

# Tuesday, 16 September

09:00 *Opening Remarks*

R. Perez and R. Garcia

## Force Spectroscopy I

*Chair: E. Meyer*

09:20 *Atomic-Resolution 3D Force and Damping Maps on Nanotube Peapods* 25

M. Ashino, D. Obergfell, S. Roth, S. Berber, D. Tomanek, R. Wiesendanger

09:40 *Ubiquitous Mechanisms of Energy Dissipation in Non-Contact Atomic Force Microscopy* 26

S. A. Ghasemi, A. Baratoff, S. Goedecker, T. Lenosky, E. Meyer, H. J. Hug

10:00 *Three-Dimensional Force Imaging and Quantification with Atomic Resolution* 27

U. D. Schwarz, B. J. Albers, T. C. Schwendemann, M. Z. Baykara, N. Pilet, E. I. Altman

10:20 *Vertical and lateral force mapping on the Si(111)-(7x7) surface by dynamic force microscopy* 28

Y. Sugimoto, T. Namikawa, K. Miki, M. Abe, S. Morita

10:40 **Coffee**

## KPFM I

*Chair: H. Onishi*

11:20 *Distinct short-range electrostatic interaction on Si and substitutional Pb atoms at the Si(111)-(7x7) surface* 29

S. Sadewasser, O. Custance, Y. Sugimoto, M. Abe, S. Morita

11:40 *Atomic scale Kelvin Probe Force Microscopy Studies of the Surface Potential Variations on the TiO<sub>2</sub>(110) surface* 30

T. Glatzel, G.H. Enevoldsen, M.C. Christensen, J.V. Lauritsen, E. Meyer, F. Besenbacher

12:00 *Quantum Mechanical Simulation of Kelvin Probe Force Microscopy for a Simple Metal Surface* 31

S. Watanabe, S. Shibata, T. Tada

12:20 *Theory of atomic scale contact contrast in amplitude modulation Kelvin probe force microscopy - application to Si(111)-7x7* 32

A. Baratoff, S. Kawai, T. Glatzel, E. Meyer

12:40 **Lunch**

## Manipulation

*Chair: F. J. Giessibl*

14:30 *Atom Manipulation on Cu(110)-O Surface with Low Temperature Noncontact AFM* 33

Y. Sugawara, S. H. Lee, Y. Naitoh, Y. J. Li, M. Kageshima

14:50 *Unveiling the atomic processes during the manipulation of single atoms at semiconductor surfaces using the FM-AFM in the repulsive regime* 34

P. Pou, P. Jelinek, Y. Sugimoto, M. Abe, O. Custance, S. Morita, R. Perez

15:10 *Water chemistry and manipulation on alkaline earth halide surfaces* 35

A. S. Foster, S. Hirth, F. Ostendorf, M. Reichling

15:30 *Controlling the motion of large organic molecules on insulating surfaces through molecular structure and localised forces* 36

T. Trevethan, A. Shluger

## Poster Session I

*Chair: A. Oral*

15:50 *Poster session I & Coffee Service (15:50 – 18:00)*

PI

# Wednesday, 16 September

## Oxides

Chair: A. Shluger

- 09:00 *Characterizing reactivity of water molecules on CeO<sub>2</sub>(111) using atomic force microscopy* 39  
M. Reichling, S. Torbruegge, O. Custance, S. Morita
- 09:20 *Atomic-scale ordering of the  $\alpha$ -Al<sub>2</sub>O<sub>3</sub>(0001) surface studied with atom-resolved nc-AFM* 40  
J. V. Lauritsen, M. C. Christensen, K. Venkaramani, B. Hinnemann, S. Helveg, F. Besenbacher
- 09:40 *Beyond Imaging: Dynamic Force Spectroscopy on Thin MgO Films* 41  
M. Heyde, T. Koenig, G. H. Simon, H.-J. Freund
- 10:00 *Simultaneous Atom-Resolved AFM and STM Studies of the Hydroxylated TiO<sub>2</sub> (110) Surface* 42  
H. P. Pinto, G. H. Enevoldsen, M. C. Christensen, W. Hofer, J. V. Lauritsen, A. S. Foster, F. Besenbacher
- 10:20 *"All-inclusive" imaging of TiO<sub>2</sub>(110)* 43  
R. Bechstein, C. Gonzalez, P. Jelinek, R. Perez, A. Kuehnle
- 10:40 **Coffee**

## KPFM II

Chair: O. Custance

- 11:20 *Interface Dipole Formation of Different ZnPcCl<sub>8</sub> Phases on Ag(111) Observed by Kelvin Probe Force Microscopy* 44  
C. Loppacher, P. Milde, U. Zerweck, L. M. Eng, M. Abel, L. Giovanelli, L. Nony, M. Mossoyan, L. Porte
- 11:40 *Development of Two-probe Frequency Modulation AFM/KFM for Nanometer-scale Electrical Measurement* 45  
E. Tsunemi, N. Satoh, K. Kobayashi, K. Matsushige, H. Yamada
- 12:00 *Interface and single molecule analysis of organic molecules in a Ferroelectric-OFET* 46  
P. Milde, K. Haubner, U. Zerweck, D. Koehler, E. Jaehne, L. M. Eng
- 12:20 *Kelvin probe force microscopy measurements of epitaxial graphene* 47  
R. Bennewitz, T. Filleter, J. McChesney, A. Bostwick, E. Rotenberg, T. Seyller
- 12:40 **Lunch**

## Liquids and Biomolecules I

Chair: J. Colchero

- 14:30 *High-speed Frequency Modulation Atomic Force Microscopy in Liquids* 48  
T. Fukuma
- 14:50 *High-resolution Imaging of Biomolecules in Liquids by FM-AFM* 49  
N. Oyabu, S. Ido, K. Kimura, K. Kobayashi, Y. Hirata, H. Yamada
- 15:10 *Bimodal atomic force microscopy imaging of isolated antibodies* 50  
N. F. Martinez, J. R. Lozano, E. T. Herruzo, F. Garcia, R. Garcia
- 15:30 *Theoretical simulation of dynamic mode AFM in water* 51  
M. Tsukada, K. Tagami, N. Watanabe

## Poster Session II

Chair: A. Schwarz

- 15:50 *Poster session II & Coffee Service (15:50 – 18:00)* PII

# Thursday, 18 September

## Magnetic and Electronic Properties

Chair: U. D. Schwarz

- 09:00 *Magnetic Exchange Force Microscopy on FeM(001)* 55  
A. Schwarz, R. Schmidt, R. Wiesendanger, C. Lazo, S. Heinze, V. Caciuc, H. Hoelsher
- 09:20 *Ab-initio Simulation of Magnetic Exchange Force Microscopy* 56  
H. Hoelscher, C. Lazo, V. Caciuc, S. Heinze
- 09:40 *Manipulation of local charges in graphene nanoribbons* 57  
G. Rubio-Bollinger, A. Castellanos-Gomez, N. Agrait
- 10:00 *Observation of Coulomb oscillation rings in InAs quantum dots by dissipative electrostatic force detection* 58  
Y. Miyahara, L. Cockins, S. A. Studenikin, P. Poole, A. Sachrajda, P. Grutter
- 10:20 *Scanning-Gate Microscopy images the electronic LDOS inside nanostructures* 59  
S. Huant, F. Martins, M. G. Pala, B. Hackens, H. Sellier, T. Ouisse, V. Bayot
- 10:40 **Coffee**
- 11:20 *A nontrivial behavior of the resonant tunneling current along the tip-sample distance on semiconductor surfaces* 60  
P. Jelinek, M. Svec, P. Pou, V. Chab, R. Perez
- 11:40 *QPlus AFM on single crystal insulators with small oscillation amplitudes at 5 K* 61  
B. Uder, J. Koeble, K. Winkler, A. Bettac, A. Feltz, M. Maier

## Liquids and Biomolecules II

Chair: T. Fukuma

- 12:00 *Molecular-scale Hydration Structures Investigated by Frequency Modulation Atomic Force Microscopy* 62  
H. Yamada, K. Kimura, S. Ido, N. Oyabu, K. Kobayashi, T. Imai
- 12:20 *Small Amplitude Dynamic Force Microscopy of Liquids Near a Solid Surface* 63  
W. Hofbauer, S. J. O'Shea
- 12:40 *Adhesion Hysteresis and Capillary Interactions in Dynamic Atomic Force Microscopy* 64  
E. Sahagun, J. J. Saenz
- 13:00 **Lunch**

# Friday, 19 September

## Insulators and Molecules

Chair: M. Reichling

- 09:00 *Heteroepitaxy of ultrathin films studied by high-resolution nc-AFM* 67  
T. Filleter, R. Bennewitz, S. Maier, W. Paul, T. Glatzel, O. Pfeiffer, E. Meyer
- 09:20 *Evidence for tip structural reversible transformations during NC-AFM imaging on KBr(001)* 68  
S. Gauthier, M. A. Venegas de la Cerda, J. Abad, D. Martrou
- 09:40 *Repulsive interaction and contrast inversion in non-contact atomic force microscopy imaging of adsorbates* 69  
P. Rahe, R. Bechstein, J. Schuette, F. Ostendorf, F. Loske, A. Kuehnle
- 10:00 *Molecule-Insulator interactions: Growth, epitaxy and electronic properties of PTCD A on NaCl* 70  
S. Burke, W. Ji, J. LeDue, J. Topple, S. Fostner, J. Mativetsky, H.-J. Gao, H. Guo, P. Grutter
- 10:20 *Resolving atomic scale features of a polar metal oxide surface* 71  
S. Torbrugge, F. Ostendorf, M. Reichling
- 10:40 **Coffee**

## Force Spectroscopy II

Chair: S. Morita

- 11:20 *Atomic Scale Force Vector Fields on NaCl-type (001) surfaces* 72  
R. Hoffmann, K. Ruschmeier, D. Weiner, A. Schirmeisen
- 11:40 *Force spectroscopy using cantilever higher flexural modes* 73  
O. Custance, Y. Sugimoto, M. Abe, S. Morita
- 12:00 *Imaging and Mapping for discriminating atom species using Non-contact Atomic Force Microscopy* 74  
M. Abe, Y. Sugimoto, K. Miki, T. Namikawa, S. Morita
- 12:20 *Qplus, quo vadis?* 75  
F. J. Giessibl
- 12:40 *Closing Remarks*  
R. Perez and R. Garcia