

SPS'12 & SPSTM-4

6th International Conference on
Scanning Probe Spectroscopy
and
4th International Workshop on
Spin-Polarized Scanning Tunneling Microscopy

September 9-12, 2012

Timmendorfer Strand, Baltic Sea, Germany

Scientific Program

Organized under the auspices of the Cluster of Excellence "NANOSPINTRONICS", the ERC Advanced Grant Group "FURORE", and the DFG Collaborative Research Center 668 "Magnetism from the single atom to the nanostructure".

Conference Chairmen

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R. Czajka (Poznań University of Technology)

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Scope and Topics of the Conference

The 6th International Conference on Scanning Probe Spectroscopy (SPS'12) will be held in Timmendorfer Strand, Germany on September 9-12, 2012, following the previous conferences 1997, 2003, 2009 in Poznań, Poland, and 2000, 2006 in Hamburg. This meeting will focus on recent advances in instrumental developments, experimental methods, theoretical conceptions and applications of scanning probe spectroscopy. The topics include

- scanning tunneling spectroscopy
- inelastic scanning tunneling spectroscopy
- spin-polarized tunneling spectroscopy
- scanning force spectroscopy

Particular emphasis will be put on spin-polarized scanning tunneling spectroscopy. For this topic a special Workshop will be organized as part of the SPS'12 conference to discuss latest developments in the field. Previous SPSTM-Workshops were held in Hamburg (2006), Athens/Ohio (2008), and Seoul (2010).

Other focus topics of SPS'12 include molecular systems, graphene, topological insulators, and novel superconductors.

Sunday **September 9, 2012**

Su

19.00 - 22.00 Registration and Reception with Buffet

Monday **September 10, 2012**

Mo

9.00 - 9.15 Opening and Welcome Address

9.15 - 9.45 **Molecular Graphene**
H. Manoharan (Stanford University, USA)

9.45 - 10.15 **Site-dependent ambipolar doping in a silicon surface**
N. J. Curson (London Centre for Nanotechnology, UCL, London, UK)

10.15 - 10.45 **Proximity, Phonon in Nanometer Size Superconducting Pb, Nb Islands : A STM Study**
S. Jeon (Department of Physics and Astronomy, Seoul National University)

10.45 - 11.15 **COFFEE BREAK**

11.15 - 11.45 **Magnetic Excitations of Molecules on the Surface of a Superconductor**
K. J. Franke (Freie Universität Berlin, Germany)

11.45 - 12.15 **Femtosecond time-resolved STM and its Applications**
H. Shigekawa (University of Tsukuba, Japan)

12.15 - 12.45 **Surface diffusion of organic molecules on a metallic surface investigated with STM**
G. Antczak (University of Wrocław, Poland)

12.45 - 14.00 **LUNCH BREAK**

14.00 - 14.20 **Combining STS and Photoelectron Spectroscopy to Study Ultrathin Molecular Films on Metals**
M. Hietschold (Chemnitz University of Technology, Germany)

14.20 - 14.40 **Molecular functional units on Si(100)**
M. Bazzanik (University of Hamburg, Germany)

- 14.40 - 15.00 **Detecting spin-states of single metal-organic complexes on a superconductor**
B. W. Heinrich (Freie Universität Berlin, Germany)
- 15.00 - 15.20 **Spin resolved measurements of single molecular magnets on surfaces**
J. Brede (University of Hamburg, Germany)
- 15.20 - 15.40 **First Principle Insights of Hybrid Organic-Ferromagnetic Interfaces**
N. Atodiresei (Forschungszentrum Jülich and JARA, Germany)
- 15.40 - 16.00 **Single Molecule Fluorescence from Tetraphenyl-Porphine on GaAs(110) in a STM**
S. Mühlenberend (Christian-Albrechts-Universität zu Kiel, Germany)
- 16.00 - 16.30 **COFFEE BREAK**
- 16.30 - 16.50 **Local charge distribution in self-assembled donor-acceptor complexes on Au(111)**
T. R. Umbach (Freie Universität Berlin, Germany)
- 16.50 - 17.10 **Isomerization of single dichlorobenzene molecules adsorbed on Ge(001)**
A. Wykrota (Poznan University of Technology, Poland)
- 17.10 - 17.30 **Graphene-Metal Interactions: Scanning Tunnelling Spectroscopy and Density Functional Theory Studies**
Z. Klusek (University of Lodz, Poland)
- 17.30 - 17.50 **Chemical Reactivity and Confined States of Graphene on Ru(0001) and Ir(111)**
S. J. Altenburg (Christian-Albrechts-Universität zu Kiel, Germany)
- 17.50 - 18.10 **Bismuth on graphite: origin of the Moire pattern**
P. J. Kowalczyk (University of Lodz, Poland)
- 18.10 - 18.30 **An atomic-scale view of an intercalated ferromagnet-graphene heterostructure**
R. Decker (University of Hamburg, Germany)
- 19.00 - 20.30 **DINNER**
- 20.30 - 22.30 **Poster Session**

Tuesday**September 11, 2012****Tu**

- 9.00 - 9.30 **First-Principles Theory of Atomic-Scale Magnetism observed by spin-polarized STM**
S. Heinze (Christian-Albrechts-Universität zu Kiel, Germany)
- 9.30 - 10.00 **Tailoring ground states and dynamics of bottom-up engineered nanomagnets**
J. Wiebe (University of Hamburg, Germany)
- 10.00 - 10.30 **Limits of Spin Stability in Atomically Assembled Antiferromagnets**
S. Loth (Center for Free-Electron Laser Science, Germany)
- 10.30 - 11.00 **COFFEE BREAK**
- 11.00 - 11.30 **Probing the magnetization dynamics of artificially constructed quantum magnets**
A. A. Khajetoorians (University of Hamburg, Germany)
- 11.30 - 12.00 **Theory of Dynamical Magnetic Excitations in Adatoms and Dimers**
S. Lounis (Forschungszentrum Jülich, Germany)
- 12.00 - 12.20 **Non-collinear magnetic ground state in finite metallic chains**
M. Menzel (University of Hamburg, Germany)
- 12.20 - 12.40 **Ab initio study of ferromagnetic Co-chains on the (5x1) Iridium(001) surface**
B. Dupé (Christian-Albrecht-Universität zu Kiel, Germany)
- 12.40 - 14.00 **LUNCH BREAK**
- 14.00 - 14.30 **Giant magnetoresistance through a single molecule**
T. K. Yamada (Chiba University, Japan)
- 14.30 - 15.00 **Investigations into the conductance and relaxations of magnetic single-atom contacts**
J. Kröger (Technische Universität Ilmenau, Germany)
- 15.00 - 15.20 **Electron Spin Resonance in Scanning Tunneling Microscopy**
G. Aloisi (Florence University, Italy)

- 15.20 - 15.40 **Spin-transfer torque and Joule heating generated by spin-polarized field-emitted electrons**
A. Schlenhoff (University of Hamburg, Germany)
- 15.40 - 16.00 **Tunneling Anisotropic Magnetoresistance on the Atomic Scale**
K. von Bergmann (University of Hamburg, Germany)
- 16.00 - 16.30 **COFFEE BREAK**
- 16.30 - 16.50 **Dynamics of magnetoelectric coupling in 2 ML Fe/Cu(111)**
L. Gerhard (Karlsruher Institut für Technologie, Germany)
- 16.50 - 17.10 **SP-STM study of individual Co atoms on Pd/Co/Ir(111)**
L. V. Dzemiantsova (University of Hamburg, Germany)
- 17.10 - 17.30 **Probing bulk impurities with STM: From a single Kondo atom towards dense systems**
H. Prüser (Georg-August-Universität Göttingen, Germany)
- 17.30 - 17.50 **Scanning tunneling spectroscopy on strongly disordered s-wave superconductor, NbN, close to the metal-insulator transition**
G. Saraswat (Tata Institute of Fundamental Research, India)
- 18.00 - 23.00 **Excursion**

Wednesday September 12, 2012

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- 9.00 - 9.30 **Dynamic force spectroscopy: models and interpretations**
A. Ptak (Poznan University of Technology, Poland)
- 9.30 - 9.50 **Atomically Precise Defects in Silicon**
S. R. Schofield (University College London, UK)
- 9.50 - 10.10 **Electronic properties of dangling-bond nanostructures prepared on hydrogen passivated Ge(001) surface by atomically precise hydrogen desorption**
S. Godlewski (Jagiellonian University, Poland)
- 10.10 - 10.30 **Electron wave function interference in complex Pb atomic chains on Si(553)-Au surface**
M. Jałochowski (Maria Curie-Skłodowska University, Poland)
- 10.30 - 11.00 **COFFEE BREAK**
- 11.00 - 11.20 **The structural surface defects and electronic properties of bismuth selenide**
M. Hermanowicz (Poznan University of Technology, Poland)
- 11.20 - 11.40 **Coulomb-repulsion driven surface doping of Bi₂Se₃ with Rb**
L. Zhou (University of Hamburg, Germany)
- 11.40 - 12.00 **STM/S Characterization of differently doped Bi₂Se₃ surfaces**
W. Koczorowski (Poznan University of Technology, Poland)
- 12.00 - 12.20 **In-plane anisotropy of Fe atoms on Bi₂Se₃(111)**
T. Schlenk (University of Hamburg, Germany)
- 12.20 - 12.40 **Co atoms on Bi₂Se₃: electronic and magnetic properties**
M. Waśniowska (University of Hamburg, Germany)
- 12.40 - 12.45 **Closing**
- 12.45 - 14.00 **LUNCH**

POSTER SESSION

Monday, September 10, 2012, 20.30 - 22.30:

- P01 **Segregation of Iron Oxides on Reduced TiO₂ (001) Surface**
A. Busiakiewicz, W. Kozłowski, and Z. Klusek
- P02 **Switching the magnetization of nanomagnets using SP-STM**
B. Ehlers, G. Herzog, S. Krause, and R. Wiesendanger
- P03 **Intercalation of Fe atoms in Bi₂Se₃**
A. Eich, T. Schlenk, M. Bianchi, T. O. Wehling, A. Balatsky, J.-L. Mi, B. B. Iversen, O. Pietzsch, J. Wiebe, A. A. Khajetoorians, Ph. Hofmann and R. Wiesendanger
- P04 **An oxygen annealing chamber for the preparation of clean hard metal substrates**
J. Friedlein, A. Sonntag, B. Ehlers, S. Krause, and R. Wiesendanger
- P05 **Bistability of Adatoms on Graphene**
M. Gyamfi, T. Eelbo, M. Waśniowska, and R. Wiesendanger
- P06 **Chromium Bulk Tips for Spin-Polarized Scanning Tunneling Microscopy**
C. Hanneken, A. Kubetzka, K. von Bergmann, S.-W. Hla, and R. Wiesendanger
- P07 **The study of silver nanoparticle properties using scanning probe microscopy**
M. Kamiński, B. Bursa, and M. Szybowicz
- P08 **Spin-transfer torque switching efficiency in SP-STM experiments**
S. Krause, A. Sonntag, G. Herzog, A. Schlenhoff, and R. Wiesendanger
- P09 **Adsorption and Diffusion of single Atoms on Si(553)-Au Surface**
M. Krawiec and M. Jałochowski
- P10 **Magnetism of fcc and hcp Fe atomic layers on Ir(111)**
A. Kubetzka, K. von Bergmann, M. Menzel, J. Brede, R. Wiesendanger, G. Bihlmayer, S. Blügel, and S. Heinze
- P11 **Superconductivity in thin lanthanum films**
P. Löptien, L. Zhou, A. A. Khajetoorians, J. Wiebe, and R. Wiesendanger
- P12 **Mechanical Properties of Bilayer Vesicles (PDMS-b-PMOXA) Probed in situ by AFM**
M. Makowski, K. Jaskiewicz, A. Kroeger, and M. Kappl

- P13 **Conical Spin-Spiral State in an Ultrathin Film**
N. Romming, Y. Yoshida, S. Schröder, P. Ferriani, D. Serrate, A. Kubetzka, K. von Bergmann, S. Heinze, and R. Wiesendanger
- P14 **Electrical conductivity of DNA molecules**
T. I. Sharipov, S. S. Ghots, and R. Z. Bakhtizin
- P15 **Imaging the electronic structure and deprotonation of tetra(4-hydroxyphenyl)porphyrin**
L. Smykalla and M. Hietschold
- P16 **Bulk Cr tips with full spatial magnetic sensitivity for spin-polarized scanning tunneling microscopy**
A. Sonntag, A. Schlenhoff, S. Krause, G. Herzog, and R. Wiesendanger
- P17 **Simulation of the Domain Wall Manipulation with a Magnetic Tip**
T. Stapelfeldt, R. Wieser, E. Y. Vedmedenko, and R. Wiesendanger
- P18 **STM/STS Investigations of Graphene Deposited on SiC(0001) Substrate**
M. Wróblewski, M. Kempieński, P. Szroeder, W. Strupiński, T. Luciński, B. Susła, D. Markowski, Sz. Łoś, and W. Kempieński
- P19 **Core Level Photoemission Characterization of polycrystalline MgB_x Surface**
M. Wróblewski, W. Kempieński, Z. Werner, M. Barlak, D. Schmeisser, and B. Susła
- P20 **Magnetic Exchange Force Spectroscopy with Atomic Resolution**
A. Schwarz, R. Schmidt, and R. Wiesendanger
- P21 **Scanning tunneling microscopy of Ni layers on W(110)**
J. Schöneberg, A. Weismann, and R. Berndt
- P22 **Supramolecular organization and subsequent interlinking of biphenyl derivatives on metal surfaces**
F. Song, T. A. Pham, S. Boz, U. Soydaner, M. Mayor, and M. Stöhr