



DENTON VACUUM SPUTTER COATER

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Operating Instructions

Table of Contents

Introduction	2
1 SAFETY AND SAMPLE PREPARATION	
Safety Hazards and Precautions	2
Sample Preparation	2
2 OPERATION	
Instrument Operation	3



Introduction

The Denton Vacuum Sputter Coater is an invaluable accessory for preparation of specimens for scanning electron microscopy. Its primary role is to coat your sample with a conductive layer of gold, to allow the SEM to generate better images.

Safety and Sample Preparation

Safety Hazards and Precautions

Suffice it to say, this machine is pretty darn safe. Just don't drop on your foot, because that could be slightly painful (even if you were wearing closed toed shoes). The gold cathode is secretly electrically charged to high voltage during sputtering. Please do not touch the gold cathode; the surface should remain clean and free of grease, oil, moisture, etc.

Sample Preparation

The gold sputtering occurs in a vacuum (which is probably why its manufacturer chose to name the company Denton Vacuum). Because of this, incredibly light samples may become projectiles when the chamber is re-pressurized after coating. Thus, it is important to ensure that your sample is either heavy enough to withstand the re-pressurization, or taped down with carbon tape. It is also important to ensure that the surface that you wish to examine in the SEM is facing upwards. A Buehler "Sampl-clip" may be used to steady small samples while sputtering.

2

Operation

Argon Gas Cylinder

1. Check that the argon cylinder is open (main valve) and that the regulator output pressure is set to approximately 30 psi.
2. Ensure that the needle valve (small valve with a black knob...to the left of the regulator) is open.

Instrument Operation

3. Carefully place your sample inside the chamber, with the surface you wish to coat facing upwards.
4. Close the chamber, and ensure that the chamber top is sealed against the rubber ring.
5. Turn on the vacuum pump by flipping the power switch on the right of the control console.
6. Allow the chamber to evacuate until the pressure reading is in the **150 to 250 millitorr** range.
7. Check that the **Gas Selector Switch** is turned to “sputter.”
8. To use the automatic timer for sputtering, set the switch next to the pump to “timed” (RECOMMENDED). If you would like to manually turn on and off the sputtering voltage, set the switch to “manual.”
9. Set the desired sputtering time on the automatic coating timer. Most small, relatively flat samples need about 45-60 seconds of sputtering. Rough or large surfaces may need a bit more time.
10. Press the red start button to start the timed coating. Adjust the current to about 30 milliamperes.
11. Watch in awe of the purple light as gold coats your sample. Wait until the sputtering has stopped (you will hear a relay click, and the purple glow will no longer be visible in the chamber).
12. Turn off the pump, open the chamber, and carefully remove your sample.

NOTE: Sputtered coatings may be easily rubbed off. Be careful with your gold coated surfaces.