

# Dr. Matthias M. May

## Curriculum Vitae

October 2024

Address: Universität Tübingen, Institute of  
Physical and Theoretical Chemistry,  
Germany

Email: [Matthias.May@uni-tuebingen.de](mailto:Matthias.May@uni-tuebingen.de)

ORCID: [orcid.org/0000-0002-1252-806X](https://orcid.org/0000-0002-1252-806X)

WWW: [www.uni-tuebingen.de/specsy](http://www.uni-tuebingen.de/specsy)



### 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:** 39 peer-reviewed, 3 book chapters, 2 granted patents. H-index W. of Science: 17.
- Online information: ResearcherID: H-8552-2013.

### Professional Experience

from 11/2021	Group leader	<b>Universität Tübingen</b> , Institute of Physical and Theoretical Chemistry, Germany.
since 12/2020	Associate member	Cluster of Excellence on batteries, <b>POLiS</b> .
03/2020 – 10/2021	Group leader	<b>Universität Ulm</b> , Institute of Theoretical Chemistry, Germany.
2018 – 2020	Postdoc	<b>Helmholtz-Zentrum Berlin</b> , Institute for Solar Fuels, Germany.
04/2018 – 10/2018	Lecturer (physics)	<b>Universität Heidelberg</b> , International Study Centre, Germany.
2016 – 2018	Postdoctoral Fellow	<b>University of Cambridge</b> , Department of Chemistry, United Kingdom.
2014 – 2015	Postdoc	<b>Technische Universität Ilmenau</b> , Fachgebiet Photovoltaik, Germany.
2011 – 2014	Doctoral research	<b>Helmholtz-Zentrum Berlin</b> , Institute for Solar Fuels.

### Third-party funding & awards

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 on electrochemical interfaces in magnesium-based batteries. 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 (summer term)	Course “Advanced Electrochemistry”.
2022 – ongoing (summer term)	Course “Data acquisition and analysis” (M.Sc. Chemistry), shared.
2021 – ongoing	Supervision of one B.Sc. and two PhD theses. Universität Tübingen.
2020 – ongoing	Supervision of two B.Sc. (completed) and three PhD theses. 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-semesterers”. 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) and the nanoGe Fall Meeting 2018. Guest editor in *Environmental Research Letters* (2024).
- **Public outreach (selection):** Scientific advisor for the museum “Futurium” in Berlin (since 2017). Interviews for “Naked Scientists” (Cambridge, UK), “Frankfurter Allgemeine Zeitung” (Germany), “Augsburger Allgemeine” (Augsburg, Germany), Deutschlandfunk (Germany).

## Invited talks (selection)

1. “Photoelectrolysis: Highly Integrated Solar-Driven Green Hydrogen Production”. *EU Agenda Workshop on Green Hydrogen, Rome, Italy*. (2021).
2. “Challenges and Opportunities of Water Splitting with Multi-Junction Solar Absorbers”. *nanoGe Fall Meeting, Torremolinos, Spain*. (2018).
3. “In-situ Formation of Nano-Dimensioned Interface Layers for Efficient Water Photolysis”. *5th International Conference from Nanoparticles and Nanomaterials to Nanodevices and Nanosystems, Porto Heli, Greece*. (2016).

## Most relevant peer-reviewed publications

1. **M. M. May** and K. Rehfeld. Negative Emissions as the New Frontier of Photoelectrochemical CO<sub>2</sub> Reduction. *Advanced Energy Materials* **12** (2022), p. 2103801. DOI: 10.1002/aenm.202103801.
2. 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.
3. **M. M. May** and M. Sprik. Water adsorption on the P-rich GaP(100) surface: Optical spectroscopy from first principles. *New Journal of Physics* **20**(3) (2018), p. 033031. DOI: 10.1088/1367-2630/aaaf38.
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<sub>2</sub>: The Influence of Conduction Band Population. *Physical Review Letters* **107**(17) (2011), p. 176405. DOI: 10.1103/PhysRevLett.107.176405.