

## Daniel Wegner – Curriculum Vitae (09-2024)

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Born: May 1975

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### Research Summary

Daniel Wegner's research focuses on the use of high-resolution scanning tunneling microscopes, which should be considered an integrated nanoscopic laboratory, rather than a mere microscopy technique, also allowing for electronic, vibrational and even optical spectroscopy as well as single-atom and single-molecule manipulation, all with atomic precision. Research activities currently focus on three main topics:

- Nanoscale magnetism of rare-earth metals and alloys: The goal is to rationalize the interplay between structural, electronic and magnetic properties that can lead to complex non-collinear spin structures and glassiness. Highlight publication: Kamber *et al.*, Science 368, 966 (2020).
- Quantum simulation: Assembling atoms into ordered arrays on surfaces leads to artificial matter, from atoms to molecules to lattices, with tailored structural, electronic, magnetic and topological properties; the goal is to understand emergent many-body properties. Highlight publication: Sierda *et al.*, Science 380, 1048 (2023).
- Submolecularly resolved single-molecule fluorescence: Tunneling electrons can induce light emission from single molecules, allowing for novel fundamental studies of electro-optical properties and light-matter interaction. The current focus is to rationalize the various intramolecular excitation and relaxation pathways as well as intermolecular energy transfer. Highlight publication: Hung *et al.*, J. Am. Chem. Soc. 146, 8858 (2024).

### Employment History (post-graduate)

- 05/2014 – 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.

### Education

- 2000 – 2004      PhD in Physics (Dr. rer. nat.), Freie Universität Berlin, Germany; Supervisor: Prof. Günter Kaindl; Grade: summa cum laude.
- 1998 – 2000      Diplom in Physics (corresponds to MSc), Freie Universität Berlin, Germany.
- 1994 – 1996      Vordiplom in Physics (corresponds to BSc), Universität Oldenburg, Germany.
- 1994              Abitur (corresponds to high school diploma), KGS Rastede, Germany.

### Awards & Recognitions:

- 2023              Nominee for the Radboud Faculty of Science Education Awards.
- 2017              Nominee for the Radboud Faculty of Science Junior Education Awards.
- 2011 – 2014      “Junges Kolleg” member, NRW Academy of Sciences and Arts.
- 2009 – 2015      Emmy Noether independent research group (DFG).
- 2009              Repatriate program “Nanotechnology”, NRW Ministry of Science (declined).

2006 – 2008 Feodor Lynen fellowship of the Alexander von Humboldt Foundation.  
2004 PhD thesis *summa cum laude*.

### Project Funding

2022 – 2026 NWO ENW-M1 grant (360 k€).  
2022 – 2026 IMM PhD voucher (290 k€).  
2016 – 2022 FOM Projectruimte (400 k€).  
2012 – 2015 DFG SFB/Transregio TRR 61 Project B13 (500 k€).  
2011 – 2014 NRW Academy of Sciences and Arts, research stipend ( €41 k€).  
2009 – 2015 DFG Emmy-Noether Program (1400 k€).

### Research Output

- 46 peer-reviewed publications.
- 1200/1600 citations, *h*-index 20/22 (according to WoS/Google Scholar).
- 13 invited talks at international conferences, symposia and workshops.
- 38 invited talks at various universities and research institutes.

### Conference and Symposium Organizations

- Organized Focus Session (with five invited speakers) at DPG Spring Meeting, Berlin (2024).
- Organizing committee international conference SP-STM 7 & LT-SPM-1, Nijmegen (2018).
- Organizing committee Dutch SPM Day, Nijmegen (2016).
- Organizing committee “sIMMposium”, Nijmegen (2015).
- Scientific advisory board of two international conferences “Rare Earth Elements and Compounds Conference” (REEC), Münster (2012 and 2013).

### Administrative activities at Radboud University (excerpt)

Since 2023 Confidential contact person at IMM.  
Since 2021 Master specialization coordinator “Quantum Matter”.  
2021 – 2022 IMM best PhD thesis award committee.  
Since 2017 IMM/HFML Helium Committee.  
2017 – 2019 IMM Research Infrastructure Committee.

### Teaching Activities

- Courses taught at Radboud University:
  - 2024/25 – now Modern Topics in Condensed Matter Physics (3 EC Bachelor)
  - 2019/20 – now Electronic Properties of Solids (3 EC Bachelor)
  - 2020/21 – now Scanning Probe Microscopy (3 EC Master)
  - 2018/19 – 2023/24 Solid State Physics (3 EC Bachelor)
  - 2015/16 – 2018/19 Surface Physics (3 EC Bachelor)
  - 2016/17 – 2018/19 Mechanics 2A (3 EC Bachelor)
  - 2016/17 – 2017/18 Mechanics 1A (3 EC Bachelor)
  - 2015/16 – 2017/18 Advanced Spectroscopy (6 EC Master, 1/8<sup>th</sup> participation)
- 4 Bachelor/Master courses taught at University of Münster (Germany) between 2010 and 2013
- Thesis Supervisions: main or co-supervisor of 12 PhD, 10 Master and 10 Bachelor students.

### Languages

German (native), English (C2), Dutch (est. C1), French (A1).