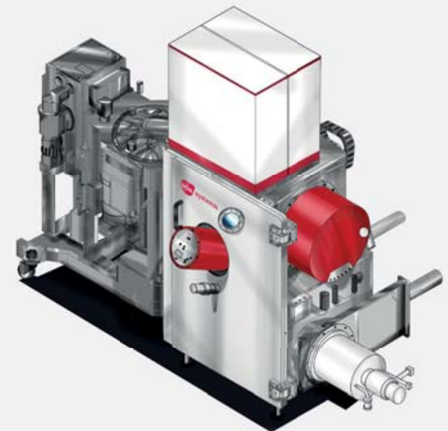
scia systems

scia Coat 200 for Dual Ion Beam Deposition (DIBD)

The scia Coat 200 is designed for homogeneous coating of 200 mm substrates, such as wafers. Typical applications of the system are multilayer films for magnetic sensors or optical coatings.

The scia Coat 200 applies a beam from a focused broad beam ion source onto a sputter target. The beam of the assist ion source is directed to the substrate. By ion bombardment it is possible to control film characteristics or pre-clean the substrate.

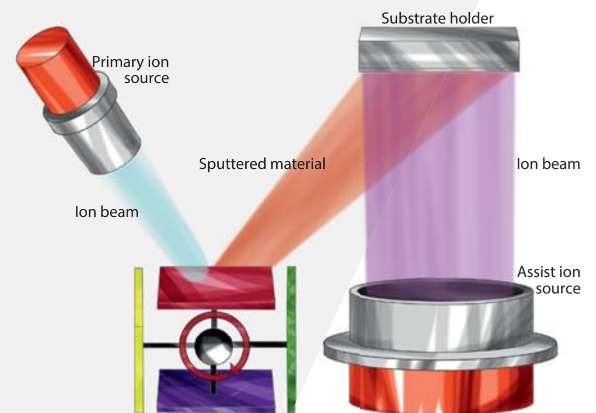
If the system is equipped with a RF350-e ion beam source as assist source, ion beam milling processes are also available on the same tool.



scia Coat 200 with handling robot

Features

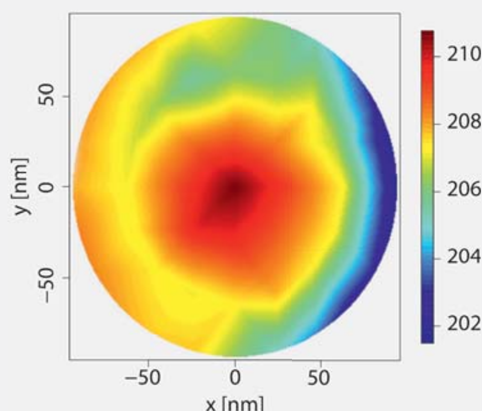
- Vertical or face-down substrate orientation for minimized particle load
- Circular sputter and assist ion beam sources
- Primary focused broad beam ion source sputters material from a target
- Secondary assist ion beam source irradiates full substrate area
- Up to 4 water cooled target materials on a rotational holder
- Substrate rotation and/or defined rotational angle alignment
- Incidence angle adjusted by substrate stage tilt



Schematic principle of scia Coat 200

Applications

- Magneto-electric multilayer films (GMR, TMR)
- Optical multilayers
- Dielectric and metal layers
- Sample pre-processing (cleaning)

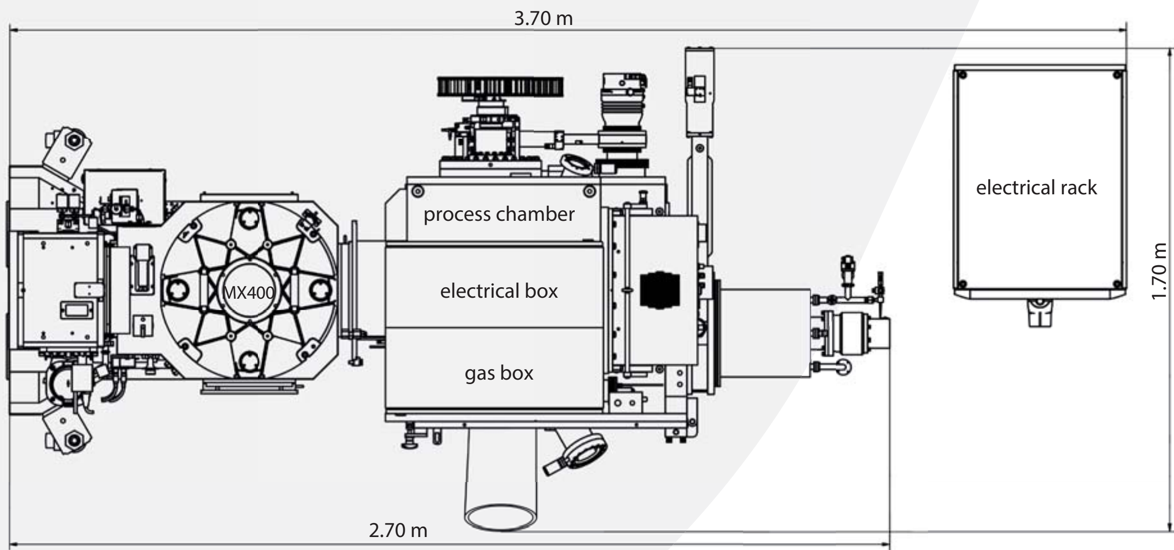


Deposition results of Al_2O_3 by scia Coat 200; uniformity variation 2.2 %, deposition rate 9 nm/min

scia systems

Technical Data

Substrate diameter	Up to 200 mm dia. Carrier handling for multiple substrate sizes available
Substrate holder	Wafer cooled, helium backside cooling contact
Ion beam sources	Sputter source: RF120-e Assist source: RF120-e or RF350-e
Neutralizer	Plasma bridge neutralizer: Filament driven N-DC or RF driven N-RF
Target holder	Target drum with 4 targets (tiltable), each with max. 300 mm dia.
Typical deposition rates	Al: 9 nm/min Al_2O_3: 12 nm/min
Axes performance	Substrate rotation 5 to 20 rpm Tiltable in-situ from 0° to 135°
Uniformity variation	≤ 2.2 %
Base pressure	≤ 5 x 10^{-7} mbar
System dimensions (W x D x H)	2.70 m x 1.70 m x 2.40 m (without electrical rack and pumps)
Tool configuration	Single wafer load-lock, Cluster system with cassette handling
Software interfaces	SECS II / GEM, OPC on request



Footprint of scia Coat 200 with handling robot

scia Systems GmbH | Annaberger Straße 240 | 09125 Chemnitz | Germany
www.scia-systems.com | info@scia-systems.com | Tel.: +49 371 5347 780 | Fax: +49 371 5347 781