20 mA.
- When the current is stable open the cover "SHUTTER OPEN" (Time starts counting down).
- When the countdown ends: close the "SHUTTER", turn off on the coater (green button) and **close the water supply**.
- Clean the cylinder (cloth + ethanol) and write in the notebook.

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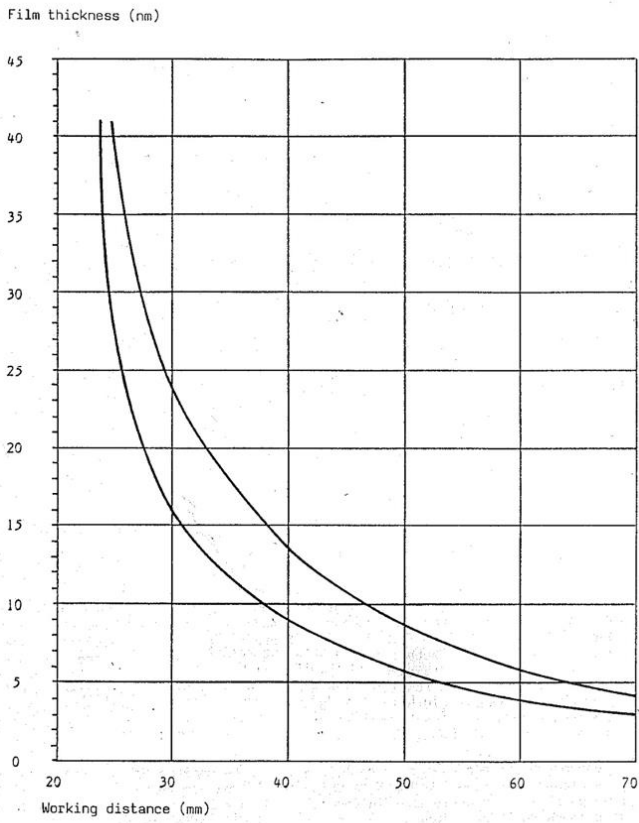


Fig. 8 Film thickness for a single carbon thread

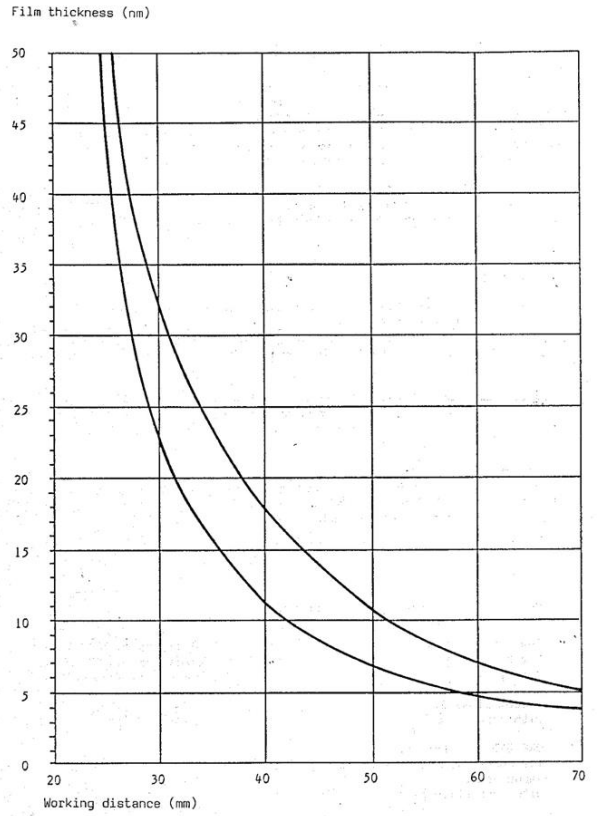


Fig. 9 Film thickness for a double carbon thread

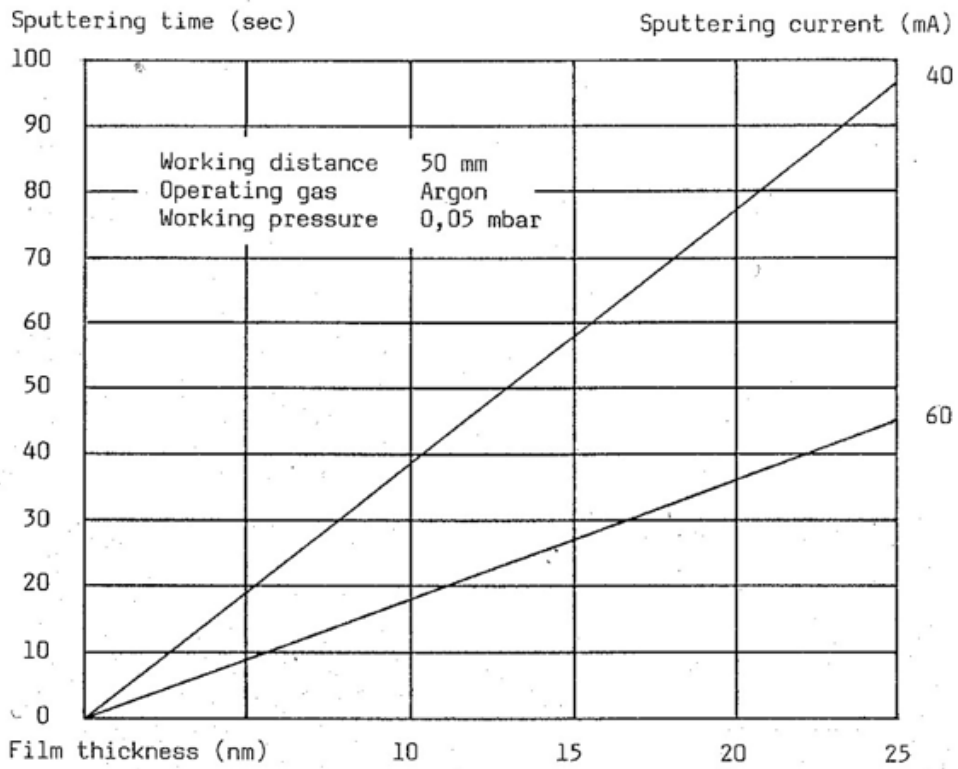


Fig. 10 Sputtering time diagram for gold ($19,3 \text{ g/cm}^3$)