Dr. Matthias M. May

Curriculum Vitae

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Personal details

Born 22.02.1984
Citizenship German

Short profile

- **Education:** Diploma (Physics, HU Berlin), overall grade 1.1 *(very good)*; PhD (Physics, HU Berlin) with distinction *(summa cum laude)*.
- **Publications:** 52 peer-reviewed, 3 book chapters, 2 granted patents. H-index W. of Science: 19.
- Online information: ResearcherID: H-8552-2013.

Professional Experience

10/2026 – ongoing	Directorate LISA+	**Universität Tübingen**, Core Facility LISA+.
2026 – ongoing	Speaker Research topic "Energy & Decarbonization"	**Universität Tübingen**, Environmental Systems Platform.
06/2026 – ongoing	Heisenberg Fellow	**Universität Tübingen**, Institute of Physical and Theoretical Chemistry, Germany.
11/2021 – 05/2026	Group leader	**Universität Tübingen**, Institute of Physical and Theoretical Chemistry, Germany.
12/2020 – 10/2024	Associate member	Cluster of Excellence on batteries, **POLiS**.
03/2020 – 10/2021	Group leader	**Universität Ulm**, Institute of Theoretical Chemistry, Germany.
2018 – 2020	Postdoc	**Helmholtz-Zentrum Berlin**, Institute for Solar Fuels, Germany.
04/2018 – 10/2018	Lecturer (physics)	**Universität Heidelberg**, International Study Centre, Germany.
2016 – 2018	Postdoctoral Fellow	**University of Cambridge**, Department of Chemistry, United Kingdom.
2014 – 2015	Postdoc	**Technische Universität Ilmenau**, Fachgebiet Photovoltaik, Germany.
2011 – 2014	Doctoral research	**Helmholtz-Zentrum Berlin**, Institute for Solar Fuels.

Third-party funding & awards

12/2025	Heisenberg Grant of DFG.
10/2025	BMBF-project "NETPEC2" on negative emissions by photoelectrochemical methods. PI & Consortium coordinator. 11/2025 – 10/2028.
10/2021	"Curious Minds Award" from Merck and Manager-Magazin.
09/2021	BMBF-project "NETPEC" on negative emissions by photoelectrochemical methods. PI & Consortium coordinator. 10/2021 – 09/2024.
03/2021	BMBF-project "H2Demo" on prototypes for solar water splitting. Principal Investigator (PI). 03/2021 – 02/2026.
01/2021	Board's Reserve project of the DFG-funded Cluster of Excellence Post Lithium Storage. PI. 04/2021 – 03/2024.
12/2019	Emmy Noether young investigator group by Deutsche Forschungsgemeinschaft. PI. 03/2020 – 03/2026.

11/2018	"Experiment!" grant of the VolkswagenStiftung. PI. 05/2019 – 10/2020.
11/2017	"Gold medal" for the invention "Photoelektrochemische Zelle zur lichtinduzierten Wasserspaltung" , International Trade Fair iENA in Nürnberg, Germany.
01/2016 – 01/2018	Postdoctoral fellowship at the University of Cambridge (U.K.) by the German National Academy of Sciences Leopoldina.
11/2015	Helmholtz PhD award of the Helmholtz Association's energy division.
05/2014	Best poster award at the 562. WE-Heraeus seminar "From Sunlight to Fuels" in Bad Honnef, Germany.
10/2011 – 05/2014	PhD scholarship by Studienstiftung des deutschen Volkes.

Teaching

2023 – ongoing	Course "Advanced Electrochemistry".
2022 – ongoing	Course "Data acquisition and analysis" (M.Sc. Chemistry), shared.
2021 – ongoing	Supervision of B.Sc., M.Sc. and PhD theses. Universität Tübingen.
2020 – 2024	Supervision of two B.Sc. and one PhD thesis. Universität Ulm.
04/2018 – 10/2018	Teaching Physics (undergraduate courses). Internationales Studienzentrum, Universität Heidelberg.
09/2016 – 02/2018	Supervision of students for the Course "Theoretical Techniques" (Chemistry). Trinity College & Pembroke College, University of Cambridge.
2011 – 2015	Co-supervision of one B.Sc. and two M.Sc. theses. Helmholtz-Zentrum Berlin and Humboldt-Universität zu Berlin.
2009 – 2010	Co-supervision of the advanced student lab "Angle-resolved photoelectron spectroscopy with synchrotron radiation". Co-supervision of one B.Sc. and one M.Ed. thesis. Humboldt-Universität zu Berlin.
10/2004 – 02/2005	Course "Unix for first-semesters". Universität Stuttgart.

Research

- **Focus:** My research focuses on the electronic structure of catalyst and semiconductor surfaces designated for (photo)electrochemical energy conversion and their interface to the electrolyte. I study these surfaces and interfaces by both computational and experimental methods to gain an atomistic understanding and ultimately control their properties.
- **Community engagement:** I have acted as a referee for grants (including DFG,) and journals, including *ACS Applied Materials & Interfaces*, *Journal of Physical Chemistry C*, *RSC Advances*, *Physical Chemistry Chemical Physics*, *Nano Letters*, *APL Materials*, *Sustainable Energy & Fuels*, *Joule* as well as *Journal of the American Chemical Society*. Furthermore, I chaired sessions at the German Physical Society Spring Meetings (Berlin 2018, Rostock 2019), the nanoGe Fall Meeting 2018, and the Emmy-Noether Meeting (Potsdam 2025). Guest editor in *Environmental Research Letters* (2024).
- **Public outreach (selection):** Featured in science TV show "Nano" (2024). Scientific advisor for the museum "Futurium" in Berlin (2017–2023). Interviews for "Naked Scientists" (Cambridge, UK), "Frankfurter Allgemeine Zeitung" (Germany), "Augsburger Allgemeine" (Augsburg, Germany), Deutschlandfunk (Germany).

Invited talks (selection)

1. "Shaping semiconductor-electrolyte interfaces for high efficiencies by photoelectrochemical processes". *US-German workshop series on artificial photosynthesis*. (2022).
2. "Photoelectrolysis: Highly Integrated Solar-Driven Green Hydrogen Production". *EU Agenda Workshop on Green Hydrogen, Rome, Italy*. (2021).
3. "Challenges and Opportunities of Water Splitting with Multi-Junction Solar Absorbers". *nanoGe Fall Meeting, Torremolinos, Spain*. (2018).

Most relevant peer-reviewed publications

1. M. Flieg, M. Guidat, and **M. M. May**. Observation and Control of Potential-Dependent Surface State Formation at a Semiconductor-Electrolyte Interface via Optical Anisotropy. *Physical Review Letters* **135** (2025), p. 268001. DOI: 10.1103/7vfj-hl9f.
2. **M. M. May** and K. Rehfeld. Negative Emissions as the New Frontier of Photoelectrochemical CO_2 Reduction. *Advanced Energy Materials* **12** (2022), p. 2103801. DOI: 10.1002/aenm.202103801.
3. M. Kölbach, K. Rehfeld, and **M. M. May**. Efficiency gains for thermally coupled solar hydrogen production in extreme cold. *Energy & Environmental Science* **14** (2021), pp. 4410–4417. DOI: 10.1039/d1ee00650a.
4. **M. M. May**, H.-J. Lewerenz, D. Lackner, F. Dimroth, and T. Hannappel. Efficient Direct Solar-to-Hydrogen Conversion by In Situ Interface Transformation of a Tandem Structure. *Nature Communications* **6** (2015), p. 8286. DOI: 10.1038/ncomms9286.
5. **M. M. May**, C. Brabetz, C. Janowitz, and R. Manzke. Charge-Density-Wave Phase of 1T-$TiSe_2$: The Influence of Conduction Band Population. *Physical Review Letters* **107**(17) (2011), p. 176405. DOI: 10.1103/PhysRevLett.107.176405.