Curriculum Vitae – Dr Moritz F. Kuehnel

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Current position: Lecturer, Department of Chemistry, Swansea University

Education and Academic Career

since 12/2017	**Lecturer, Swansea University** (link)
7/2015 – 11/2017	**Senior Research Associate, University of Cambridge** Christian Doppler Laboratory for Sustainable Syngas Chemistry (link) Supervisor: Prof. Erwin Reisner *Functional molecule/nanoparticle hybrid materials for solar-driven syngas generation*
8/2012 – 6/2015	**Postdoctoral Research Associate, University of Cambridge** Fellowships from *German Research Foundation* and *Isaac Newton Trust* (Trinity College) Christian Doppler Laboratory for Sustainable Syngas Chemistry Supervisor: Dr. Erwin Reisner *Earth-abundant molecular electrocatalysts for CO_2 reduction*
2/2012 – 7/2012	**Postdoctoral Researcher, Humboldt-Universität zu Berlin** Supervisor: Prof. Thomas Braun (link) *Activation of small molecules by transition metal catalysts*
2009 – 2012	**Associate Member, Doctoral Training Centre '*Fluorine as a Key Element*', Berlin** (link) *Interdisciplinary training in fluorine chemistry*
2007 – 2011	**Doctoral Research Assistant, Freie Universität Berlin** Supervisor: Prof. Dieter Lentz (link) Dr. rer. nat. '*summa cum laude*' (highest grade, equivalent to PhD, awarded 23/09/2011) Awarded '*Best Chemistry Dissertation'*, Ernst Schering Foundation *Metal Hydride-Induced Hydrodefluorination of Fluorinated Alkenes and Allenes* (link to PDF)
2000 – 2007	**Studies in Chemistry, Freie Universität Berlin** Supervisor: Prof. Dieter Lentz Chemistry Diplom '*very good*' (highest grade, equivalent to Master's) *Hydrometalation Reactions of Fluorinated Allenes*

Awards and Honours

Feb 2018	Advisory board member of the UK Solar Fuels Network
Jan 2018	Member of the Royal Society of Chemistry
Jan 2017	EES Prize for the '*Best Oral Presentation*' at the 5th UK Solar Fuels Meeting, RSC
Oct 2016	Keynote lecture 1st FOTOFUEL Conference and School, Almeria
Sep2016	Keynote lecture 6th EuCheMS Chemistry Congress, Seville
Jul 2015	Promotion to Senior Research Associate, University of Cambridge
Feb 2013	Postdoctoral Research Fellowship, German Research Foundation (DFG, link)
Dec 2012	Isaac Newton Trust Fellowship, Trinity College, Cambridge
Nov 2012	Schering Prize for the '*Best Chemistry Dissertation'*, Ernst Schering Foundation (link)
Sep 2011	'*Best Publication in Fluorine Chemistry*', German Chemical Society (link)

Publications

***h*-Index:** 15 **Total citations:** >1000 (Google Scholar)

Articles

J. J. Leung, J. Warnan, K. H. Ly, N. Heidary, D. H. Nam, M. F. Kuehnel and E. Reisner,* "Solar-driven reduction of aqueous CO_2 with a cobalt bis(terpyridine)-based photocathode", *Nat. Catal.* **2019**, *2*, 354–365 (link)

M. F. Kuehnel, C. E. Creissen, C. D. Sahm, D. Wielend, A. Schlosser, K. L. Orchard and E. Reisner "ZnSe nanorods as a visible-light-absorber for photocatalytic and photoelectrochemical H_2 evolution in water", *Angew. Chem. Int. Ed.*, **2019**, *58*, 5059–5063 (link)

T. Uekert, M. F. Kuehnel,* D. W. Wakerley, E. Reisner,* "Plastic waste as a feedstock for solar-driven H_2 generation", *Energy Environ. Sci.*, **2018**, *11*, 2853–2857 (link). Highlighted in the press (BBC, Chemistry World, Times of India, CNET and many others including BBC radio live interview) and by the EPSRC

A. L. Raza, M. F. Kuehnel, M. Talavera, M. Teltewskoi, M. Ahrens, P. Kläring, T. Braun, D. Lentz, "Reactivity of Rhodium Hydrido and Silyl Complexes towards 1,1-Difluoroallene", *J. Fluorine Chem.*, **2018**, *214*, 80–85 (link)

D. W. Wakerley, K. H. Ly, N. Kornienko, K. L. Orchard, M. F. Kuehnel and E. Reisner, "Aerobic conditions enhance the photocatalytic activity of CdS/CdO_x quantum dots", *Chem. Eur. J.*, **2018**, *24*, 18385–18388 (link) Featured on ChemistryViews

M. F. Kuehnel, C. D. Sahm, G. Neri, J. R. Lee, K. L. Orchard, A. J. Cowan and E. Reisner, "ZnSe quantum dots modified with a Ni(cyclam) catalyst for efficient visible-light driven CO_2 reduction in water", *Chem. Sci.*, **2018**, *9*, 2501–2509 (link). Selected for the themed collection 'Outstanding Contributions to Molecular Science for Energy Research'

M. F. Kuehnel* and E. Reisner,* "Solar hydrogen generation from lignocellulose", *Angew. Chem. Int. Ed.*, **2018**, *57*, 3290–3296 (link).

B. Reuillard, K. H. Ly, T. E. Rosser, M. F. Kuehnel, I. Zebger and E. Reisner, "Tuning Product Selectivity for Aqueous CO_2 Reduction with a Mn(bipyridine)-pyrene Catalyst Immobilized on a Carbon Nanotube Electrode", *J. Amer. Chem. Soc.*, **2017**, *139*, 14425-14435 (link)

M. F. Kuehnel, K. L. Orchard, K. E. Dalle and E. Reisner, "Selective photocatalytic CO_2 reduction in water through anchoring of a molecular Ni catalyst on CdS nanocrystals", *J. Amer. Chem. Soc.*, **2017**, *139*, 7217-7223 (link)

D. W. Wakerley,† M. F. Kuehnel,† K. L. Orchard, K. H. Ly, T. E. Rosser and E. Reisner, "Solar-driven reforming of lignocellulose to H_2 with a CdS/CdO_x photocatalyst", *Nat. Energy*, **2017**, *2*, 17021 (link, † shared first authorship). Highlighted in the press (Reuters TV, Business Weekly, Natural Gas Daily, The Engineer and others)

M. Crespo-Quesada, L. M. Pazos-Outón, J. Warnan, M. F. Kuehnel, R. H. Friend and E. Reisner, "Metal-encapsulated organolead halide perovskite photocathode for solar-driven hydrogen evolution in water", *Nat. Commun.* **2016**, *7*, 12555 (link)

M. F. Kuehnel, D. W. Wakerley, K. L. Orchard and E. Reisner, "Photocatalytic Formic Acid Conversion on CdS Nanocrystals with Controllable Selectivity for H_2 or CO", *Angew. Chem. Int. Ed.*, **2015**, *54*, 9627–9631. Featured on the inside cover (link)

M. F. Kuehnel, D. Lentz and T. Braun, "Synthesis of fluorinated building blocks by transition metal-mediated hydrodefluorination reactions", *Angew. Chem. Int. Ed.* **2013**, *52*, 3328–3348 (link)

M. F. Kuehnel, P. Holstein, M. Kliche, J. Krüger, S. Matthies, D. Nitsch, J. Schutt, M. Sparenberg and D. Lentz, "Titanium-Catalyzed Vinylic and Allylic C-F Bond Activation – Scope, Limitations and Mechanistic Insight", *Chem. – Eur. J.* **2012**, *18*, 10701–10714 (link)

M. F. Kuehnel, T. Schlöder, S. Riedel, B. Nieto-Ortega, F. J. Ramírez, J. T. López Navarrete, J. Casado and D. Lentz, "Synthesis of the Smallest Axially Chiral Molecule via Asymmetric Carbon-Fluorine Bond Activation", *Angew. Chem. Int. Ed.* **2012**, *51*, 2218–2220 (link). Highlighted in *Nachrichten aus der Chemie* 2012, **60**, 6

M. F. Kühnel and D. Lentz, "Fluorinated dienes in transition-metal chemistry – the rich chemistry of electron-poor ligands", *Dalton Trans.* **2010**, *39*, 9745–9759 (link). Featured on the front cover

M. F. Kühnel and D. Lentz, "Titanium-Catalyzed C-F Activation of Fluoroalkenes", *Angew. Chem. Int. Ed.* **2010**, *49*, 2933–2936 (link). Classified as 'Hot Paper' and honoured with the AG Fluorchemie Publication Prize 2010/2011

M. F. Kühnel and D. Lentz, "Hydrometalation of Fluoroallenes", *Dalton Trans.* **2009**, 4747–4755 (link). 'Hot Article'.

T. Hügle, M. F. Kühnel and D. Lentz, "Hydrazine Borane – A Promising Hydrogen Storage Material", *J. Am. Chem. Soc.* **2009**, *131*, 7444–7446 (link)

Patents

E. Reisner, D. Achilleos, H. Kasap, M. F. Kuehnel, "Photocatalyst and photocatalytic methods", PCT/EP2019/064221

D. W. Wakerley, M. F Kuehnel, K. L Orchard, E. Reisner, "Photocatalyst and photocatalytic methods", WO2018/096103A1

Book Chapters

M. F. Kuehnel and D. Lentz, "Preparation of Fluoroolefins", in *Efficient Preparation of Fluorine Compounds*, ed. H. W. Roesky, Wiley, pp. 315–333, 2013 (link)

Presentations

Invited and Keynote Lectures

International Society of Electrochemistry Annual Meeting, Durban, 8/2019
Solar SUPERGEN Technical meeting, Swansea 7/2019
Christian Doppler Symposium on Solar Fuels, Cambridge, 3/2019
Freie Universität Berlin, 10/2018
Doctoral Training Centre GRK1582 '*Fluorine as a Key Element*' Final Symposium, Berlin, 8/2018
Cardiff University, 7/2018
Université Grenoble Alpes, 7/2018
MRS Spring Meeting, Phoenix, 4/2018.
University College London, 3/2018
Global Student Engineering Conference, London, 11/2017.
Sustainable CO_2 Capture and Utilisation Workshop, Santander, 9/2017.
Freie Universität Berlin, 6/2017.
1st FOTOFUEL Conference and School, Almeria, 10/2016 (keynote lecture).
6th EuCheMS Chemistry Congress, Seville, 9/2016 (keynote lecture).
Christian Doppler Symposium on Solar Fuels, Cambridge, 9/2015.
UKERC International Energy Summer School, Wyboston, 7/2015.
Technische Universität Berlin, 11/2012.
Karlsruhe Institute of Technology, Karlsruhe, 9/2010.
Doctoral Training Centre GRK1582 '*Fluorine as a Key Element*' Inauguration Symposium, Berlin, 11/2009.

Selected Conference Presentations

ADUC Chemiedozententagung, Jena, 3/2018 (talk)
Gordon Research Conference *Renewable Energy: Solar Fuels*, Ventura, January 2018 (poster).
Recent Appointees in Materials Science Meeting, Exeter, September 2017 (talk).
2nd International Solar Fuels Conference, San Diego, July 2017 (talk).
ADUC Chemiedozententagung, Marburg, March 2017 (talk).
5th UK Solar Fuels Symposium, Newcastle, January 2017 (talk). Awarded '*Best Oral Presentation*'.
2nd UK-Japan Solar Fuels Workshop, Tokyo, June 2016 (flash presentation and poster).
Gordon Research Conference *Renewable Energy: Solar Fuels*, Lucca, February 2016 (poster).
4th UK Solar Fuels Symposium, Cambridge, January 2016 (poster).
ISACS17 Challenges in Chemical Renewable Energy, Rio de Janeiro, September 2015 (flash presentation and poster).
25th International Conference on Organometallic Chemistry, Lisbon, September 2012 (talk).
16th European Symposium on Fluorine Chemistry, Ljubljana, July 2010 (talk).
13ter Deutscher Fluortag, Schmitten, October 2008 (talk).
15th European Symposium on Fluorine Chemistry, Prague, July 2007 (talk).