

● Spatial ALD

Beneq C2R™

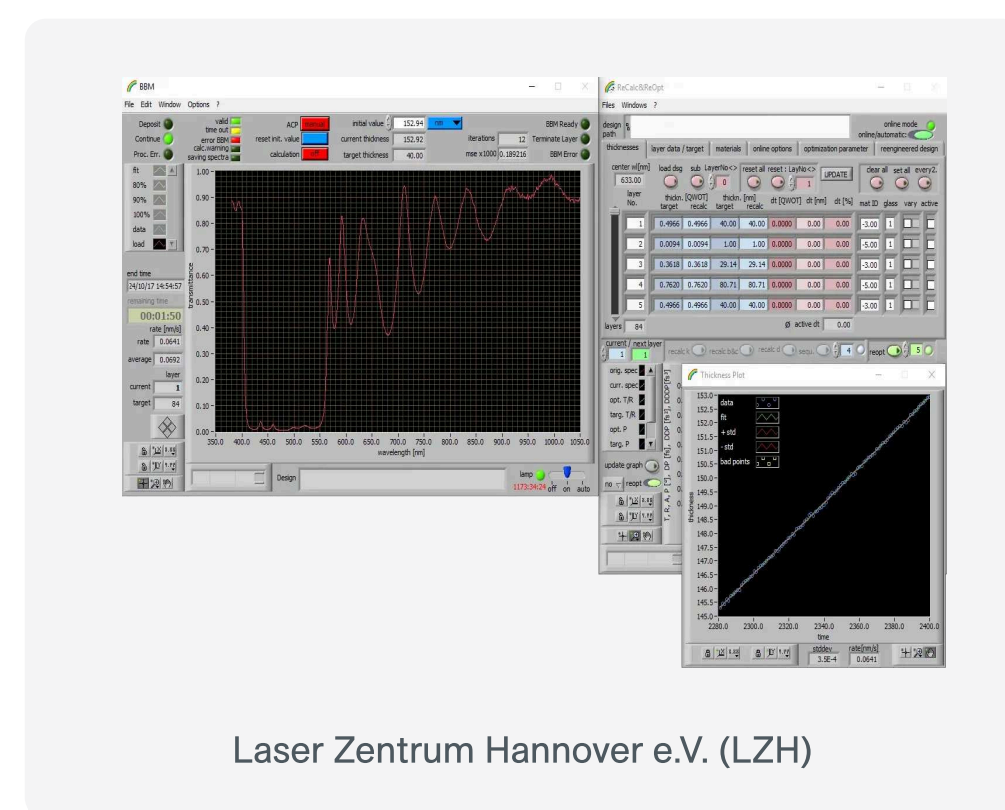
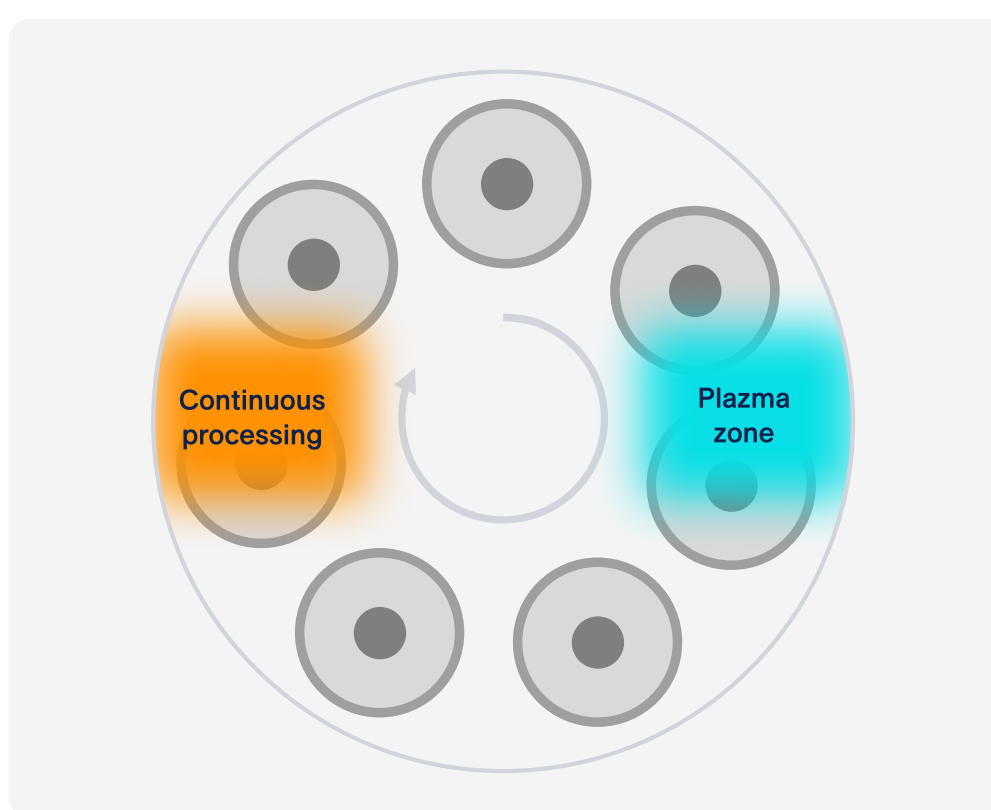


OVERVIEW



Low-temperature, plasma-enhanced spatial ALD with growth rates up to 2000 nm/h. With rotation speeds up to 200 rpm and in-situ optical broadband monitoring (BBM), C2R™ is the perfect production tool for high throughput optical coatings with tailored plasma ALD processes. Unlock dense, uniform films at breakthrough deposition rates.

FEATURES



Continuous processing

Our rotary design of spatial ALD eliminates time-consuming pulsing and purging. By separating precursors in space rather than time, the process enables continuous flow, with higher deposition rates driven by chemical kinetics and substrate movement through precursor zones.

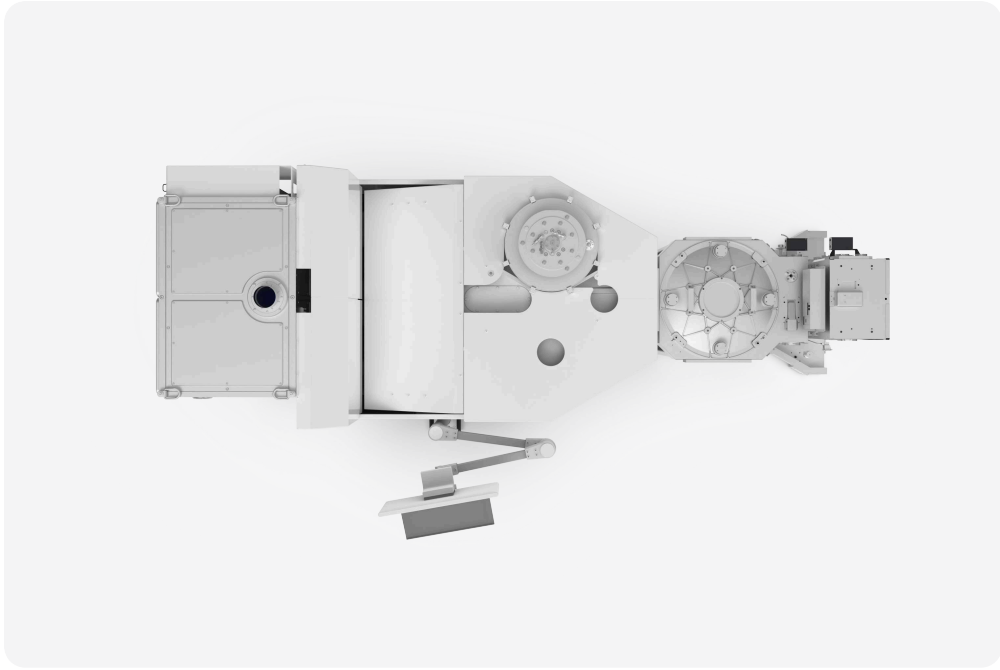
Enhanced precision with BBM

Our Broadband monitoring (BBM) option elevates ALD precision by continuously measuring the sample's transmission spectrum during each rotation. The process automatically halts when the measured spectrum matches the simulated one, ensuring:

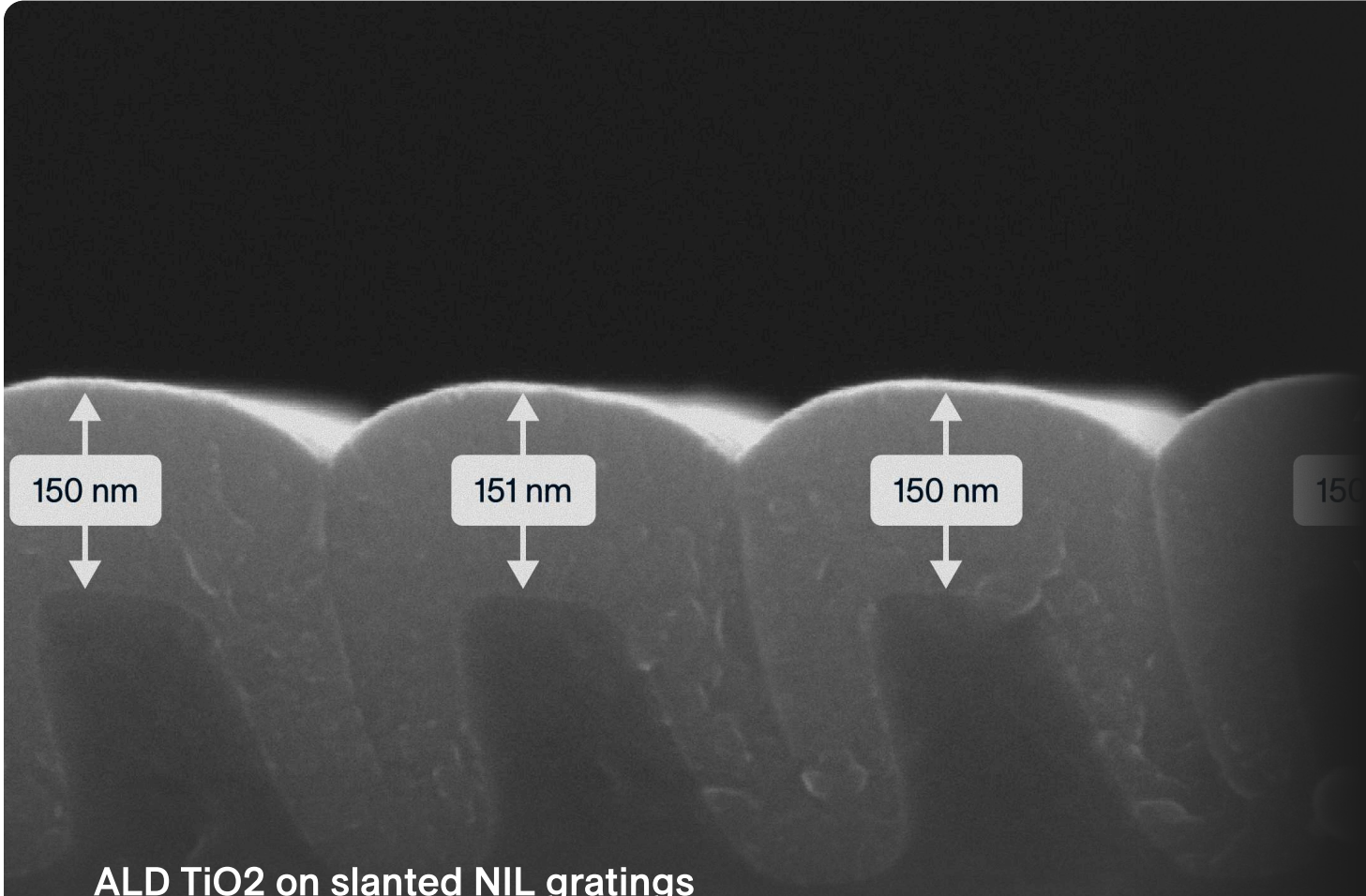
- Exceptional coating thickness accuracy, crucial for multistack coatings, for example
- Continuous deposition rate monitoring for diagnostics and fine-tuning
- ReCalc-ReOpt™ technology for real-time reoptimization and compensation

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Process type	Plasma Enhance Spatial ALD	Process temperature range	25–200°C
Plasma power	Max power 1000 W	Max wafer holder rotation speed	200 rpm
Batch capacity	7 pcs of 200 mm wafers/glass lenses	Wafer automation	Brooks MX400 with optional preheater and aligner
Wafer/glass lens thickness (max)	12 mm standard, up to 30 mm upon request	Precursor Cabinet	Four sources, individually heated up to 120°C + 3 inlet for plasma gases
Readily available processes	Al ₂ O ₃ , SiO ₂ , Ta ₂ O ₅ , TiO ₂ , HfO ₂ Multilayer stack Other processes available upon request	In situ process monitoring	Broadband monitoring, 400 nm–1700 nm using witness sample
Deposition rate	Up to 2000 nm/h (process dependent)	Example substrates	Polymer optics, High curvature lenses, 200 mm wafers



ALD TiO₂ on slanted NIL gratings
High-refractive index: 2.61 @ 448nm

Scalable ALD Solutions for AR Waveguides, μ LEDs and DUV Optics

Wide FoV for immersive AR
High-RI (2.61) TiO₂ fills NIL/SRG gratings

Warp-Free Optics
Delivered with stress tuneability

High-Speed ALD
Up to 2000 nm/h courtesy of rotary spatial-ALD

Applicable products

- C2R™
- P-Series