



**Physics of X-Ray and Neutron Multilayer Structures workshop**  
**10 & 11 November 2016** UNIVERSITEIT TWENTE.

Thursday November 10 <sup>th</sup> (Building Gallery, Erlenmeyer)	
10:00-10:10	Opening <b>Fred Bijkerk, University of Twente</b>
10:10-10:50	<i>Keynote talk:</i> Multilayer X-ray Optics, Past and Future <b>Eberhard Spiller</b>
10:50-11:10	<i>Invited:</i> Multi-parameter Characterization of sub-nanometer Cr/Sc Multilayers based on Complementary Measurements <b>Anton Haase, PTB</b>
<i>Coffee break</i>	
11:40-12:00	Reconstruction of interfaces of periodic multilayer structures using model independent GIXR and XSW techniques <b>Igor Makhotkin, University of Twente</b>
12:00-12:20	X-ray at-wavelength metrology of multi-layered surfaces <b>Sébastien Bérubon, ESRF</b>
12:20-12:40	Self-consistent optical-constants of materials for EUV multilayer coatings <b>Juan Larruquert, Instituto de Optica-CSIC</b>
<i>Lunch</i>	
13:10-14:10	<b>Poster session 1</b>
14:10-14:30	<i>Invited:</i> DFT simulations of surfaces, interfaces and multilayers <b>Peter Blaha, Inst. Materialchemie, TU Wien</b>
14:30-14:50	Beryllium based multilayer mirrors for the EUV spectral range <b>Vladimir Polkovnikov, IPM RAS</b>
14:50-15:10	Tungsten growth on silicon oxide and boron carbide and additional role of spacer in the ultrashort period multilayer X-ray mirrors <b>Matej Jergel, Institute of Physics SAS, Slovakia</b>
15:10-15:30	Normal- and grazing incidence mirrors for 6.x nm wavelength <b>Dmitry Kuznetsov, University of Twente</b>
<i>Coffee break</i>	
16:00-16:20	<i>Invited:</i> Neutron multilayers <b>Thierry Bigault, Institut Laue Langevin</b>
16:20-16:40	The Hydrogenation Kinetics of a Magnesium Thin Film: An in-situ Neutron-Reflection and Optical-Transmission Study of a Two-Phase System <b>Ad van Well, Delft University of Technology</b>
16:40-17:00	Study of the in-plane magnetic structure of neutron polarizing multilayer mirrors <b>Ryuji Maruyama, Japan Atomic Energy Agency</b>
17:00-18:00	<b>Lab tour</b> <b>XUV Optics group University of Twente</b>
18:30	<b>Drinks and dinner (Broeierd)</b>

Friday November 11 <sup>th</sup> (Building Gallery, Erlenmeyer)	
09:00-09:20	<i>Invited:</i> Kossel X-ray standing-waves within a Cr/B <sub>4</sub> C/Sc multilayer excited by protons <b>Karine Le Guen</b> , <i>Sorbonne Universités</i>
09:20-09:40	High reflective water window collector optics <b>Hagen Pauer</b> , <i>OptiX fab</i>
09:40-10:00	Current achievements in thin-film fabrication at HZG <b>Michael Störmer</b> , <i>Helmholtz-Zentrum Geesthacht</i>
10:00-10:20	Development of efficient and stable Al-based multilayer reflecting coatings for the EUV range <b>Evgueni Meltchakov</b> , <i>Laboratoire Charles Fabry</i>
<i>Coffee break</i>	
10:50-11:10	<i>Invited:</i> EUV optics lifetime - radiation damage, contamination, and oxidation <b>Maarten van Kampen</b> , <i>ASML</i>
11:10-11:30	Design, fabrication, and test of extreme ultraviolet microscope with 30-nm spatial resolution <b>Mitsunori Toyoda</b> , <i>IMRAM, Tohoku University</i>
11:30-11:50	Hard X-ray multilayers with increased radiation resistance <b>Mauro Prasciolu</b> , <i>DESY</i>
11:50-12:10	Stability issues in Pd/B <sub>4</sub> C multilayers <b>Christian Morawe</b> , <i>ESRF</i>
<i>Lunch</i>	
12:40-13:40	<b>Poster session 2</b>
13:40-14:00	<i>Invited:</i> Optimization and application of attosecond multilayers <b>Alexander Guggenmos</b> , <i>Ludwig-Maximilians-Universität München</i>
14:00-14:20	Periodic multilayers and FEL radiation <b>Philippe Jonnard</b> , <i>Sorbonne Universités</i>
14:20-14:40	Stress optimization of multilayer Laue lens coatings <b>Stefan Braun</b> , <i>Fraunhofer IWS Dresden</i>
14:40-15:00	X-ray nanometer focusing at the SSRF basing on multi-layer Laue lens <b>Jiayi Zhang</b> , <i>Beijing Synchrotron Radiation Facility</i>
<i>Break</i>	
15:20-15:40	<i>Invited:</i> Multilayers on sculptured surfaces <b>Dmitriy Voronov</b> , <i>Lawrence Berkeley National Laboratory</i>
15:40-16:00	Complete characterisation of a multilayer coated reflection grating by atomic force microscopy (AFM), X-ray diffraction (XRD) and grazing incidence X-ray fluorescence analysis (GIXRF) <b>Werner Jark</b> , <i>Elettra – Sincrotrone Trieste</i>
16:00-16:20	Accurate computation of the X-ray diffraction efficiency of a multilayer coated grating based on a non-conformal deposition model <b>Francois Polack</b> , <i>Synchrotron SOLEIL</i>
16:20-16:40	High Efficiency Multilayer coated Blazed Grating for tender X-rays <b>Andrey Sokolov</b> , <i>Helmholtz Zentrum Berlin</i>
16:40-17:00	Closing remarks

#### Recommendations for presenters:

**Invited and regular talks:** 15 minutes + 5 minutes for discussion



## Poster sessions

### Poster Session 1 (10 November 13:10 – 14:10)

- Structural and reflective characteristics of Mo/Be multilayer with barrier layers  
**Nikolai Chkhalo**, *IPM RAS*
- Cr/C multilayer mirror for Ni-like Ta X-ray laser application  
**Mingqi Cui**, *Beijing Synchrotron Radiation Facility*
- Optical Characterization of wave retarder in FUV-EUV range  
**Ahmed Gaballah**, *University of Padova*
- In-house X-ray Standing Wave study of LaN/B multilayer mirrors  
**Cedric Hendrikx**, *University of Twente*
- Development of high reflectance Cr/V multilayer mirror for water window applications  
**Qiushi Huang**, *Tongji University*
- Interface Growth in FeCo-Si Multilayers determined with atomic resolution  
**Thomas Krist**, *Helmholtz-Zentrum Berlin*
- Grazing incidence EUV surface metrology: benchmarking of DPP source table-top scatterometry versus PTB synchrotron based EUV-Radiometry  
**Oleksiy Maryasov**, *Physikalisch-Technische Bundesanstalt*
- In-situ stress measurement of thin film and multilayer deposition  
**Johan Reinink**, *University of Twente*
- Development of multilayer coated replicated neutron focusing optics  
**Suzanne Romaine**, *Smithsonian Astrophysical Observatory*
- The At-Wavelength Metrology facility for UV- and XUV reflection and diffraction optics at BESSY-II  
**Franz Schaefers**, *Helmholtz-Zentrum Berlin*
- Characterization of chemical processes and interfacial diffusion in Pd/Y multilayers using HAXPES induced by standing waves  
**M.-Y. Wu**, *Sorbonne Universités*
- Development of XUV multilayer coatings in IOF  
**Sergiy Yulin**, *Fraunhofer Institut Angewandte Optik und Feinmechanik*
- Interface engineering method for ultra-thin Cr/Ti soft x-ray multilayer  
**Jingtao Zhu**, *Tongji University*



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## Poster sessions

### Poster Session 2 (11 November 12:40 – 13:40)

- EBL2: high power EUV exposure facility  
**Herman Bekman, TNO**
- Multilayer Laue lenses for hard X-ray microscopy  
**Nathalie Bouet, Brookhaven National Laboratory**
- CeMOX, a Collaborative facility for Development of High Performance Multilayer Optics  
**Blandine Capitanio, Groupe Optique Synchrotron Soleil**
- In-vacuo growth studies and thermal oxidation of ZrO<sub>2</sub> thin films  
**Roger Coloma Ribera, University of Twente**
- The new 1 – 5 keV high efficiency alternate multilayer grating for SOLEIL SIRIUS beamline  
**David Denetiere, Groupe Optique Synchrotron Soleil**
- Design, Development and characterization of thin film filters for high brilliance sources in the UV-X-ray Spectral range.  
**Kety Jimenez, Padova University**
- Nonequilibrium electron-phonon dynamics in ruthenium thin films exposed to ultra-short laser pulses  
**Igor Milov, University of Twente**
- Thermal stability and mechanical stress of B-based multilayers  
**Philipp Naujok, Fraunhofer Institute for Applied Optics and Precision Engineering IOF**
- Fabrication, characterization and application of large aperture multilayer Laue lenses  
**Sven Niese, AXO DRESDEN GmbH**
- Numerical modelling of reflective multilayer based X-ray optics  
**Pierre Piault, ESRF The European Synchrotron**
- Thin film based Optical Elements for Analytical X-ray Applications  
**Jörg Wiesmann, Incoatec GmbH**