

[SABANCI ÜNİVERSİTESİ NANOTEKNOLOJİ ARAŞTIRMA VE UYGULAMA MERKEZİ |

**RF/DC Sputter Deposition System
Acceptance Protocol Criteria**

RF/DC Sputter Deposition System

Equipment: RF/DC Sputter Deposition System

This protocol defines the test and inspection criteria to be evaluated during the Site Acceptance Test (SAT) following the system installation.

1. GENERAL INSTALLATION CHECKS

- Complete delivery and damage-free installation of system components
- Complete electrical, vacuum, water cooling, air, and gas connections

2. HARDWARE AND SAFETY CHECKS

- Vacuum systems must be tested
- Gas systems, MFCs, and valves must be tested for functionality and leak tightness
- Safety systems must be tested: high-pressure safety valve, emergency stop, and door interlocks must be tested.
- The functionality of all sensors, valves, and pumps (Baratron, etc.) must be demonstrated.

3. PERFORMANCE VERIFICATION TESTS

- Film production of the required thickness and quality will be requested using the substrate and target determined by SUNUM. The thin film produced will be tested to determine whether it meets the specifications referenced in the Technical Specifications.
- Final vacuum value: $\leq 5 \times 10^{-7}$ mbar.
- Film thickness uniformity: must be better than $\pm 5\%$.
- Film thickness calibration and simultaneous measurement tests will be performed.
- Independent operation of the four magnetron target sources and water cooling tests will be conducted.
- Verification of the "co-sputter" and "reactive sputtering" processes specified in the technical specifications will be performed.
- Verification of the PID-controlled substrate heating system up to 800°C ($\pm 1^{\circ}\text{C}$) will be performed.
- Sample rotation motion tests (0–30 rpm) will be performed.

4. SOFTWARE AND AUTOMATION TESTS

- Testing of PLC control screens
- Automatic vacuum, vent, film thickness monitoring, temperature, pressure, and gas control
- User interface: recipe creation, data logging, and CSV export
- User definition tests
- Documentation of system usage, maintenance procedures, and spare parts information will be provided

5. TRAINING AND DOCUMENTATION

- At least two days of user training will be provided (Operator training and general information training will be organized separately.)
- Complete delivery of usage, maintenance, and technical documentation (printed and digital).