

MICHAEL RENZLER

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SCIENTIFIC EDUCATION

| | |
|---|-----------------------------|
| University of Innsbruck <i>PhD in Physics</i> Thesis: Electron interactions with (doped) Helium Nanodroplets | July 2013 - September 2016 |
| University of Linköping (Sweden) <i>Studies of Material Physics and Nanotechnology</i> Erasmus stay abroad | July 2011 - June 2012 |
| University of Innsbruck <i>Studies of Physics (MSc.)</i> Focus: Experimental Ion Physics | November 2010 - June 2013 |
| University of Innsbruck <i>Studies of Physics (BSc.)</i> | October 2007 - October 2013 |

PROFESSIONAL EXPERIENCE

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|--|----------------------------|
| University of Innsbruck <i>Senior Scientist</i> Department of Mechatronics | May 2020 - present |
| University of Innsbruck <i>PostDoc</i> Department of Mechatronics | October 2016 - May 2020 |
| University of Innsbruck <i>Research Assistant</i> Department of Ion Physics and Applied Physics | July 2013 - September 2016 |

TEACHING

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|--|----------------|
| Various Lectures/Exercices/Lab Courses | |
| Digital Technology | 2016 - present |
| Electromagnetic Compatibility | 2017 - present |
| Semiconductor Physics | 2018 - present |
| Physical Fundamentals of Semiconductor Devices | 2017 - present |
| Internet of Things | 2017 - 2019 |
| University Course | |
| Internet of Things | 2020 |
| Co-Supervision of Master Theses | |
| David Stock | 2014 |
| Martin Kuhn | 2015 |
| Erik Barwa | 2016 |
| Alexander Ritsch | 2017 |

Co-Supervision of Bachelor Theses

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| Florian Prieth | 2017 |
| Dominic Ecker | 2018 |
| Tobias Faller | 2018 |
| Markus Gadner | 2018 |

RESEARCH

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|---|--|
| H-Index | 11 |
| Number of peer-reviewed publications | 24 |
| Interests | Antenna Design, Nanotechnology, Electromagnetic Compatibility |

For full list of metrics: [Research ID](#)

FUNDING (AS OF JUNE 2021)

| | |
|---|-------------|
| EMC and Antenna Measurements <i>various companies</i> 5.500 € | ongoing |
| University of Innsbruck <i>Infrastructure Funding: AntEMC</i> 75.000 € | 2020 |
| Leuchtturmprojekt Digitalisierung <i>EMV Safe Tirol</i> 165.000 € | 2020 - 2023 |
| Contract Research <i>Software Development: Texible GmbH</i> 4.500 € | 2018 - 2019 |
| FFG Innovation Check (F&S BONDTEC Semiconductor GmbH) <i>Wireless Connection of a Bond Head</i> 12.500 € | 2018 - 2019 |

PUBLICATIONS

References

- [1] V. Ruzsanyi, H. Wiesenhofer, C. Ager, J. Herbig, G. Aumayr, M. Fischer, M. Renzler, T. Ussmueller, K. Lindner, and C. Mayhew. "A portable sensor system for the detection of human volatile compounds against transnational crime". In: *Sensors and Actuators B: Chemical* 328 (Feb. 2021), p. 129036. DOI: [10.1016/j.snb.2020.129036](#).
- [2] D. Mair, M. Renzler, A. Pfeifhofer, and T. Ußmüller. "Evolutionary Optimization of Asymmetrical Pixelated Antennas Employing Shifted Cross Shaped Elements for UHF RFID". In: *Electronics* 9.11 (Nov. 2020), p. 1856. DOI: [10.3390/electronics9111856](#).
- [3] D. Mair, M. Ferdik, C. Happ, M. Renzler, and T. Ussmueller. "Numerical Optimization of a Fully Cross-Coupled Rectifier Circuit for Wireless Passive Ultra Low Power Sensor Nodes". In: *Sensors* 19.20 (Oct. 2019), p. 4527. DOI: [10.3390/s19204527](#).

- [4] M. Fischer, M. Ferdik, L.-O. Rack, G. Saxl, M. Renzler, and T. Ussmueller. “An Experimental Study on the Feasibility of a Frequency Diverse UHF RFID System”. In: *IEEE Access* 7 (2019), pp. 132311–132323. DOI: [10.1109/access.2019.2939613](https://doi.org/10.1109/access.2019.2939613).
- [5] M. Fischer, M. Renzler, and T. Ussmueller. “Development of a Smart Bed Insert for Detection of Incontinence and Occupation in Elder Care”. In: *IEEE Access* 7 (2019), pp. 118498–118508. DOI: [10.1109/access.2019.2931041](https://doi.org/10.1109/access.2019.2931041).
- [6] M. Mahmoodi-Darian, S. Raggl, M. Renzler, M. Goulart, S. E. Huber, A. Mauracher, P. Scheier, and O. Echt. “Doubly charged coronene clusters - Much smaller than previously observed”. In: *The Journal of Chemical Physics* 148.17 (May 2018), p. 174303. DOI: [10.1063/1.5028393](https://doi.org/10.1063/1.5028393).
- [7] A. Kaiser, J. Postler, M. Ončák, M. Kuhn, M. Renzler, S. Spieler, M. Simpson, M. Gatchell, M. K. Beyer, R. Wester, F. A. Gianturco, P. Scheier, F. Calvo, and E. Yurtsever. “Isomeric Broadening of C_{60}^+ Electronic Excitation in Helium Droplets: Experiments Meet Theory”. In: *The Journal of Physical Chemistry Letters* 9.6 (Feb. 2018), pp. 1237–1242. DOI: [10.1021/acs.jpcllett.8b00150](https://doi.org/10.1021/acs.jpcllett.8b00150).
- [8] M. Renzler, N. Reithmaier, R. Reinhardt, W. Pohl, and T. Ußmüller. “A road tunnel model for the systematic study of lighting situations”. In: *Tunnelling and Underground Space Technology* 72 (Feb. 2018), pp. 114–119. DOI: [10.1016/j.tust.2017.11.017](https://doi.org/10.1016/j.tust.2017.11.017).
- [9] M. Renzler, L. Kranabetter, E. Barwa, L. Grubwieser, P. Scheier, and A. M. Ellis. “Resonant electron attachment to mixed hydrogen/oxygen and deuterium/oxygen clusters”. In: *The Journal of Chemical Physics* 147.19 (Nov. 2017), p. 194301. DOI: [10.1063/1.5003428](https://doi.org/10.1063/1.5003428).
- [10] M. Renzler, L. Kranabetter, M. Goulart, P. Scheier, and O. Echt. “Positively and Negatively Charged Cesium and $(C_{60}_m)Cs_n$ Cluster Ions”. In: *The Journal of Physical Chemistry C* 121.20 (Jan. 2017), pp. 10817–10823. DOI: [10.1021/acs.jpcc.6b11928](https://doi.org/10.1021/acs.jpcc.6b11928).
- [11] L. Kranabetter, M. Goulart, A. Aleem, T. Kurzthaler, M. Kuhn, E. Barwa, M. Renzler, L. Grubwieser, M. Schwärzler, A. Kaiser, P. Scheier, and O. Echt. “ Cs^+ Solvated in Hydrogen - Evidence for Several Distinct Solvation Shells”. In: *The Journal of Physical Chemistry C* 121.20 (Mar. 2017), pp. 10887–10892. DOI: [10.1021/acs.jpcc.6b12057](https://doi.org/10.1021/acs.jpcc.6b12057).
- [12] M. Renzler, M. Kuhn, A. Mauracher, A. Lindinger, P. Scheier, and A. M. Ellis. “Anionic Hydrogen Cluster Ions as a New Form of Condensed Hydrogen”. In: *Physical Review Letters* 117.27 (Dec. 2016). DOI: [10.1103/physrevlett.117.273001](https://doi.org/10.1103/physrevlett.117.273001).
- [13] M. Renzler, M. Daxner, L. Kranabetter, A. Kaiser, A. W. Hauser, W. E. Ernst, A. Lindinger, R. Zillich, P. Scheier, and A. M. Ellis. “Communication: Dopant-induced solvation of alkalis in liquid helium nanodroplets”. In: *The Journal of Chemical Physics* 145.18 (Nov. 2016), p. 181101. DOI: [10.1063/1.4967405](https://doi.org/10.1063/1.4967405).
- [14] M. Kuhn, M. Renzler, J. Postler, S. Ralser, S. Spieler, M. Simpson, H. Linnartz, A. G. G. M. Tielens, J. Cami, A. Mauracher, Y. Wang, M. Alcamí, F. Martín, M. K. Beyer, R. Wester, A. Lindinger, and P. Scheier. “Atomically resolved phase transition of fullerene cations solvated in helium droplets”. In: *Nature Communications* 7.1 (Nov. 2016). DOI: [10.1038/ncomms13550](https://doi.org/10.1038/ncomms13550).
- [15] M. Renzler, S. Ralser, L. Kranabetter, E. Barwa, P. Scheier, and A. M. Ellis. “Observation of stable HO_4^+ and DO_4^+ ions from ion - molecule reactions in helium nanodroplets”. In: *Physical Chemistry Chemical Physics* 18.19 (2016), pp. 13169–13172. DOI: [10.1039/c6cp01895e](https://doi.org/10.1039/c6cp01895e).
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- [17] M. Renzler, M. Harnisch, M. Daxner, L. Kranabetter, M. Kuhn, P. Scheier, and O. Echt. “Fission of multiply charged alkali clusters in helium droplets - approaching the Rayleigh limit”. In: *Physical Chemistry Chemical Physics* 18.15 (2016), pp. 10623–10629. DOI: [10.1039/c6cp00764c](https://doi.org/10.1039/c6cp00764c).
- [18] N. Weinberger, S. Ralser, M. Renzler, M. Harnisch, A. Kaiser, S. Denifl, D. K. Böhme, and P. Scheier. “Ion formation upon electron collisions with valine embedded in helium nanodroplets”. In: *The European Physical Journal D* 70.4 (Apr. 2016). DOI: [10.1140/epjd/e2016-60737-1](https://doi.org/10.1140/epjd/e2016-60737-1).
- [19] S. A. Krasnokutski, M. Kuhn, M. Renzler, C. Jäger, T. Henning, and P. Scheier. “Ultra-Low-Temperature Reactions of Carbon Atoms with Hydrogen Molecules”. In: *The Astrophysical Journal* 818.2 (Feb. 2016), p. L31. DOI: [10.3847/2041-8205/818/2/L31](https://doi.org/10.3847/2041-8205/818/2/L31).

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- [21] J. Postler, M. Renzler, A. Kaiser, S. E. Huber, M. Probst, P. Scheier, and A. M. Ellis. “Electron-Induced Chemistry of Cobalt Tricarbonyl Nitrosyl (Co(CO)₃NO) in Liquid Helium Nanodroplets”. In: *The Journal of Physical Chemistry C* 119.36 (Aug. 2015), pp. 20917–20922. DOI: [10.1021/acs.jpcc.5b05260](https://doi.org/10.1021/acs.jpcc.5b05260).
- [22] A. Mauracher, M. Daxner, S. E. Huber, J. Postler, M. Renzler, S. Denifl, P. Scheier, and A. M. Ellis. “The interaction of He[−] with fullerenes”. In: *The Journal of Chemical Physics* 142.10 (Mar. 2015), p. 104306. DOI: [10.1063/1.4913956](https://doi.org/10.1063/1.4913956).
- [23] A. Mauracher, M. Daxner, S. E. Huber, J. Postler, M. Renzler, S. Denifl, P. Scheier, and A. M. Ellis. “Formation of Dianions in Helium Nanodroplets”. In: *Angewandte Chemie International Edition* 53.50 (Oct. 2014), pp. 13794–13797. DOI: [10.1002/anie.201408172](https://doi.org/10.1002/anie.201408172).
- [24] M. Renzler, M. Daxner, N. Weinberger, S. Denifl, P. Scheier, and O. Echt. “On subthreshold ionization of helium droplets, ejection of He⁺, and the role of anions”. In: *Phys. Chem. Chem. Phys.* 16.41 (2014), pp. 22466–22470. DOI: [10.1039/c4cp03236e](https://doi.org/10.1039/c4cp03236e).
- [25] D. Mair, M. Fischer, J. Konzilia, M. Renzler, and T. Ußmüller. “A Casestudy on Pixelated Antennas Optimized for Environments with a Broad Range of Electrical Properties”. In: *in preparation* (2022).

PATENTS

Size Selected Clusters And Nanoparticles

2020

EP 3 739 612 A1

Pending