

Publications

Peer-reviewed articles

1. **M. M. May**, C. Brabetz, C. Janowitz, and R. Manzke. “Charge-Density-Wave Phase of 1T-TiSe₂: The Influence of Conduction Band Population”. *Physical Review Letters* **107**(17) (2011), p. 176405. DOI: 10.1103/PhysRevLett.107.176405.
2. **M. M. May**, C. Brabetz, C. Janowitz, and R. Manzke. “The influence of different growth conditions on the charge density wave transition of 1T-TiSe₂”. *Journal of Electron Spectroscopy and Related Phenomena* **184**(3–6) (2011), pp. 180–183. DOI: 10.1016/j.elspec.2011.01.001.
3. H. Döscher, O. Supplie, **M. M. May**, P. Sippel, C. Heine, A. G. Muñoz, R. Eichberger, H.-J. Lewerenz, and T. Hannappel. “Epitaxial III-V Films and Surfaces for Photoelectrocatalysis”. *ChemPhysChem* **13**(12) (2012), pp. 2899–2909. DOI: 10.1002/cphc.201200390.
4. F. F. Abdi, T. J. Savenije, **M. M. May**, B. Dam, and R. van de Krol. “The Origin of Slow Carrier Transport in BiVO₄ Thin Film Photoanodes: A Time-Resolved Microwave Conductivity Study”. *Journal of Physical Chemistry Letters* **4**(16) (2013), pp. 2752–2757. DOI: 10.1021/jz4013257.
5. **M. M. May**, O. Supplie, C. Höhn, R. van de Krol, H.-J. Lewerenz, and T. Hannappel. “The interface of GaP(100) and H₂O studied by photoemission and reflection anisotropy spectroscopy”. *New Journal of Physics* **15**(10) (2013), p. 103003. DOI: 10.1088/1367-2630/15/10/103003.
6. **M. M. May**, H.-J. Lewerenz, and T. Hannappel. “Optical in situ Study of InP(100) Surface Chemistry: Dissociative Adsorption of Water and Oxygen”. *Journal of Physical Chemistry C* **118**(33) (2014), pp. 19032–19041. DOI: 10.1021/jp502955m.
7. A. Ramírez, P. Hillebrand, D. Stellmach, **M. M. May**, P. Bogdanoff, and S. Fiechter. “Evaluation of MnO_x, Mn₂O₃, and Mn₃O₄ Electrodeposited Films for the Oxygen Evolution Reaction of Water”. *Journal of Physical Chemistry C* **118**(26) (2014), pp. 14073–14081. DOI: 10.1021/jp500939d.
8. P. Sippel, O. Supplie, **M. M. May**, R. Eichberger, and T. Hannappel. “Electronic structures of GaP(100) surface reconstructions probed with two-photon photoemission spectroscopy”. *Physical Review B* **89** (2014), p. 165312. DOI: 10.1103/PhysRevB.89.165312.
9. O. Supplie, S. Brückner, O. Romanyuk, H. Döscher, C. Höhn, **M. M. May**, P. Kleinschmidt, F. Grosse, and T. Hannappel. “Atomic scale analysis of the GaP/Si(100) heterointerface by in situ reflection anisotropy spectroscopy and ab initio density functional theory”. *Physical Review B* **90**(23) (2014), p. 235301. DOI: 10.1103/PhysRevB.90.235301.
10. O. Supplie, **M. M. May**, H. Stange, C. Höhn, H.-J. Lewerenz, and T. Hannappel. “Materials for light-induced water splitting: In situ controlled surface preparation of GaPN epilayers grown lattice-matched on Si(100)”. *Journal of Applied Physics* **115**(11), 113509 (2014), p. 113509. DOI: 10.1063/1.4869121.
11. **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.
12. O. Supplie, **M. M. May**, C. Höhn, H. Stange, A. Müller, P. Kleinschmidt, S. Brückner, and T. Hannappel. “Formation of GaP/Si(100) heterointerfaces in presence of inherent reactor residuals”. *ACS Applied Materials & Interfaces* **7**(18) (2015), pp. 9323–9327. DOI: 10.1021/acsami.5b02231.
13. O. Supplie, **M. M. May**, P. Kleinschmidt, A. Nägelein, A. Paszuk, S. Brückner, and T. Hannappel. “In situ controlled heteroepitaxy of single-domain GaP on As-modified Si(100)”. *APL Materials* **3**(12), 126110 (2015). DOI: 10.1063/1.4939005.
14. O. Supplie, **M. M. May**, G. Steinbach, O. Romanyuk, F. Grosse, A. Nägelein, P. Kleinschmidt, S. Brückner, and T. Hannappel. “Time-resolved in situ spectroscopy during formation of the

- GaP/Si(100) heterointerface”. *Journal of Physical Chemistry Letters* **6**(3) (2015), pp. 464–469. DOI: 10.1021/jz502526e.
15. O. Romanyuk, O. Supplie, T. Susi, **M. M. May**, and T. Hannappel. “Ab initio density functional theory study on the atomic and electronic structure of GaP/Si(001) heterointerfaces”. *Physical Review B* **94**(15) (2016), p. 155309. DOI: 10.1103/PhysRevB.94.155309.
 16. **M. M. May**, D. Lackner, J. Ohlmann, F. Dimroth, R. van de Krol, T. Hannappel, and K. Schwarzburg. “On the Benchmarking of Multi-Junction Photoelectrochemical Fuel Generating Devices”. *Sustainable Energy & Fuels* **1**(3) (2017), pp. 492–503. DOI: 10.1039/C6SE00083E.
 17. O. Supplie, **M. M. May**, S. Brückner, N. Brezhneva, T. Hannappel, and E. V. Skorb. “In Situ Characterization of Interfaces Relevant for Efficient Photoinduced Reactions”. *Advanced Materials Interfaces* **4**(21) (2017), p. 1601118. DOI: 10.1002/admi.201601118.
 18. W.-H. Cheng, M. H. Richter, **M. M. May**, J. Ohlmann, D. Lackner, F. Dimroth, T. Hannappel, H. A. Atwater, and H.-J. Lewerenz. “Monolithic Photoelectrochemical Device for 19% Direct Water Splitting”. *ACS Energy Letters* **3**(8) (2018), pp. 1795–1800. DOI: 10.1021/acsenergylett.8b00920.
 19. **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.
 20. **M. M. May** and K. Rehfeld. “ESD Ideas: Photoelectrochemical carbon removal as negative emission technology”. *Earth System Dynamics* **10**(1) (2019), pp. 1–7. DOI: 10.5194/esd-10-1-2019.

Non-peer-reviewed articles and data publications

1. **M. M. May**, O. Supplie, C. Höhn, W.-D. Zabka, H.-J. Lewerenz, R. van de Krol, and T. Hannappel. “Water-induced modifications of GaP(100) and InP(100) surfaces studied by photoelectron spectroscopy and reflection anisotropy spectroscopy”. Ed. by Y. Kanai and D. Prendergast. *Proceedings of SPIE* **8822** (2013), pp. 88220M-88220M-7. DOI: 10.1117/12.2026172.
2. O. Supplie, H. Döscher, **M. M. May**, and T. Hannappel. “Heteroepitaxial III-V on Si(100) tandem absorbers structures for photoelectrolysis”. *AIP Conference Proceedings* **1568**(1) (2013), pp. 20–23. DOI: 10.1063/1.4848082.
3. O. Supplie, S. Brückner, O. Romanyuk, **M. M. May**, H. Döscher, P. Kleinschmidt, H. Stange, A. Dobrich, C. Höhn, H.-J. Lewerenz, F. Grosse, and T. Hannappel. “An experimental-theoretical atomic-scale study - In situ analysis of III-V on Si(100) growth for hybrid solar cells”. In: *IEEE 40th Photovoltaic Specialist Conference (PVSC)*. 2014, pp. 2797–2799. DOI: 10.1109/PVSC.2014.6925510.
4. O. Supplie, **M. M. May**, S. Brückner, A. Nägelein, P. Kleinschmidt, and T. Hannappel. “Watching the formation of the GaP/Si(100) heterointerface in situ”. In: *IEEE 42nd Photovoltaic Specialist Conference (PVSC)*. 2015. DOI: 10.1109/PVSC.2015.7356381.
5. O. Supplie, S. Brückner, **M. M. May**, and T. Hannappel. “Scrutinising growth”. *Compound Semiconductor* **21**(5) (2015), pp. 57–59.
6. **M. M. May**. “YaSoFo - Yet Another Solar Fuels Optimizer with solar-to-carbon efficiency example”. Comp. software. 2018. DOI: 10.5281/zenodo.1489158.

Book chapters

1. T. Hannappel, **M. M. May**, and H.-J. Lewerenz. “Epitaxial III-V Thin Film Absorbers: Preparation, Efficient InP Photocathodes and Routes to High Efficiency Tandem Structures”. In: *Photoelectrochemical Water Splitting: Materials, Processes and Architectures*. Ed. by H.-J. Lewerenz and L. Peter. The Royal Society of Chemistry, 2013. Chap. 9, pp. 223–265. ISBN: 978-1-84973-647-3. DOI: 10.1039/9781849737739-00223.

2. **M. M. May**, H. Döscher, and J. Turner. “High-efficiency water splitting systems”. In: *Integrated Solar Fuel Generators*. Ed. by I. Sharp, H. Atwater, and H.-J. Lewerenz. The Royal Society of Chemistry, 2018. Chap. 12, pp. 454–499. ISBN: 978-1-78262-555-1. DOI: 10.1039/9781788010313-00454.

Patents

1. **M. M. May**, T. Hannappel, and H.-J. Lewerenz. “Photoelektrochemische Zelle zur lichtinduzierten Wasserspaltung”. German. DE 10 2016 119 634 A8. pending.
2. **M. M. May**, H. J. Lewerenz, and T. Hannappel. “Verfahren zum Herstellen einer Photoelektrode zur Wasserstoffentwicklung”. German. DE 10 2014 105 545 B3. 2015.

Online publication lists

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- Scopus: www.scopus.com/authid/detail.uri?authorId=57204158667
- ResearcherID: www.researcherid.com/rid/H-8552-2013

H-index (Scopus): 12.