



**PRECISION IN OPTICAL COATING**

**scia Opto 300**

## Features & Benefits

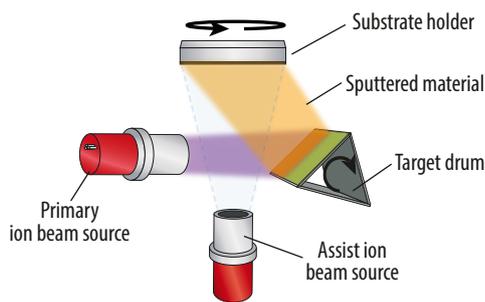
- Variable substrate sizes up to 300 mm dia.
- Automatic loading with two loading positions for continuous processing
- Up to 6 target materials on a rotational holder, each target up to 300 mm x 300 mm, with optimized geometry for mixed layers or smooth transition between layers
- Excellent process uniformity by substrate rotation with up to 60 rpm
- In-situ optical thickness monitor (OTM) and test glass changer
- Optimized geometry for coating with low stress

## Applications

- Dielectric mirrors (e.g. rugate filters)
- Optical coatings for high- and anti-reflective layers, bandpass and notch filters
- High laser damage threshold coatings
- Deposition of refractive index gradient layers
- In-situ preprocessing of substrates (etching, cleaning, smoothing)
- Metallic, seed and protective coatings

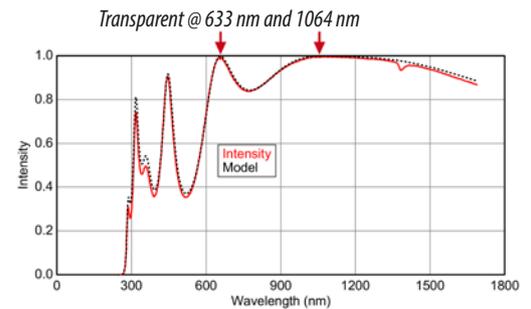
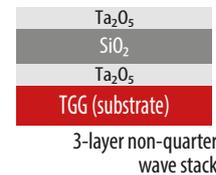
## Principle

- Ion Beam Sputtering (IBS), Dual Ion Beam Sputtering (DIBS)
  - Primary source sputters material from a target to the face-down oriented substrate
  - Secondary source used for pre-cleaning the substrate and/or assist during deposition



## Application Example

- Anti-reflex coating of a multilayer stack consisting of Ta<sub>2</sub>O<sub>5</sub> and SiO<sub>2</sub> on TGG
  - Transparent design for typical laser lines of 633 nm and 1064 nm
  - Target: R < 0.10 % @ 633 nm, < 0.01 % @ 1064 nm



Transmission spectra measured with transmission mode of ellipsometer. Target values of reflectivities could be reached.

## Technical Data

<b>Substrate size (up to)</b>	300 mm dia.
<b>Substrate holder</b>	Substrate rotation up to 60 rpm, includes optical thickness monitor (OTM) and test glass changer
<b>Ion beam sources</b>	Sputter source: 120 mm circular RF source (RF120-e) Assist source: 120 mm circular RF source (RF120-e)
<b>Neutralizer</b>	RF driven plasma bridge neutralizer (N-RF)
<b>Target holder</b>	Target drum with 6 water-cooled targets (each up to 300 mm x 300 mm)
<b>Typical deposition rates</b>	Si: 6 nm/min, SiO <sub>2</sub> : 9 nm/min, Ta <sub>2</sub> O <sub>5</sub> : 6 nm/min
<b>Uniformity variation</b>	≤ 0.8 % (σ/mean) for 300 mm
<b>Base pressure</b>	< 5 x 10 <sup>-8</sup> mbar
<b>System dimension (W x D x H)</b>	4.60 m x 1.80 m x 2.20 m, for single chamber with double substrate load lock (without electrical rack and pumps)
<b>Configurations</b>	Single chamber with double substrate load lock
<b>Software interfaces</b>	SECS II / GEM, OPC

