

Curriculum Vitae – Prof. Dr. Moritz F. Kühnel

Current position: Chair of Inorganic Chemistry, University of Hohenheim

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Academic Career and Education

Since 3/2024	Professor (W3) of Inorganic Chemistry, Universität Hohenheim (link)
Since 12/2023	Honorary Associate Professor, Swansea University
Since 10/2023	Managing Director, Institute of Chemistry, Universität Hohenheim
10/2023–2/2024	Acting Professor of Inorganic Chemistry, Universität Hohenheim
1/2022–11/2022	Head of Department Hydrogen Labs and Field Tests, Fraunhofer IWES (link)
08/2022	Offer of appointment as Professor (W2) of Inorganic Chemistry, Universität Koblenz (declined)
12/2020–12/2021	Group Leader Hydrogen Technologies, Fraunhofer IMWS (link)
3/2020–11/2023	Senior Lecturer in Chemistry, Swansea University (link)
12/2017–2/2020	Lecturer in Chemistry, Swansea University
0/2015–11/2017	Senior Postdoc, University of Cambridge (with Prof. Erwin Reisner, link)
8/2012–6/2015	Postdoc, University of Cambridge (with Prof. Erwin Reisner)
2/2012–7/2012	Postdoc, Humboldt-Universität zu Berlin (with Prof. Thomas Braun, link)
10/2009–7/2012	Doctoral Training Centre ‘Fluorine as a Key Element’, Berlin (link)
4/2007–12/2011	Doctorate, Freie Universität Berlin (with Prof. Dieter Lentz, link) • Dr. rer. nat. ‘ <i>summa cum laude</i> ’. Thesis: Homogeneous catalysis for C-F activation (link)
10/2000–3/2007	Chemistry Undergraduate, Freie Universität Berlin

Awards and Honours

09/2024	Visiting Scientist Universidade Federal de Santa Maria (Brazil)
02/2024	Selected talk Gordon Research Conference: Solar Fuels, Ventura
12/2023	Honorary Associate Professor, Swansea University
01/2022	Promotion to Head of Department, Fraunhofer IWES
05/2021	<i>Project acquisition of the Month</i> , Fraunhofer Society
12/2020	Fellow of the Higher Education Academy
03/2020	Promotion to Senior Lecturer
02/2020	Among top 5% reviewers for <i>Angewandte Chemie</i>
11/2019	Swansea University Research Award finalist
02/2018	Advisory board member of the UK Solar Fuels Network
01/2018	Session chair Gordon Research Seminar <i>Renewable Energy: Solar Fuels</i>
01/2017	EES Prize ‘ <i>Best Oral Presentation</i> ’ at the 5 th UK Solar Fuels Meeting
10/2016	Keynote lecture 1 st FOTOFUEL Conference and School, Almeria
09/2016	Keynote lecture 6 th EuCheMS Chemistry Congress, Sevilla
07/2015	Promotion to Senior Research Associate, University of Cambridge
02/2013	Postdoctoral Research Fellowship, DFG
12/2012	Isaac Newton Trust Fellowship, Trinity College, Cambridge
11/2012	Schering Prize for the ‘ <i>Best Chemistry Dissertation</i> ’, Schering Stiftung
09/2011	Paper selected as ‘ <i>Best Publication in Fluorine Chemistry</i> ’, GDCh

Publication List

h-Index: 25

Citations: >4700

[Google Scholar](#)

Peer-reviewed Journal Articles

- L. Olivotto, [M.F. Kühnel](#),* "Shedding light on the dark spots in biophotocatalysis", *Trends Chem.* **2025**, 7, 635-636 ([link](#))
- M. McKee, M. Kutter, Y. Wu, H. Williams, M.-A. Vaudreuil, M. Carta, A.K. Yadav, H. Singh, J.-F. Masson, D. Lentz, [M.F. Kühnel](#),* N. Kornienko,* "Hydrophobic assembly of molecular catalysts at the gas-liquid-solid interface drives highly selective CO₂ electromethanation", *Nat. Chem.* **2025**, 17, 92-100 ([link](#))
- A. Samal,* C. Mohanty, N. Das, R. Das, [M.F. Kühnel](#),* "A review on metal phosphate based graphene hybrids: Emerging composite materials for vast applications", *Mater. Today Chem.* **2024**, 38, 102096 ([link](#))
- M. Perfecto-Irigaray, G. Beobide,* O. Castillo, M.G. Allan, [M.F. Kühnel](#),* A. Luque, H. Singh, A.K. Yadav, S. Pérez-Yáñez, "Unravelling co-catalyst integration methods in Ti-based metal-organic gels for photocatalytic H₂ production", *Dalton Trans.* **2024**, 53, 9482-9494 ([link](#))
- I. Bashir, J.D. McGettrick, [M.F. Kühnel](#),* B. Sarfraz, S.N. Arshad, Ali Rauf* "Sustainable Formate Synthesis: Integrating Ethylene Glycol Oxidation with Carbon Dioxide Electrocatalysis Using Redox-Stabilized Earth-Abundant Electrodes", *ACS Sustainable Chem. Eng.* **2024**, 12, 4795-4802 ([link](#))
- L. Thirumalaisamy, Z. Wei, K.R. Davies, M.G. Allan, J. McGettrick, T. Watson, [M.F. Kuehnel](#), S. Pitchaimuthu, "Dual Shield: Bifurcated Coating Analysis of Multilayered WO₃/BiVO₄/TiO₂/NiOOH Photoanodes for Sustainable Solar-to-Hydrogen Generation from Challenging Waters", *ACS Sustainable Chem. Eng.* **2024**, 12, 3044-3060 ([link](#))
- K.T. Uthra, V. Chitra, N. Damodharan, A. Devadoss, [M.F. Kuehnel](#), A.J. Expósito, S. Nagarajan, S. Pitchaimuthu, G.P. Pazhani, "Microplastic emerging pollutants – impact on microbiological diversity, diarrhoea, antibiotic resistance, and bioremediation", *Environ. Sci.: Adv.* **2023**, 2, 1469-1487 ([link](#))
- K.R. Davies, M.G. Allan, S. Nagarajan, R. Townsend, V.S. Asokan, T. Watson, A.R. Godfrey, M.M. Maroto-Valer, [M.F. Kuehnel](#), S. Pitchaimuthu, "Photoelectrocatalytic Surfactant Pollutant Degradation and Simultaneous Green Hydrogen Generation", *Ind. Eng. Chem. Res.* **2023**, 62(45), 19084-19094 ([link](#))
- K.R. Davies, M.G. Allan, S. Nagarajan, R. Townsend, T. Dunlop, J.D. McGettrick, V.S. Asokan, S. Ananthraj, T. Watson, R. Godfrey, J. Durrant, M.M. Maroto-Valer, [M.F. Kuehnel](#), S. Pitchaimuthu, "Solar light-driven simultaneous pharmaceutical pollutant degradation and green hydrogen production using a mesoporous nanoscale WO₃/BiVO₄ heterostructure photoanode", *J. Environ. Chem. Eng.* **2023**, 11(3), 110256 ([link](#))
- J. Bollmann, S. Pitchaimuthu, [M.F. Kühnel](#),* "Challenges of Industrial-Scale Testing Infrastructure for Green Hydrogen Technologies", *Energies* **2023**, 16, 3604 ([link](#))
- M.G. Allan, T. Pichon, J.A. McCune, C. Cavazza, A. Le Goff, [M.F. Kühnel](#),* "Augmenting the Performance of Hydrogenase for Aerobic Photocatalytic Hydrogen Evolution via Solvent Tuning", *Angew. Chem. Int. Ed.* **2023**, 62, e202219176 ([link](#)) Featured on the [Frontispiece](#). Highlighted in [Advances in Engineering](#)
- Y. Cherif, H. Azzi, K. Sridharan, S. Ji, H. Choi, M.G. Allan, S. Benaissa, K. Saidi-Bendahou, L. Dampney, C. Silva Ribeiro, S. Krishnamurthy, S. Nagarajan, M. Maroto-Valer, [M.F. Kuehnel](#), S. Pitchaimuthu, "Facile Synthesis of Gram-Scale Mesoporous Ag/TiO₂ Photocatalysts for Pharmaceutical Water Pollutant Removal and Green Hydrogen Generation", *ACS Omega* **2023**, 8, 1249-1261 ([link](#))
- S. Pitchaimuthu, K. Sridharan, S. Nagarajan, S. Ananthraj, P. Robertson, [M.F. Kuehnel](#), Á. Irabien, M. Maroto-Valer, "Solar Hydrogen Fuel Generation from Wastewater – Beyond Photoelectrochemical Water Splitting: A Perspective", *Energies* **2022**, 15, 7399 ([link](#))
- A. Kumar, P. Majithia, P. Choudhary, I. Mabbett, [M.F. Kuehnel](#), S. Pitchaimuthu, V. Krishnan, "MXene coupled graphitic carbon nitride nanosheets based plasmonic photocatalysts for removal of pharmaceutical pollutant", *Chemosphere* **2022**, 308, 136297 ([link](#))
- M.G. Allan, M.J. McKee, F. Marken, [M.F. Kuehnel](#),* "Solvent-controlled O₂ diffusion enables air-tolerant solar hydrogen generation", *Energy Environ. Sci.* **2021**, 14, 5523-5529 ([link](#))

B. Jones, K.R. Davies, M.G. Allan, I. Mabbett, T. Watson, J. Durrant, M.F. Kuehnel, S. Pitchaimuthu, "Photoelectrochemical Concurrent Hydrogen Generation and Heavy Metal Recovery from Polluted Acidic Mine Water", *Sustainable Energy Fuels*, **2021**, 5, 3084–3091 ([link](#))

M.O. Omorogie,* J.O. Babalola, M.O. Ismaeel, J.D. McGettrick, T.M. Watson, D.M. Dawson, M. Carta, M.F. Kuehnel,* "Activated carbon from Nauclea diderrichii agricultural waste – a promising adsorbent for ibuprofen, methylene blue and CO₂", *Adv. Powder Technol.*, **2021**, 32, 839–847 ([link](#))

J.A. McCune, M.F. Kuehnel, E. Reisner, O.A. Scherman, "Stimulus-mediated ultrastable radical formation" *Chem* **2020**, 6, 1819–1830 ([link](#)). Highlighted in [Chemistry World](#).

A. Wagner, K.H. Ly, N. Heidary, I. Szabó, K.I. Assaf, S.J. Barrow, K. Sokołowski, N. Kornienko, M.F. Kuehnel, E. Rosta, I. Zebger, W.M. Nau, O.A. Scherman, E. Reisner "Host-guest-chemistry meets electrocatalysis: cucurbit[6]uril on Au as a hybrid organic-inorganic system in CO₂ reduction", *ACS Catal.* **2020**, 10, 751–761 ([link](#))

J.J. Leung, J. Warnan, K.H. Ly, N. Heidary, D.H. Nam, M.F. Kuehnel, E. Reisner,* "Solar-driven reduction of aqueous CO₂ 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, E. Reisner "ZnSe nanorods as a visible-light-absorber for photocatalytic and photoelectrochemical H₂ 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 H₂ generation", *Energy Environ. Sci.* **2018**, 11, 2853–2857 ([link](#)). Featured on the [EPSRC website](#). Highlighted in the media ([BBC](#), [itv News](#), [New Statesman](#), [The Times of India](#), [The Independent](#), [Daily Mail Online](#), [Huffington Post](#), [CNET](#), [Advances Wales](#), [The Chemical Engineer](#), [Chemistry World](#) and many others including BBC radio live interviews)

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, E. Reisner, "Aerobic conditions enhance the photocatalytic activity of CdS/CdO_x quantum dots", *Chem. Eur. J.* **2018**, 24, 18385–18388 ([link](#)). *Hot Article*, featured on [cover](#), highlighted in [ChemistryViews](#)

M.F. Kuehnel, C.D. Sahm, G. Neri, J.R. Lee, K.L. Orchard, A.J. Cowan, E. Reisner, "ZnSe quantum dots modified with a Ni(cyclam) catalyst for efficient visible-light driven CO₂ 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, E. Reisner, "Tuning Product Selectivity for Aqueous CO₂ 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, E. Reisner, "Selective photocatalytic CO₂ reduction in water through anchoring of a molecular Ni catalyst on CdS nanocrystals", *J. Amer. Chem. Soc.* **2017**, 139, 7217–7223 ([link](#)). Among top 20 most accessed articles in JACS

D.W. Wakerley,[†] M.F. Kuehnel,[†] K.L. Orchard, K.H. Ly, T.E. Rosser, E. Reisner, "Solar-driven reforming of lignocellulose to H₂ with a CdS/CdO_x photocatalyst", *Nat. Energy* **2017**, 2, 17021 ([link](#), [†] shared first authorship). Highlighted in the press ([Reuters TV](#), [BNN Bloomberg TV live interview](#), [Business Weekly](#), [Natural Gas Daily](#), [The Engineer](#) and others)

M. Crespo-Quesada, L.M. Pazos-Outón, J. Warnan, M.F. Kuehnel, R.H. Friend, 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, E. Reisner, "Photocatalytic Formic Acid Conversion on CdS Nanocrystals with Controllable Selectivity for H₂ or CO", *Angew. Chem. Int. Ed.* **2015**, 54, 9627–9631. Featured on the inside cover ([link](#))

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

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

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

Book Chapters and Journal Articles without Peer Review

M. Tümmeler, M. Kühnel,* "Die Funktionsweise und Betriebsvariablen von PEM-Elektrolyseuren", *gwf Gas + Energie* **2021**, 162 (10), 54–63

M. Kühnel, S. Schattauer, N. Denecke, S. Schmidt, "Testzentren für industrielle H₂-Technologie nehmen Betrieb auf", *HZwei* **2021**, 21(3), 22–23

"Biological approaches to artificial photosynthesis", *Faraday Discuss.* **2019**, 215, 66–83 ([link](#))

"Synthetic approaches to artificial photosynthesis", *Faraday Discuss.* **2019**, 215, 242–281 ([link](#))

"Demonstrator devices for artificial photosynthesis", *Faraday Discuss.* **2019**, 215, 345–363 ([link](#))

"Beyond artificial photosynthesis", *Faraday Discuss.* **2019**, 215, 422–438 ([link](#))

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](#))

Patent applications

E. Reisner, D. Achilleos, H. Kasap, M. Kuehnel, "Photocatalyst and photocatalytic methods for producing hydrogen", WO/2019/229255 ([link](#))

D. Wakerley, M. Kuehnel, K. Orchard, E. Reisner, "Photocatalyst and photocatalytic methods", WO/2018/096103 ([link](#))