



BENCHTOP PVD SYSTEM

nanoPVD-S10A

Compact, research-grade RF/DC magnetron sputtering for metals, oxides, nitrides, multilayers and exploratory thin-film materials R&D.

4"

MAX SUBSTRATE

$<5 \times 10^{-7}$

BASE PRESSURE (MBAR)

3

MAGNETRON SOURCES

600°C

SUBSTRATE HEATING

Research-grade sputtering in a compact benchtop platform

The nanoPVD-S10A brings high-performance magnetron sputtering into a compact benchtop platform. Optimised for RF and DC sputtering of metals and insulating materials, it gives research teams a practical, repeatable route to thin-film development — from contact layers and seed films to TCO, dielectric and reactive multilayer studies. High-end vacuum, source and control hardware make it suitable for laboratories and cleanrooms alike.

- Compact footprint for research labs and cleanrooms
- Configurable magnetron sources and gas handling
- Reactive and co-deposition process options
- RF/DC compatibility across a broad material range
- Recipe-driven operation via touchscreen HMI
- Designed for serviceability and long-term use

Why choose the nanoPVD-S10A

- ✓ **Faster experimental cycles**
Keep early-stage sputtering close to the research group and change processes without competing for shared cleanroom time.
- ✓ **Ease of use for mixed teams**
A touchscreen HMI, compact layout and simple maintenance help new users build confidence on genuine research-grade processes.
- ✓ **Research-grade flexibility**
RF and DC sputtering of metals and insulators, including reactive and co-deposition methods for more advanced film stacks.
- ✓ **Lower operational friction**
Add local PVD capability without the access, facility and training burden of larger shared infrastructure.

Key features

- 📱 **Compact benchtop design**
Advanced PVD capability in a space-efficient format for labs, teaching spaces and cleanrooms.
- 🌀 **RF/DC magnetron sputtering**
DC for conductive targets; RF for oxides, nitrides and other non-conductive materials.
- 🌀 **High-vacuum performance**
Turbomolecular pumping for low-contamination operation below 5×10^{-7} mbar.
- 🧪 **Reactive sputtering capability**
Gas and pressure control for up to three process gases for oxide, nitride and compound films.
- 📱 **Recipe-based touchscreen control**
7" HMI with fully automatic operation and multiple saved process recipes.
- 🔧 **Configurable sources & gas**
Up to three water-cooled magnetrons for 2" targets, with co-deposition and reactive options.

Typical configurations

Start with a proven configuration, then tailor source, gas, stage and monitoring options around your materials and target films.

Metals deposition

Conductive films, contact metals and electrodes where reliable DC sputtering matters.

- Two magnetrons with DC power supply
- SputterSwitch module for shared output
- Z-shift & bi-shutter for 4" geometries
- Quartz crystal sensor for rate / thickness

TCO / dielectrics

Transparent conductive oxides and dielectric coatings benefiting from RF power and O₂ control.

- Two magnetrons with RF power supply
- SputterSwitch module for shared output
- Substrate heating + extra O₂ gas line
- Z-shift, bi-shutter and QCM sensor

Reactive / co-deposition

Flexible materials R&D needing source routing, multiple gases and mixed RF/DC.

- Three magnetrons with RF & DC supplies
- SputterSwitch power / source routing
- Three gases, e.g. Ar, O₂ and N₂
- Reactive oxides and nitrides

Technical specifications

Parameter	Specification
System type	Benchtop PVD — DC & RF magnetron sputtering
Base pressure	<5×10 ⁻⁷ mbar (turbo-pumped)
Pressure control	Capacitance manometer; optional MFC closed-loop
Process gas inlets	Up to 3 MFC-controlled gases
Sputter sources	Up to 3 × 2" water-cooled magnetrons
Target size	2"
Power supplies	Up to 780 W DC and/or 150 W, 13.56 MHz RF, auto-match
Reactive sputtering	Yes; up to 3 MFCs, optional closed-loop
Magnetic targets	High-strength magnet pack available

Parameter	Specification
Max substrate size	4" (100 mm)
Substrate heating	Up to 500°C; up to 600°C (4-bulb)
Substrate cooling	Not available
Substrate bias	RF & DC bias available as an option
Load lock	Not available as standard
Glovebox compatible	No
Process control	Industrial PLC + 7" HMI touchscreen
Recipe control	Recipe save / load standard
Footprint	800 × 500 × 550 mm
Warranty	2 years

Exact specifications depend on final configuration and are confirmed at quotation.

Selected publications citing the nanoPVD range

- Influence of DC sputtering power on the surface evolution of Ti thin films — University of Johannesburg
- Evolution of TiAlSi thin-film coatings under varying target power — Northumbria University
- In situ monitoring of aptamer–protein binding on a ZnO surface — University of Liverpool
- HMR-based optical gas detection with CuO and ZnO coatings — Universidad Pública de Navarra
- Direct synthesis of nanopatterned epitaxial graphene on SiC — University of Technology Sydney
- High hardness in biocompatible β-Ti₃Au intermetallic films — Northumbria University

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Research-focused thin-film deposition, plasma etch and anneal systems for advanced materials and process development.

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