

**AG Kuch**  
**Scientific Activity Report 2017**

**Scientists:**

Arruda, Lucas

Bernien, Matthias (until 30.06.)

Britton, Andrew (until 19.10.)

Gelen, Ismet

Golias, Evangelos (from 01.06.)

Kipgen, Lalminthang

Kuch, Wolfgang

Kumberg, Ivar (from 26.10.)

Manzoor, Alina (from 11.09.)

Nickel, Fabian

Tauqir

**Bachelor, Master, and Diploma students:**

Bach, Jan (from 13.09.)

Drauschke, Janina (until 04.04.)

Ebert, Thomas (22.05.–27.11.)

Kemmler, Lukas (until 07.03.)

Kruschinski, Arnold (14.02.–01.08.)

Memmen, Janka (from 10.11.)

## **Publications:**

L. Kipgen, M. Bernien, F. Nickel, H. Naggert, A. J. Britton, L. M. Arruda, E. Schierle, E. Weschke, F. Tuczek, and W. Kuch

Soft-x-ray-induced spin-state switching of an adsorbed Fe(II) spin-crossover complex  
J. Phys.: Condens. Matter. **29**, 394003-1–7 (2017).

W. Kuch and M. Bernien

Controlling the magnetism of adsorbed metal-organic molecules  
J. Phys.: Condens. Matter **29**, 023001-1–14 (2017).

F. Nickel, M. Bernien, M. Herder, S. Wrzalek, P. Chittas, K. Kraffert, L. M. Arruda, L. Kipgen, D. Krüger, S. Hecht, and W. Kuch

Light-induced photoisomerization of a diarylethene molecular switch on solid surfaces  
J. Phys.: Condens. Matter **29**, 374001-1–6 (2017).

F. Nickel, M. Bernien, K. Kraffert, D. Krüger, L. M. Arruda, L. Kipgen, and W. Kuch  
Reversible Switching of Spiropyran Molecules in Direct Contact With a Bi(111) Single Crystal Surface

Adv. Funct. Mater. **27**, 1702280-1–6 (2017).

S. Ossinger, H. Naggert, L. Kipgen, T. Jasper-Toennies, A. Rai, J. Rudnik, F. Nickel, L. M. Arruda, M. Bernien, W. Kuch, R. Berndt, and F. Tuczek

Vacuum-Evaporable Spin-Crossover Complexes in Direct Contact with a Solid Surface: Bismuth versus Gold

J. Phys. Chem. C **121**, 1210–1219 (2017).

## **Presentations:**

### **a) invited talks**

M. Bernien, F. Nickel, H. Naggert, L. M. Arruda, L. Kipgen, C. F. Hermanns, K. Tarafder, T. G. Gopakumar, J. Miguel, A. Krüger, F. Matino, A. Bannwarth, S. Mühlenberend, Y.-M. Chang, D. Krüger, K. Kraffert, W. Walter, E. Schierle, E. Weschke, R. Berndt, P. M. Oppeneer, F. Tuzcek, and W. Kuch  
X-ray absorption spectroscopy of magnetic and conformational molecular switches on surfaces  
Final Symposium of Sfb 658 on Elementary Processes in Molecular Switches at Surfaces, Berlin, 05.–06.04.2017.

W. Kuch  
X-ray absorption spectroscopy for the investigation of adsorbed molecules  
1st Berlin Photon School at BESSY II, Berlin, 14.–24.03.2017.

W. Kuch  
X-ray absorption spectroscopy for the investigation of adsorbed molecules  
CIC nanoGUNE, San Sebastian (Spain), 12.05.2017.

W. Kuch  
Controlling magnetic molecules on surfaces  
Physikalisches Kolloquium, Universität Bayreuth, 13.06.2017.

W. Kuch  
– X-ray absorption spectroscopy and magnetic circular dichroism  
– Magnetic molecules at surfaces  
– X-ray absorption spectroscopy for the investigation of adsorbed molecules  
Lecture Series on „X-ray absorption spectroscopy of magnetic molecules at surfaces“, Graduate School, Università degli Studi Roma Tre, Rome (Italy), 15.–19.06.2017.

W. Kuch  
Controlling magnetic molecules on surfaces  
Physikalisches Kolloquium, Universität Osnabrück, 30.11.2017.

### **b) contributed talks**

M. Bernien, F. Nickel, J. Miguel, L. M. Arruda, L. Kipgen, N. Blümel, D. Krüger, A. J. Britton, E. Schierle, E. Weschke, and W. Kuch  
Interplay of magnetic coupling and anisotropy of Ho<sub>3</sub>N@C<sub>80</sub> endohedral fullerenes on ferromagnetic substrates  
DPG Spring Meeting of the Condensed Matter Section, Dresden (19.–24.03.2017).

S. Kraus, F. Huttmann, N. Rothenbach, K. Ollefs, L. M. Arruda, F. Nickel, A. J. Britton, W. Kuch, Th. Michely, and H. Wende  
Growth of Tm-based organometallic nanostructures on Gr/Ir(111)  
DPG Spring Meeting of the Condensed Matter Section, Dresden (19.–24.03.2017).

N. Rothenbach, F. Huttmann, K. Ollefs, S. Kraus, M. Bernien, L. M. Arruda, W. Kuch, H. Wende, and Th. Michely

Magnetic properties of EuCot nanowires on graphene/Ir(111)

DPG Spring Meeting of the Condensed Matter Section, Dresden (19.–24.03.2017).

S. Kraus, F. Huttmann, N. Rothenbach, K. Ollefs, L. M. Arruda, W. Kuch, H. Wende, and T. Michely

Nanostructures of Cyclooctatetraene with Rare Earth Metals on Graphene

Operating Quantum States in Atoms and Molecules at Surfaces (QMol Conference 2017), Ascona (Switzerland) (10.–14.09.2017).

### **c) posters**

L. M. Arruda, Md. E. Ali, M. Bernien, F. Nickel, J. Kopprasch, P. M. Oppeneer, and W. Kuch  
Controlling the magnetic anisotropy of adsorbed Fe porphyrins by a ring-closure reaction  
DPG Spring Meeting of the Condensed Matter Section, Dresden (19.–24.03.2017).

L. Kipgen, H. Naggert, M. Bernien, F. Nickel, L. M. Arruda, A. J. Britton, S. Ossinger, F. Tuzcek, and W. Kuch

The Emergence of Cooperativity in the Coverage-Dependent Temperature and Light-Induced Spin-State Switching of an Fe(II) Complex Adsorbed on a Graphite Surface

DPG Spring Meeting of the Condensed Matter Section, Dresden (19.–24.03.2017).

L. Kipgen, H. Naggert, M. Bernien, F. Nickel, L. M. Arruda, A. J. Britton, S. Ossinger, F. Tuzcek, and W. Kuch

The Emergence of Cooperativity in the Coverage-Dependent Temperature and Light-Induced Spin-State Switching of an Fe(II) Complex Adsorbed on a Graphite Surface

Final Symposium of Sfb 658 on Elementary Processes in Molecular Switches at Surfaces, Berlin, 05.–06.04.2017.

L. Kipgen, M. Bernien, H. Naggert, A. J. Britton, L. M. Arruda, F. Nickel, S. Ossinger, Chen Luo, F. Radu, F. Tuzcek, and W. Kuch

Tuning the Spin-Crossover Behavior of an Fe(II) Complex on a Graphite Surface by Methyl Groups

Ninth Joint BER II and BESSY II User Meeting, Berlin (13.–15.12.2017).

L. Kipgen, M. Bernien, S. Ossinger, A. J. Britton, L. M. Arruda, F. Nickel, H. Naggert, C. Luo, H. Ryll, F. Radu, F. Tuzcek, and W. Kuch

Tuning the Spin-Crossover Behavior of an Fe(II)-based Complex on Graphite with Methyl Groups

Operating Quantum States in Atoms and Molecules at Surfaces (QMol Conference 2017), Ascona (Switzerland) (10.–14.09.2017).

F. Nickel, M. Bernien, S. Wrzalek, M. Herder, P. Chittas, K. Kraffert, L. M. Arruda, L. Kipgen, S. Hecht, and W. Kuch

Light-induced ring-closure isomerization of a diarylethene derivate in direct contact with surfaces

Final Symposium of Sfb 658 on Elementary Processes in Molecular Switches at Surfaces, Berlin, 05.–06.04.2017.

S. Ossinger, H. Naggert, L. Kipgen, T. Jasper-Toennies, W. Kuch, R. Berndt, and F. Tucek  
Physical Vapour Deposition of Fe(II) SCO Complexes  
Gordon Research Conference on Artificial Molecular Switches & Motors, Holderness, NH  
(U.S.A.), 11.–16.06.2017.

N. Rothenbach, F. Huttmann, K. Ollefs, S. Kraus, M. Bernien, L. M. Arruda, N. B. Brookes,  
K. Kummer, W. Kuch, T. Michely, and H. Wende  
Magnetic properties of EuCot nanowires on graphene/Ir(111)  
Operating Quantum States in Atoms and Molecules at Surfaces (QMol Conference 2017),  
Ascona (Switzerland) (10.–14.09.2017).

## Degrees:

Drauschke, Janina

Differenzielle Reflexionsspektroskopie zur Schaltkinetik von adsorbiertem Spironaphtooxazin  
Bachelor degree, Freie Universität Berlin, April 2017.

Kemmler, Lukas

Charakterisierung eines Aufbaus zur Differentiellen Reflexions-Spektroskopie an  
photochromen Molekülen  
Bachelor degree, Freie Universität Berlin, March 2017.

Kruschinski, Arnold

Synchrotron-Detected Electron-Paramagnetic Resonance of Simple Molecules on Surfaces  
Bachelor degree, Freie Universität Berlin, August 2017.

Ebert, Thomas

Thermisch und mit LIESST induzierter Spin-Crossover von adsorbiertem  
 $\text{Fe}(\text{H}_2\text{B}(\text{BPZ})_2)_2\text{Phen} + \text{me}_4$  auf kristallinem HOPG-Substrat  
Bachelor degree, Freie Universität Berlin, November 2017.