

Daniel Wegner – Curriculum Vitae



Office Address Radboud University
Institute for Molecules and Materials
Scanning Probe Microscopy Department
P.O. Box 9010 // 78
6500 GL Nijmegen
The Netherlands

Phone +31-24-36-53138

Email d.wegner@science.ru.nl

Internet <http://www.ru.nl/spm>

Employment History

05/2015 – today Assistant professor (*tenured*): Institute for Molecules and Materials, Radboud University, Nijmegen, Netherlands.

09/2009 – 04/2014 Emmy Noether group leader: Institute of Physics and Center for Nanotechnology, University of Münster, Germany.

04/2006 – 07/2009 Postdoctoral researcher: Group of Prof. Michael F. Crommie, Department of Physics, University of California, Berkeley, USA.

01/2005 – 03/2006 Postdoctoral researcher: Group of Prof. Günter Kaindl, Institute for Experimental Physics, FU Berlin, Germany.

02/2000 – 12/2004 Research and Teaching Assistant: Group of Prof. Günter Kaindl, Institute for Experimental Physics, FU Berlin, Germany.

Education

2000 – 2004 PhD in Physics (Dr. rer. nat.), FU Berlin, Germany.
Supervisor: Prof. Günter Kaindl,
Thesis: *Scanning tunneling spectroscopy on lanthanide-metal surfaces: correlated electronic structure and dynamics of excited states*,

1998 – 2000 Diplom in Physics (corresp. to Master degree), FU Berlin, Germany,
Thesis: *Linear and nonlinear optical scanning near-field microscopy on magnetic films*.

1994 – 1996 Vordiplom in Physics (corresp. to Bachelor degree), University of Oldenburg, Germany.

1994 Abitur (corresp. to high school diploma), KGS Rastede, Germany.

Awards & Recognitions:

2011 – 2014 Member of the „Junges Kolleg“ of the North-Rhine Westphalian (NRW) Academy of Sciences and Arts.

2009 – 2015 Emmy Noether independent research group (DFG).

05/2009 Repatriate program “Nanotechnology”, NRW Ministry of innovation, science, research and technology (declined).

2008 A publication in Nano Letters was featured as Research Highlight in Nature Nanotechnology 3, 68 (2008).

2006 – 2008 Feodor Lynen fellowship of the Alexander von Humboldt Foundation.

2004 PdH thesis *summa cum laude*.

Project Funding

2016 –	FOM Projectruimte <i>Toward bottom-up construction of an “Aggregate-OLED”</i> volume: ca. 400 k€.
2012 – 2015	DFG SFB/Transregio TRR 61 <i>Multilevel molecular assemblies: structure, dynamics and function</i> , Project B13: <i>Bonding, charge transfer and aggregation of Pt-complexes on metallic interfaces</i> (shared with Dr. Cristian A. Strassert) volume ca. 500 k€.
2011 – 2014	DFG Forschergruppe FOR 945 „Nanomagnets: from synthesis via interaction with surfaces to function“, associated participation.
2011 – 2014	Research stipend, NRW Academy of Sciences and Arts, volume: ca. €41 k€.
2009 – 2015	Emmy-Noether Program (ENP) of the DFG, volume: ca. €1400 k€.
2009	Repatriate program “Nanotechnology” of the NRW ministry for innovation, science, research and technology, volume: up to 1200 k€ (declined in favor of ENP)

Teaching

- at Radboud University:
 - 2018/19 Surface Physics (3 EC Bachelor course)
Solid State Physics (3 EC Bachelor course), 2x
Mechanics 2A (3 EC Bachelor course)
 - 2017/18 Mechanics 1A (3 EC Bachelor course)
Mechanics 2A (3 EC Bachelor course)
Surface Physics (3 EC Bachelor course)
Advanced Spectroscopy (6 EC Master course, 1/8th contribution)
 - 2016/17 Mechanics 1A (3 EC Bachelor course)
Mechanics 2A (3 EC Bachelor course)
Surface Physics (3 EC Bachelor course)
Advanced Spectroscopy (6 EC Master course, 1/8th contribution)
 - 2015/16 Surface Physics (3 EC Bachelor course)
Advanced Spectroscopy (6 EC Master course, 1/8th contribution)
- at University of Münster (Germany):
 - 2012/13 Magnetism: Phenomena – measurement methods – applications (Master course).
Introductory Condensed Matter Physics (Bachelor course).
 - 2011/12 Magnetism: Phenomena – measurement methods – applications (Master course).
 - 2010/11 Current experimental research highlights in Solid State Physics in reduced dimensions (Master/PhD course).
Introduction to Solid State Physics in reduced dimensions (Master course).

Thesis Supervision

since 2016	PhD thesis, Tzu-Chao Hung, working title: <i>STM-induced light emission on fluorescent and phosphorescent complexes</i> .
2016	PhD thesis, Pascal Ewen, <i>Submolecular insights into the electronic structure of luminescent Pt(II) complexes at metallic and insulating interfaces</i> .
2016	PhD thesis, Judith Niefenführ, <i>Scanning tunneling microscopy on large magnetic molecules</i> .
2016	Master thesis, Shane Bozelie, <i>Tuning molecule-substrate interactions of platinum complexes by a decoupling layer</i> .

- 2016 Master Thesis, Nils Rollfing, *Iron selenide thin films on bismuth selenide: growth, structural and electronic properties*.
- 2013 Bachelor thesis, Nils Rollfing, *Structural and electronic characterization of adamantyl ligands via scanning tunneling microscopy and spectroscopy*.
- 2012 Master thesis, Manuel Steinbrecher, *Structural and electronic investigation of Bismuth surfaces on Cu(111)*.
- 2012 Master thesis, Pascal Ewen, *Adsorption and electronic structure of phosphorescent Platinum complexes on Au(111)*.
- 2012 Diplom thesis, Tatjana Walth, *Scanning tunneling microscopy and –spectroscopy of tetracyanoethylene on silver surfaces*.
- 2010 Bachelor thesis, Pascal Ewen, *Scanning tunneling microscopy and –spectroscopy of surface states at low temperatures*.

Contributions to Conference and Symposium Organizations

- Organizing committee of the international conference SP-STM 7 & LT-SPM-1, Nijmegen (2018).
- Organizing committee of the Dutch SPM Day, Nijmegen (2016).
- Organizing committee of the international symposium “sIMMposium”, Nijmegen (2015).
- Scientific advisory board of the international conference “Rare Earth Elements and Compounds Conference” (REEC), Münster (2013).
- Scientific advisory board of the international conference “Rare Earth Elements and Compounds Conference” (REEC), Münster (2012).
- Public symposium “Responsibility in Research”, NRW Academy of Sciences and Arts, Düsseldorf (2013).
- Research Day of the NRW Academy of Sciences and Arts, Düsseldorf (2011).

Referee in peer-reviewed Journals

- Nature Materials, Nature Communications, Scientific Reports
- Physical Review Letters, Physical Review B
- Nano Letters, Journal of the American Chemical Society, Journal of Physical Chemistry C
- Applied Physics Letters, Journal of Applied Physics

Languages

German (native); English (fluent); Dutch (B2)

Invited Conference/Symposium Talks

1. Graz (2018), Int. IMPRESS Workshop “Interfacing machine learning and experimental methods for surface structures”, *When there is more than meets the eye*.
2. St. Petersburg/Repino, Int. RACIRI Workshop, *STM, STS and AFM microscopy applied to nano magnetism*.
3. Bielefeld (2015), Int. Symposium „Nanomagnets: from Synthesis via Interactions with Surfaces to Function“, *Studying isolated and self-assembled single molecule magnets on a surface using STM*.
4. Delft (2014), Dutch Scanning Probe Microscopy Day 2014, *Identifying Molecular Electronic Set Screws for Improved OLED and Magnetic Molecules*.
5. Bad Honnef (2013), 544th Heraeus Seminar “Interactions with the Nanoworld”, *Utilizing and Tuning Molecule-Substrate Coupling*.
6. Tartu (2011), Estland, 2nd European Nanomanipulation Workshop, *Building molecules from scratch by STM*.
7. Bielefeld (2011), Int. Symposium “Deposition and Characterization of Nanomagnets on Surfaces”, *Bottom-Up Creation of Magnetic Molecules with an STM*.
8. Vancouver (2009), Canada, Int. Workshop “Quantum Coherent Properties of Spins II”, *Tuning Spin Coupling in Bottom-up Fabricated V-TCNE Nanostructures*.

Full Publication Record

1. M. R. Slot, S. N. Kempkes, E. J. Knol, W. M. J. van Weerdenburg, J. J. van den Broeke, D. Wegner, D. Vanmaekelbergh, A. A. Khajetoorians, C. M. Smith, and I. Swart, *p-Band Engineering in Artificial Electronic Lattices*, Physical Review X 9, 011009 (2019).
2. B. Kiraly, A. N. Rudenko, W. M. J. van Weerdenburg, D. Wegner, M. I. Katsnelson, and A. A. Khajetoorians, *An orbitally derived single-atom magnetic memory*, Nature Communications 9, 3904 (2018).
3. N. Hauptmann, M. Dupé, T.-C. Hung, A. K. Lemmens, D. Wegner, B. Dupé, and A. A. Khajetoorians, *Revealing the correlation between real-space structure and chiral magnetic order at the atomic scale*, Physical Review B 97, 100401(R) (2018).
4. H. von Allwörden, A. Eich, E. J. Knol, J. Hermenau, A. Sonntag, J. W. Gerritsen, D. Wegner, and A. A. Khajetoorians, *Design and performance of an ultra-high vacuum spin-polarized scanning tunneling microscope operating at 30 mK and in a vector magnetic field*, Review of Scientific Instruments 89, 033902 (2018).
5. N. Hauptmann, J. W. Gerritsen, D. Wegner, and A. A. Khajetoorians, *Sensing Noncollinear Magnetism at the Atomic Scale Combining Magnetic Exchange and Spin-Polarized Imaging*, Nano Letters 17, 5660 (2017).
6. V. Obersteiner, M. Scherbela, L. Hörmann, D. Wegner, and O. T. Hofmann, *Structure Prediction for Surface-Induced Phases of Organic Monolayers: Overcoming the Combinatorial Bottleneck*, Nano Letters 17, 4453 (2017).
7. J. Donner, J.-P. Broschinski, B. Feldscher, A. Stammer, H. Bögge, T. Glaser, and D. Wegner, *Correlating electronic and magnetic coupling in large magnetic molecules via scanning tunneling microscopy*, Physical Review B 95, 165441 (2016).
8. A. Eich, N. Rollfing, F. Arnold, C. Sanders, P. R. Ewen, M. Bianchi, M. Dendzik, M. Michiardi, J.-L. Mi, M. Bremholm, D. Wegner, P. Hofmann and A. A. Khajetoorians, *Absence of superconductivity in ultrathin layers of FeSe synthesized on a topological insulator*, Physical Review B 94, 125437 (2016).
9. A. Bruix, J. A. Miwa, N. Hauptmann, D. Wegner, S. Ulstrup, S. S. Grønberg, C. E. Sanders, M. Dendzik, A. Grubišić Čabo, M. Bianchi, J. V. Lauritsen, A. A. Khajetoorians, B. Hammer and P. Hofmann, *Single-layer MoS₂ on Au(111): Band gap renormalization and substrate interaction*, Physical Review B 93, 165422 (2016).
10. J. Sanning, L. Stegemann, P. R. Ewen, C. Schwermann, C. G. Daniliuc, D. D. Zhang, N. Lin, L. Duan, D. Wegner, N. L. Doltsinis and C. A. Strassert, *Colour-tunable asymmetric cyclometalated Pt(II) complexes and STM-assisted stability assessment of ancillary ligands for OLEDs*, Journal of Materials Chemistry C 4, 2560 (2016).
11. J. Donner, J.-P. Broschinski, T. Glaser, and D. Wegner, *Deposition and Self-Assembly of Large Magnetic Molecules*, Journal of Physical Chemistry C 119, 28660 (2015).
12. J. Sanning, P. R. Ewen, L. Stegemann, J. Schmidt, C. G. Daniliuc, T. Koch, N. L. Doltsinis, D. Wegner and C. A. Strassert, *Scanning-Tunneling-Spectroscopy-Directed Design of Tailored Deep-Blue Emitters*, Angewandte Chemie Int. Ed. 54, 786 (2015).
13. P. R. Ewen, J. Sanning, T. Koch, N. L. Doltsinis, C. A. Strassert and D. Wegner, *Spectroscopic mapping and selective electronic tuning of molecular orbitals in phosphorescent organometallic complexes - a new strategy for OLED materials*, Beilstein Journal of Nanotechnology 5, 2248 (2014).
14. T. Deilmann, P. Krüger, M. Rohlfing, D. Wegner, *Adsorption and STM imaging of TCNE on Ag(001): An ab initio study*, Physical Review B 89, 045405 (2014).

15. P. R. Ewen, J. Sanning, N. L. Doltsinis, M. Mauro, C. A. Strassert, and D. Wegner, *Unraveling orbital Hybridization of Triplet Emitters at the Metal-Organic Interface*, Physical Review Letters 111, 267401 (2013).
16. M. Steinbrecher, H. Harutyunyan, C. R. Ast, and D. Wegner, *Finding the Rashba-type spin-splitting from interband scattering in quasiparticle interference maps*, Physical Review B 87, 245436 (2013).
17. D. Wegner, R. Yamachika, X. Zhang, Y. Wang, M. F. Crommie, and N. Lorente, *Adsorption site determination of a molecular monolayer via inelastic tunneling*, Nano Letters 13, 2346 (2013).
18. H. Harutyunyan, M. Callsen, T. Allmers, V. Caciuc, S. Blügel, N. Atodiresei, and D. Wegner, *Hybridisation at the organic-metal interface: a surface-scientific analogue of Hückel's rule?*, Chemical Communications 49, 5993 (2013).
19. C. Tao, J. Sun, X. Zhang, R. Yamachika, D. Wegner, Y. Bahri, G. Samsonidze, M. L. Cohen, S. G. Louie, T. D. Tilly, R. A. Segalman, and M. F. Crommie, *Spatial resolution of a type II heterojunction in a single bipolar molecule*, Nano Letters 9, 3963 (2009).
20. D. Wegner, R. Yamachika, X. Zhang, Y. Wang, T. Baruah, M. R. Pederson, B. M. Bartlett, J. R. Long, and M. F. Crommie, *Tuning Molecule-Mediated Spin Coupling in Bottom-Up Fabricated Vanadium-TCNE Nanostructures*, Physical Review Letters 103, 087205 (2009).
21. D. Wegner and G. Kaindl, *Indication of a non-magnetic surface layer on a magnetic single crystal*, Physical Review B 79, 140406(R) (2009).
22. R. Yamachika, X. Lu, D. Wegner, Y. Wang, A. Wachowiak, M. Grobis, L. M. C. Beltran, J. R. Long, M. Pederson, and M. F. Crommie, *Local Electronic Properties of Titanocene Chloride Dimer Molecules on a Metal Surface*, Journal of Physical Chemistry C 113, 677 (2009).
23. S. Bedwani, D. Wegner, M. F. Crommie, and A. Rochefort, *Strongly reshaped organic-metal interfaces: Tetracyanoethylene on Cu(100)*, Physical Review Letters 101, 216105 (2008).
24. D. Wegner, R. Yamachika, Y. Wang, V. W. Brar, B. M. Bartlett, J. R. Long, and M. F. Crommie, *Single-Molecule Charge Transfer and Bonding at an Organic/Inorganic Interface: Tetracyanoethylene on Noble Metals*, Nano Letters 8, 131 (2008).
25. Y. Wang, E. Kioupakis, X. H. Lu, D. Wegner, R. Yamachika, J. E. Dahl, R. M. K. Carlson, S. G. Louie and M. F. Crommie, *Spatially resolved electronic and vibronic properties of single diamondoid molecules*, Nature Materials 7, 38 (2008).
26. D. Wegner, A. Bauer, and G. Kaindl, *Effect of impurities on Tamm-like lanthanide-metal surface states*, Physical Review B 76, 113410 (2007).
27. D. Wegner, A. Bauer, and G. Kaindl, *Magnon-broadening of exchange-split surface states on lanthanide metals*, Physical Review B 73, 165415 (2006).
28. D. Wegner, A. Bauer, A. Rehbein and G. Kaindl, *Exchange splittings of lanthanide (0001)-surface states and their dependences on short-range magnetic order*, Japanese Journal of Applied Physics 45, 1941 (2006).
29. D. Wegner, A. Bauer and G. Kaindl, *Influence of morphology on quantum-well states of Yb on W(110)*, Japanese Journal of Applied Physics 45, 1937 (2006).
30. D. Wegner, A. Bauer, Yu. M. Koroteev, G. Bihlmayer, E. V. Chulkov, P. M. Echenique, and G. Kaindl, *Surface electronic structures of La(0001) and Lu(0001)*, Physical Review B 73, 115403 (2006).
31. D. Wegner, A. Bauer, and G. Kaindl, *Electronic Structure and Dynamics of Quantum-Well States in thin Yb-Metal Films*, Physical Review Letters 94, 126804 (2005).
32. A. Rehbein, D. Wegner, G. Kaindl, and A. Bauer, *Temperature dependence of lifetimes of Gd(0001) surface states*, Physical Review B 67, 033403 (2003).

33. G. Meyer, T. Crecelius, A. Bauer, D. Wegner, I. Mauch, and G. Kaindl, *Magneto-optical near-field microscopy of ultrathin films in ultrahigh vacuum*, Journal of Microscopy 210, 209 (2003).
34. A. Bauer, A. Mühlig, D. Wegner, and G. Kaindl, *Lifetime of Surface States on (0001)-Surfaces of Lanthanide Metals*, Physical Review B 65, 075421 (2002).
35. D. Wegner, U. Conrad, J. Güdde, G. Meyer, T. Crecelius, and A. Bauer, *In-plane magnetization of garnet films imaged by proximal probe nonlinear magneto-optical microscopy*, Journal of Applied Physics 88, 2166 (2000).
36. A. Bauer, B. L. Petersen, T. Crecelius, G. Meyer, D. Wegner, and G. Kaindl, *Magnetic domain imaging with a scanning near-field optical microscope using a modified Sagnac interferometer*, Journal of Microscopy 194, 507 (1999).