

## SLOPOS13 – 13<sup>th</sup> International Workshop on Slow Positron Beam Techniques and Applications at TUM

123 delegates from 21 countries accepted our NEPOMUC research group's invitation to the 13<sup>th</sup> International Workshop on Slow Positron Beam Techniques and Applications SLOPOS13 and joined at the Technische Universität München from 15<sup>th</sup> to 20<sup>th</sup> September. This event is part of a series of triennial SLOPOS-conferences. It was a great honour when the international research community chose the TUM as an organizer despite attractive competitors such as the USA, China and India.

The excellent scientific program comprised 50 talks and 58 posters presented during two poster sessions. It was very impressive to learn about novel technical developments on positron beam facilities and the wide range of its applications all over the world. The workshop reflected the large variety of positron beam experiments covering fundamental studies, e.g., for efficient production of anti-hydrogen as well as applied research on defects in bulk materials, thin films, surfaces, and interfaces (see also the scientific high-lights below). For one of the four top-class plenary talks we could win Prof. J. Mannhart of MPI for Solid State Research in Stuttgart who gave an outstanding presentation on Two-dimensional Electron Systems at Oxide Interfaces.



**Opening of the Scientific Program:**  
Prof. J. Barth, Dean of Physics  
Department; PD Dr. C. Hugenschmidt  
Chair of SLOPOS13; Prof. W. Petry,  
Scientific Director of FRM II

The workshop offered the unique opportunity to meet friends, get acquainted with new colleagues, and discuss lively scientific topics – also in informal atmosphere during a Bavarian Brotzeit at the poster sessions. Socializing had already started at the Welcome Reception in the Munich Town Hall on Sunday evening and was continued during the conference excursion when the delegates enjoyed the scenic surroundings of Lake Starnberg by boat. Arriving in the lovely city of Murnau, a concise introduction in history of art and an extraordinary concert for saxophone and organ in St. Nikolaus church worked up everybody's appetite for the Bavarian dinner.

The scientific program of SLOPOS13 was beautified by social events starting with a Welcome Reception on Sunday evening in the Munich Town Hall. During the conference excursion the delegates enjoyed the scenic surrounding of Starnberger See by boat. After a concise introduction in history of art and an extraordinary concert for saxophone and organ in St. Nikolaus church we had a Bavarian dinner in the lovely city of Murnau.

The international advisory committee of SLOPOS assigned a subcommittee to award student prizes for the best presented scientific contributions. To our great delight, the prizes were given to a team of students from Finland, a French student, and the NEPOMUC team. The prizes were awarded during the Conference Banquet in one of the most famous Wirtshäuser in the heart of Munich on Thursday evening.

At the end of the conference a guided tour of the experimental hall of FRM II was offered.

Particular focus was laid on the positron beam facility at the high-intensity positron source NEPOMUC. Hence the visitors gained an impression of the new brightness enhancement device with magnetic switches and the four different spectrometers which are currently operated: Surface Spectrometer – SuSpect, Coincidence Doppler-Broadening Spectrometer – CDBS, Pulsed Low-Energy Positron System – PLEPS, and a Positronium Time-Of-Flight experiment connected to the Open beam Port – OP.

A very high number of conference participants already gave a pretty positive feedback that confirms the success SLOPOS13. We are still very happy to have hosted such a fruitful workshop with its high-quality scientific contributions.

We are looking forward to SLOPOS14 in Japan in 2016!

Christoph Hugenschmidt

Chair of the Organising Committee

Garching, September 2013



**Conference excursion:** Members of the organisation team at Lake Starnberg.

## Scientific high-lights at SLOPOS13

### Positron beam facilities

- Further improvements of existing high-flux positron beams at large scale facilities such as POSH in Delft, MEPS and GIPS in Dresden-Rossendorf, NEPOMUC in Munich and at KEK and AIST, Japan.
- Development of new positron sources at the research reactors in Hamilton, Canada and Kyoto, Japan, as well as at accelerators in Saclay, France.
- Pulsed beams in Munich and Tsukuba, Japan.
- New  $^{22}\text{Na}$  based beams in Germany, Israel and Australia.
- Laser created relativistic positrons and development of multi-cell positron traps in USA

### Defect spectroscopy and interfaces

- NiTi shape memory alloys
- Mg-Ti thin films and Mg nanoparticles
- Embrittlement mechanism of RPV steels
- Lattice defects in GaN and InN
- Free volume in polymer films and at polymer-solid interfaces
- Vacancy defects in  $\text{UO}_2$
- Defect formation in battery cathodes
- Vacancy defects in strontium titanate

### Surfaces

- Positron induced  $\text{O}^+$  desorption
- Positrons sticking to surfaces
- Surface reconstruction determined by RHEPD

### Fundamentals

- Two-quantum  $e^+$  annihilation in flight
- Positronium cooling and Ps interaction
- Positron electron plasma
- Tomographic PALS
- Emission of correlated positron-electron pairs and Ps negative ions
- Production of anti-hydrogen
- Polarized positron and electronic structure of ferromagnetics

### Theory

- Comparison different theoretical approaches with experiment
- Modeling of positron-electron interaction in and Ps at surfaces
- Calculation of electronic structure obtained by 2D-ACAR

 **SLOPOS**  
Munich 2013



Conference Photo (17/09/2013. T. Gigl)