AG Kuch
Scientific Activity Report 2013

Scientists:

Bernien, Matthias
Chang, Yin-Ming
Erkovan, Mustafa (07.06.–20.06.)
Hermanns, Ch. Felix (until 30.06.)
Khalifa, Zaki (until 15.03.)
Kopprasch, Jens (18.03.–31.07.)
Krüger, Alex
Kuch, Wolfgang
Nickel, Fabian (since 19.04.)
Sandig, Oliver
Shokr, Yasser
Song, Jiaming
Wu, Chii-Bin (until 31.01.)
Xu, Jianli (since 23.10.)
Xu, Qingyu (12.06.–08.09.)
Zhang, Bin

Bachelor, Master, and Diploma students:

Chittas, Pantelis (since 04.11.)
Drescher, Lorenz (until 28.01.)
Hagelschuer, Till (since 12.09.)
Hahn, Marc (until 28.02.)
Hartmann, Claudia (until 07.08.)
Khan, Risalat (until 22.10.)
Kraffert, Kai (since 30.09.)
Krüger, Dennis (until 11.02.)
Nickel, Fabian (until 04.04.)
Zitzke, Patrick (25.03.–27.05.)
Publications:

S. Bhandary, B. Brena, P. M. Panchmatia, I. Brumboiu, M. Bernien, C. Weis, B. Krumme, C. Etz, W. Kuch, H. Wende, O. Eriksson, and B. Sanyal
Manipulation of spin state of iron porphyrin by chemisorption on magnetic substrates

Spin Crossover Complex on Au(111): Structural and Electronic Differences Between Mono- and Multilayers

Magnetic Coupling of Gd₃N@C₈₀ Endohedral Fullerenes to a Substrate

C. F. Hermanns, K. Tarafder, M. Bernien, A. Krüger, Y.-M. Chang, P. M. Oppeneer, and W. Kuch
Magnetic Coupling of Porphyrin Molecules Through Graphene

C. F. Hermanns, M. Bernien, A. Krüger, W. Walter, Y.-M. Chang, E. Weschke, and W. Kuch
Huge magnetically coupled orbital moments of Co porphyrin molecules and their control by CO adsorption

Iron Porphyrin molecules on Cu(001): Influence of adlayers and ligands on the magnetic properties

M. Y. Khan, Chii-Bin Wu, M. Erkovan, and W. Kuch
Probing antiferromagnetism in NiMn/Ni/(Co)/Cu₃Au(001) single-crystalline epitaxial thin films

M. Y Khan, Chii-Bin Wu, S. K. Kreft, and W. Kuch
Concentration- and thickness-dependent magnetic properties of NiₓMn₁₋ₓ(Ni/(Co)/Cu₃Au(001) in epitaxially grown NiₓMn₁₋ₓ(Ni/(Co)/Cu₃Au(001)

V. Mazalova, A. Soldatov, A. Krüger, and W. Kuch
Theoretical study of the local atomic and electronic structure of dimetacyano azobenzene molecules on Bi (111) substrate
**Presentations:**

**a) invited talks**

W. Kuch  
X-ray spectroscopic investigations of adsorbed switchable molecules  
Institut für Physik, Johannes Gutenberg Universität Mainz, 10.01.2013.

W. Kuch  
X-ray spectroscopic studies of paramagnetic porphyrin molecules on graphene  
International Conference on Functional Metal Organics and Hybrids, Kolkata (India), 08.–10-02.2013.

W. Kuch  
X-ray spectroscopic investigations of adsorbed switchable molecules  
Institut Néel, CNRS Grenoble, Grenoble (France), 14.05.2013.

W. Kuch  
Controlling the Magnetic Properties of Metalloporphyrin Molecules on Ferromagnetic Films  
International Conference on Nanoscale Magnetism (ICNM 2013), Istanbul (Turkey), 02.–06.09.2013.

W. Kuch  
Ferromagnetic coupling in self-assembled metal-organic networks at surfaces  
II. German-Russian Interdisciplinary Workshop “Nanodesign: Physics, Chemistry, Computer Modeling”, Rostov-on-Don (Russia), 10.–11.10.2013.

W. Kuch  
Magnetic coupling in metal-organic surface layers  

**b) contributed talks**

M. Bernien, D. Wiedemann, C. F. Hermanns, A. Krüger, D. Rolf, W. Kroener, P. Müller, A. Grohmann, and W. Kuch  
Spin Crossover in a Vacuum-Deposited Submonolayer of a Molecular Iron(II) Complex  
DPG-Frühjahrstagung 2013 of the Condensed Matter Section, Regensburg, 10.–15.03.2013.

M. Bernien, C. F. Hermanns, K. Tarafder, A. Krüger, W. Walter, Y.-M. Chang, E. Weschke, P. M. Oppeneer, and W. Kuch  
Magnetic coupling of porphyrin molecules through graphene  
Joint European Magnetic Symposia (JEMS 2013), Rhodes (Greece), 25.–30.08.2013.

C. F. Hermanns, K. Tarafder, M. Bernien, A. Krüger, W. Walter, Y.-M. Chang, E. Weschke, P. M. Oppeneer, and W. Kuch  
Huge magnetically coupled orbital moments of Co porphyrin molecules and their control by CO adsorption  
DPG-Frühjahrstagung 2013 of the Condensed Matter Section, Regensburg, 10.–15.03.2013.
Magnetism and molecule-surface interaction in transition metal porphyrin molecules on Cu(001)
DPG-Frühjahrstagung 2013 of the Condensed Matter Section, Regensburg, 10.–15.03.2013.

S. Polesya, S. Mankovsky, H. Ebert, W. Kuch, and J. Minar
Magnetic properties of Fe,Mn$_{1-x}$/Ni bilayers: an ab initio study
DPG-Frühjahrstagung 2013 of the Condensed Matter Section, Regensburg, 10.–15.03.2013.

Structural and magnetic properties of pyridyl and benzonitrile based metal-organic networks
DPG-Frühjahrstagung 2013 of the Condensed Matter Section, Regensburg, 10.–15.03.2013.

W. Stefanowicz, L. E. Nistor, S. Pizzini, W. Kuch, V. Nguyen, G. Gaudin, S. Auffret, B. Rodmacq, and J. Vogel
Size dependence of magnetic switching in perpendicular pillars close to the spin reorientation transition

c) posters

Electronic and magnetic properties of Gd$_3$N@C$_{80}$ on Cu(100)

Magnetic Coupling of Gd$_3$N@C$_{80}$ Endohedral Fullerenes to a Substrate
Fifth Joint BER II and BESSY II Users Meeting, Berlin, 04.–06.12.2013.

A Spin-Crossover Complex on Surfaces: Structural and Electronic Differences Between Mono- and Multilayers
Fifth Joint BER II and BESSY II Users Meeting, Berlin, 04.–06.12.2013.

M. Erkovan, Y. Shokr, D. Schiestl, M. Yaqoob Khan, C.-B. Wu, and W. Kuch
Spin-Reorientation Transition of Ni on Cu3Au(001) and Dependence of Curie Temperature on Ni and NiMn Thickness
International Conference on Nanoscale Magnetism (ICNM 2013), Istanbul (Turkey), 02.–06.09.2013.
F. Nickel, M. Bernien, Q. Xu, and W. Kuch
Light-induced ring opening of a submonolayer nitrospiropyran electronically decoupled from a Cu(100) surface

H. Ryll, F. Radu, C. Back, W. Kuch, A. Tennant, and H. Zabel
VEKMAG - a vector magnet for BESSY II
Fifth Joint BER II and BESSY II Users Meeting, Berlin, 04.–06.12.2013.

Y. Shokr, M. Erkovan, D. Schiestl, C.-B. Wu, M. Y. Khan, and W. Kuch
Influence of top Ni layer on exchange bias and blocking temperature in Ni/NiMn/Ni trilayers
The European School on Magnetism – 2013 School "Magnetism for Energy – From fundamentals to materials", Cargèse (France), 25.02.–08.03.2013.

Y. Shokr, M. Erkovan, D. Schiestl, C.-B. Wu, M. Y. Khan, and W. Kuch
Influence of top Ni layer on exchange bias and blocking temperature in Ni/NiMn/Ni trilayers
DPG-Frühjahrstagung 2013 of the Condensed Matter Section, Regensburg, 10.–15.03.2013.

Y. Shokr, M. Erkovan, C.-B. Wu, and W. Kuch
Probing the magnetic interlayer coupling between perpendicularly magnetized Ni films across thick Ni<sub>25</sub>Mn<sub>75</sub> antiferromagnetic layers by minor-loop measurements
International Conference on Nanoscale Magnetism (ICNM 2013), Istanbul (Turkey), 02.–06.09.2013.

J. Song, C.-B. Wu, and W. Kuch
Optimization of the differential conductance contrast in spin-polarized room temperature scanning tunneling microscopy of e-fct Mn on Co/Cu(001)
DPG-Frühjahrstagung 2013 of the Condensed Matter Section, Regensburg, 10.–15.03.2013.
Degrees:

Drescher, Lorenz
Die Entkopplung von Spiropyran vom Substrat auf Xenon- und Adamantan-modifizierten Cu(100)-Oberflächen
Bachelor degree, Freie Universität Berlin, February 2013.

Hahn, Marc
Magnetisierungsdynamik gekoppelter magnetischer Dünnschichtsysteme in Experiment und Simulation

Hartmann, Claudia
Untersuchung magnetischer Eigenschaften von Eisen und Kobalt in selbstorganisierenden metall-organischen Netzwerken auf Gold(111) mittels Röntgenabsorptionsspektroskopie
Diploma degree, Freie Universität Berlin, August 2013.

Hermanns, Ch. Felix
X-ray absorption studies of metalloporphyrin molecules on surfaces: Electronic interactions, magnetic coupling, and chemical switches

Khan, Risalat
Surface characterization of ultrathin Mn films grown on Co/Cu(001) using spin-polarized scanning tunneling microscopy
Master degree, Freie Universität Berlin, October 2013.

Krüger, Dennis
Adsorptionsverhalten und chemische Modifikation eines Spin-Crossover-Komplexes auf Au(111)
Bachelor degree, Freie Universität Berlin, February 2013.

Nickel, Fabian
Untersuchung von photochromen Molekülen auf Oberflächen mit Differentieller Reflexions-Spektroskopie
Master degree, Freie Universität Berlin, March 2013.

Zitzke, Patrick
Untersuchungen des Exchange Bias an Ni/NiMn/Ni-Dreischichtsystemen
Bachelor degree, Freie Universität Berlin, May 2013.