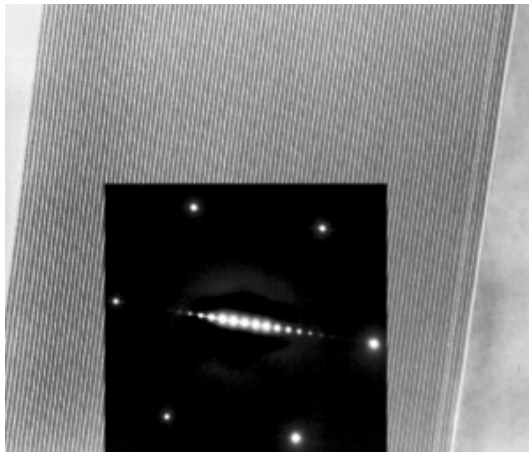


AXO DRESDEN GmbH - Applied X-ray Optics and High Precision Deposition - was founded as a Spin-off by employees of the Fraunhofer Institute Material and Beam Technology Dresden (IWS) with a participating share of the Fraunhofer Society. Our objectives are the development and production of multilayer X-ray optics.

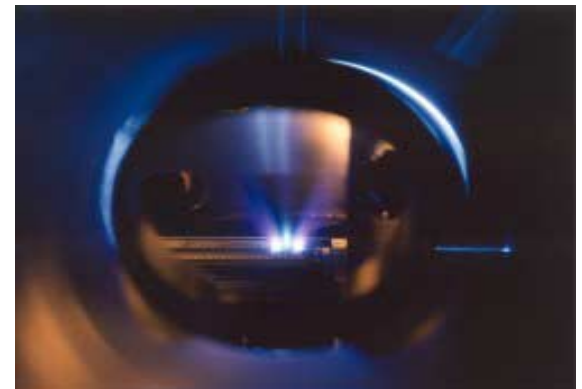
In close collaboration with the IWS, and further Fraunhofer institutes we are able to use different high precision deposition technologies to develop and produce customized X-ray optics, consisting of various material combinations.

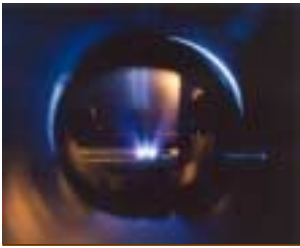
Our production program contains both single X-ray optics and complex X-ray optical systems to generate high intensity collimated or focused monochromatic X-ray beams.

A wide assortment of flat and curved X-ray optics are available for the application of the common types of X-ray sources with respect to wavelength, construction and focus geometry.



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E-mail: [contact@axo-dresden.de](mailto:contact@axo-dresden.de)  
[www.axo-dresden.de](http://www.axo-dresden.de)

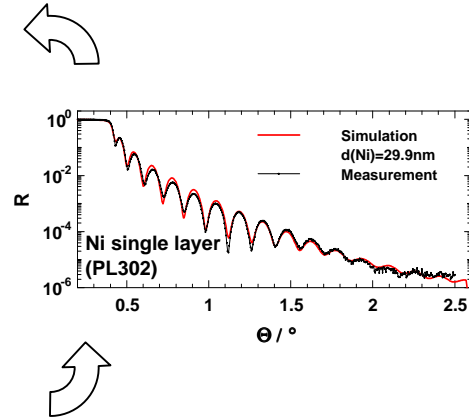
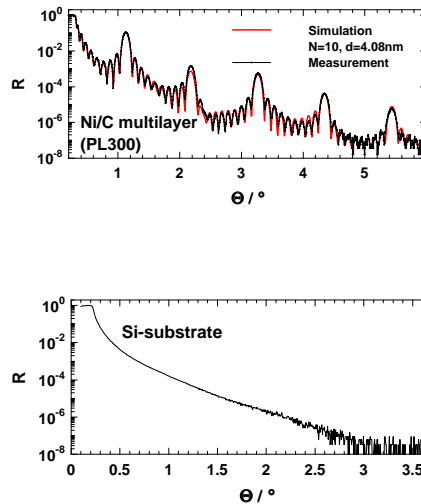




# TEACHING TOOL FOR X-RAY REFLECTOMETRY



Teaching tool for X-ray reflectometry: pure silicon substrate, Ni-single layer, 10 period- Ni/C-multilayer

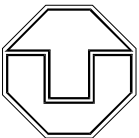


## Partners:

TU Dresden, Institute of Crystallography and Solid State Physics

Fraunhofer Institute Material and Beam Technology (IWS) Dresden

- Teaching concept: bulk surface  $\Rightarrow$  single layer  $\Rightarrow$  multilayer
- Set: pure silicon substrate, Ni single layer, 10-period Ni/C-multilayer, instruction in X-ray reflectometry on CD-ROM
- for training and further education of students, scientists, skilled workers, ...
- Determination of morphological parameters: layer thickness, material density, surface and interface roughness



TECHNISCHE  
UNIVERSITÄT  
DRESDEN

AXO DRESDEN GmbH  
APPLIED X-RAY OPTICS  
RÖNTGENOPTIK  
PRÄZISIONSBESCHICHTUNG

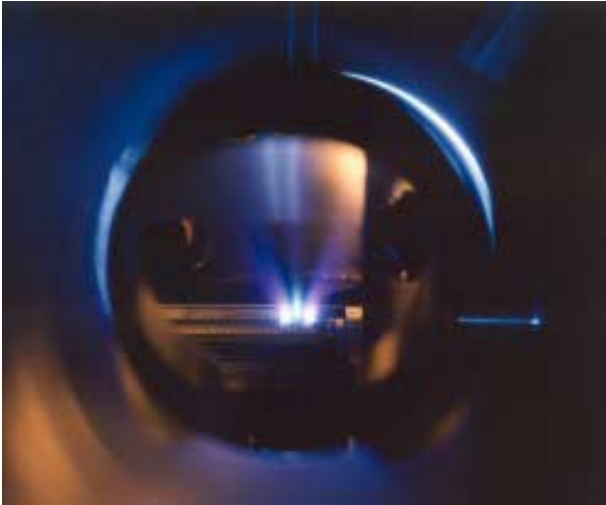
[www.axo-dresden.de](http://www.axo-dresden.de)



Fraunhofer Institut  
Werkstoff- und  
Strahltechnik



## Large area deposition techniques- PLD and Sputtering



Dual beam large area pulsed laser deposition  
plasma plumes caused by the interaction of  
focussed ns-laser pulses and the target surface

- Multilayer stacks for a wide variety of applications
- Constant and graded thickness distributions
- Accuracy and homogeneity in the sub-nm range
- Up to 6" diameter

## Multilayer X-ray optics

