

Nanochrome™ IV

Plasma Assisted Reactive Magnetron Sputtering



Key Benefits

- Exceptional process repeatability
- Stable deposition rates
- High quality oxide and nitride deposition
- Capable of producing films with high layer count
- Optional load-lock operation

NANOCHROME™

NANOCHROME™ IV PARMS

The Nanochrome™ IV PARMS produces dielectric thin film layers by reactive magnetron sputtering with final reaction and film densification at the substrate surface using a high current, low energy ion source. Reactive operation results in faster deposition times. Low pressure sputtering achieves higher deposition rates.

Films are made reactively from metal targets to produce highly dense, pure oxides and stoichiometric nitrides. The system uses either pulsed DC for operation with single cathodes, or low frequency AC.

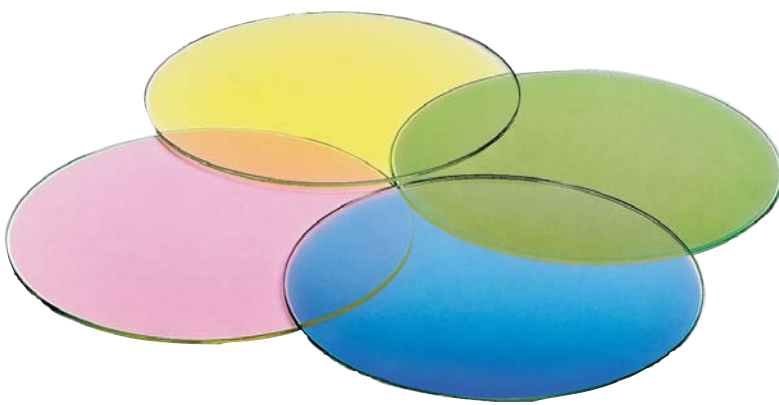
Oxides that have been produced include tantalum, niobium, titanium, aluminum, germanium and silicon with typical rates of 3 - 5 Å/s. Uniformity is less than 2% for 250 mm diameter. The films are suitable for the UV, VIS NIR, SWIR, and MWIR ranges. The system also produces transparent conductive AZO and ITO.



CHAMBER DESIGN

The Nanochrome™ IV PARMS is built around a vertical "clam shell" design that gives the user easy access to all parts of the chamber. State of the art, high speed pumps are used to quickly achieve process base pressure.

The chamber has several viewports to allow viewing of thin films as they grow, enabling real-time optical measurement and control of your coatings.



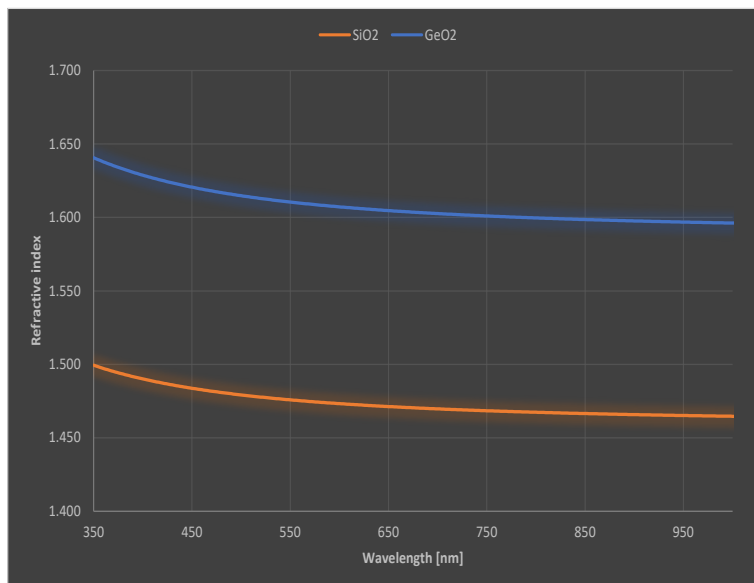
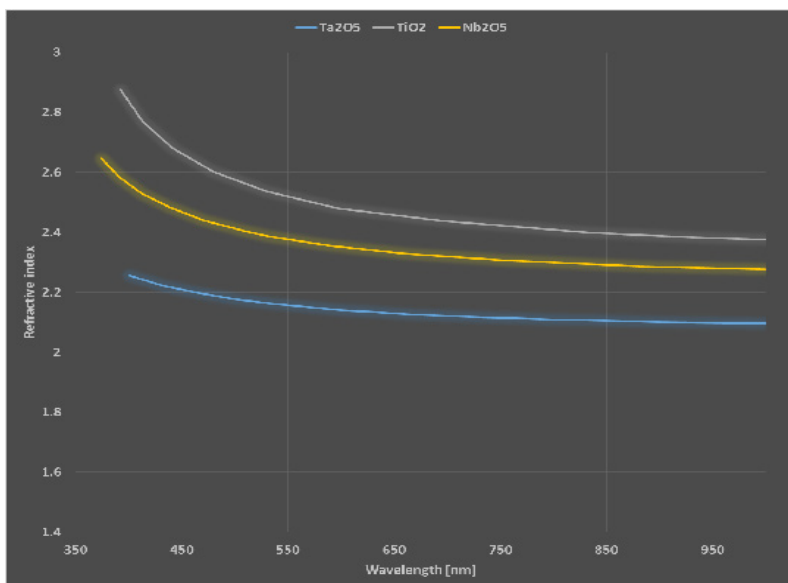
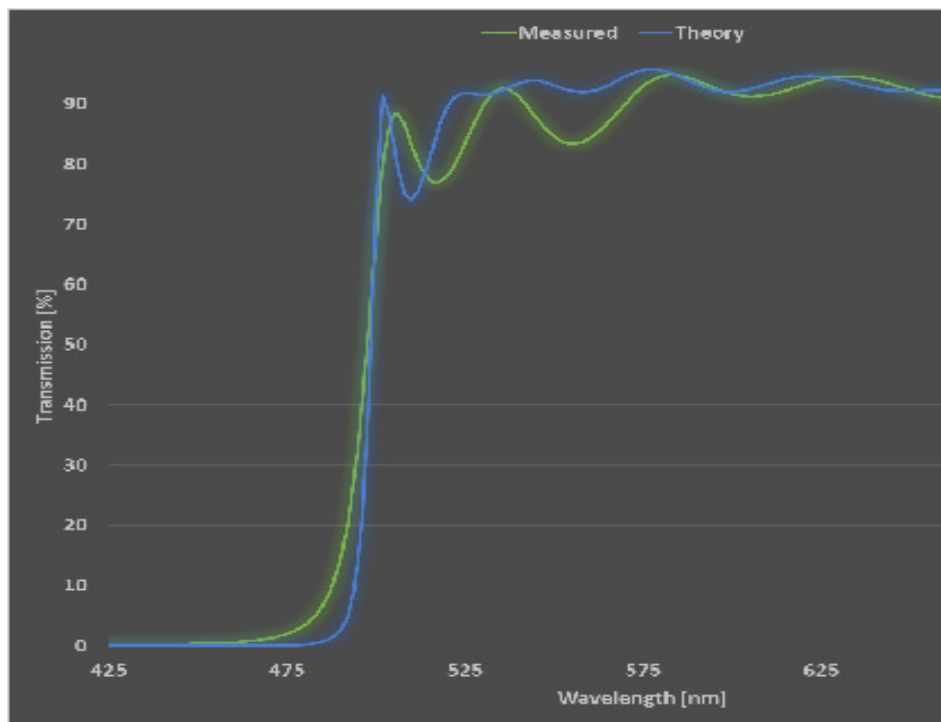
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Thin Film Deposition

OPTICAL ENDPOINT MONITORING

The Nanochrome™ IV PARMS optical endpoint monitoring offers:

- onboard reoptimization
- 350 to 1650 nm optical control range
- ability to import designs from all major commercial optical design software
- ideal for broadband AR, V coat, step filter, notch filter, multiband pass



CONTROL SYSTEM AND AUTOMATION

The INTLVAC THIN FILM Nanocon control system is designed to automatically control the sputter process. Control of the sputter guns, ion source, and gas flows are completely automated by Intlvac's controller. The system is capable of high layer count with this automated deposition.

The Nanocon controller will communicate with the customer's, or Intlvac supplied, Optical Monitoring System (OMS). Other control modes are deposition by time or layer termination using a quartz crystal monitoring (QCM) system.



SUBSTRATE FIXTURING

The Nanochrome™ IV PARMS comes standard with a central rotating fixture that holds a single 250mm disk or custom fixture for smaller parts. The holder has an optical path through the center to allow for optical monitoring of your process.

LOAD-LOCK

An optional manual or fully automatic load-lock may be added to the system to reduce pump down and venting times. The load-lock is useful when performing large production quantities of shorter runs. With load-lock, pump down time is under 10 minutes.

PROVIDING TECHNOLOGY SOLUTIONS

At Intlvac Thin Film, we design and manufacture a wide variety of systems for Thin Film PVD and Etch. Our product line ranges from small R&D/pilot project systems to large production systems utilizing processes such as Ion Beam Etching, Sputtering, E-beam and Thermal Evaporation fiber-optic coating and more! Call today to discuss your specific requirements.



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