

List of Publications – Matthias Bauer

Book chapters:

1. M. Bauer, H. Bertagnolli: X-ray absorption spectroscopy – the Method and Its Applications, in: R. Schäfer, P.C. Schmidt (Ed.): *Methods in Physical Chemistry*, Wiley-VCH (Weinheim), 2012, p. 231-270.
2. I. Schlipf, M. Bauer, H. Bertagnolli: X-ray absorption spectroscopy – the Method and Its Applications on CSD in: T. Schneller et al. (Ed.): *Chemical solution deposition of functional thin film oxides*, Springer, 2013, p. 181 - 212.
3. M. Bauer, U. Bentrup, J.B. Priebe, A. Brückner: Operando techniques, in: P.C.J. Kamer, D. Vogt, J.W. Thybaut (Hrsg.): *Contemporary Catalysis: Science, Technology and Applications*, Royal Society of Chemistry, 2017, p. 551 – 590.

Peer reviewed journals:

1. T. Asthalter*, M. Bauer, U. van Bürck, I. Sergueev, H. Franz, A.I. Chumakov: Phonons in confinement and the Boson Peak using nuclear inelastic absorption, *Hyperfine Int.* 2002, 144/145, 77.
2. M.P. Feth, C. Bolm, J.P. Hildebrand, M. Köhler, O. Beckmann, M. Bauer, R. Ramamonjisoa, H. Bertagnolli*: Structural Investigation of High-Valent Salen Manganese Complexes by UV/Vis-, Raman, XANES- and EXAFS-Spectroscopy, *Chem. Eur. J.* 2003, 9, No.6, 1348-1359.
3. T. Asthalter*, M. Bauer, U. van Bürck, A.I. Chumakov, I. Sergueev, H. Franz: Confined phonons in glasses - A study by nuclear inelastic absorption and Raman scattering, *Eur. Phys. J.* 2003 E 12, S1, 9.
4. M.P. Feth*, M. Bauer, G. Kickelbick, O. Metelkina, U. Schubert, H. Bertagnolli: Influence of additives and post-synthesis treatment on the structural properties of sol-gel prepared alumina-doped zirconia studied by EXAFS-spectroscopy and X-ray diffraction, *J. Non-cryst. Sol.* 2005, 351, 432-443.
5. M. Bauer*, Th. Kauf, J. Christoffers, H. Bertagnolli: Investigations into the metal species of the homogeneous iron(III) catalyzed Michael addition reaction, *Phys. Chem. Chem. Phys.* 2005, 7(13), 2664-2670.
6. M. Bauer*, Chr. Gastl, Chr. Köppl, G. Kickelbick, H. Bertagnolli: EXAFS Spectroscopy of the Alkoxide Precursor $Zr(OnBu)_4$ and its Modification in Solution, *Monatsh. Chem. - Chemical Monthly* 2006, 137, 567–581.
7. R. Supplit, N. Hüsing*, H. Bertagnolli, M. Bauer, V. Kessler, G.A. Seisenbaeva, S. Bernstorff, S. Gross:

- Synthesis and characterization of orthorhombic, 2d-centered rectangular and lamellar iron oxide doped silica films,
J. Mater. Chem. 2006, 16, 4443-4453.
8. X. Liu, M. Bauer, J. van Slageren, F. Phillipp, H. Bertagnolli, E. Roduner*:
Structure and Magnetization of Small Monodisperse Platinum Clusters
Phys. Rev. Lett. 2006, 97, 2534011-4.
 9. X. Liu, M. Bauer, J. van Slageren, F. Phillipp, H. Bertagnolli, E. Roduner*:
Structure and Magnetization of Small Monodisperse Platinum Clusters,
Virtual Journal of Nanoscale Science and Technol. 2007, 15(1).
 10. M. Bauer*, S. Müller, G. Kickelbick, H. Bertagnolli:
The structures of the precursor $\text{Hf}(\text{OnBu})_4$ and its modification in solution: EXAFS-
investigation in combination with XANES- and IR-spectroscopy,
New J. Chem. 2007, 31, 1950-1959.
 11. M. Bauer*, H. Bertagnolli:
The Amplitude Reduction Factor and the Cumulant Expansion Method: Crucial
Factors in the Structural Analysis of Alkoxide Precursors in Solution,
J. Phys. Chem. B 2007, 111, 13756-13764.
 12. M. Bauer*, H. Bertagnolli:
X-ray absorption spectroscopy - The Method and its application,
Bunsen-Magazin, 9. Jahrgang, 6/2007, 216-231.
 13. J.-M. Wu, M. Antonietti, S. Gross, M. Bauer, B. M. Smarsly*:
Ordered Mesoporous Thin Films of Rutile TiO_2 Nanocrystals Mixed with Amorphous
 Ta_2O_5 ,
ChemPhysChem., 2008, 9, 748-757.
 14. Y. Akdogan, C. Vogt, M. Bauer, H. Bertagnolli, L. Giurgiu, E. Roduner*:
Platinum species in the pores of NaX, NaY and NaA zeolites studied using EPR,
XAS and FTIR spectroscopies,
Phys. Chem. Chem. Phys., 2008, 10, 2952-2963.
 15. Chr. Rill, M. Bauer, H. Bertagnolli, G. Kickelbick*:
Microemulsion Approach to Neodymium, Europium, and Ytterbium
Oxide/Hydroxide Colloids - Effects of Precursors and Preparation Parameters on
Particle Size and Crystallinity,
Journal of Colloid and Interface Science, 2008, 325, 179-186.
 16. F. Graziola, F. Girardi, M. Bauer, R. Di Maggio, M. Rovezzi, H. Bertagnolli, C. Sada,
G. Rossetto, S. Gross*:
UV-photopolymerisation of poly(methyl methacrylate)-based inorganic-organic
hybrid coatings and bulk samples reinforced with methacrylate-modified zirconium
oxocluster,
Polymer, 2008, 49, 4332-4343.
 17. M. Bauer*, H. Bertagnolli:
Towards X-ray absorption spectroscopy in real time,
ChemPhysChem., 2009, 10, 2197-2200.

18. M. Bauer*, H. Bertagnolli:
Alkoxide clusters in solution: An EXAFS study of the example $Y(OEtOMe)_3$ and the degradation induced by structural modifiers,
Z. Phys. Chem., 2009, 223, 877.
19. V. Di Noto, A. Boer, S. Lavina, C.A. Muryn, M. Bauer, G.A. Timco, G. Pace, M. Rancan, R.E.P. Winpenny, S. Gross*:
First example of functional chromium wheel-based hybrid organic-inorganic materials for dielectric applications,
Adv. Func. Mat., 2009, 19, 3226-3236.
20. V. Rabe, W. Frey, A. Baro, S. Laschat*, M. Bauer, H. Bertagnolli, S. Rajagopalan, T. Asthalter, E. Roduner, H. Dilger, T. Glaser, D. Schnieders:
Syntheses, Crystal structures, Spectroscopic Properties and Catalytic Aerobic Oxidations of Novel Trinuclear Non-heme Iron Complexes,
Eur. J. Inorg. Chem., 2009, 4660.
21. V. Guillermin, S. Gross, C. Serre, T. Devic, M. Bauer, G. Férey :
A zirconium methacrylate oxocluster as precursor for the low-temperature synthesis of porous zirconium(IV) dicarboxylates,
Chem. Commun., 2010, 46, 767.
22. M. Bauer*, G. Heusel, S. Mangold, H. Bertagnolli:
Two-dimensional spectroscopic set-up for simultaneous UV-Vis/(Q)EXAFS in-operando studies of homogeneous reactions under laboratory conditions,
J. Synchr. Rad., 2010, 17, 273-279.
23. M. Bauer*, Chr. Gastl:
X-ray absorption in homogeneous catalysis research: The iron-catalyzed Michael addition reaction by XAS, RIXS and multi-dimensional spectroscopy,
Phys. Chem. Chem. Phys., 2010, 12, 5575-5584.
24. S. Gross*, M. Bauer*:
EXAFS as powerful analytical tool for the investigation of organic-inorganic hybrid materials (invited feature article),
Adv. Funct. Mat., 2010, 20, 4026.
25. A.B. Ene, M. Bauer, T. Archipov, E. Roduner*:
Adsorption of Oxygen on Copper in Cu/HZSM5 Zeolites,
Phys. Chem. Chem. Phys., 2010, 12, 6520-6531.
26. F. Maratini, L. Pandolfo, M. Bendova, U. Schubert, M. Bauer, M. Rocchia, A. Venzo, E. Tondello, S. Gross*:
From thioxocluster to dithiocluster: exploring the chemistry of polynuclear Zr complexes with S₂O and S₂S ligands,
Inorg. Chem., 2011, 50, 489.
27. M. Bauer*:
The chemical information contained in the EXAFS Debye-Waller factor: Covalency in Iron(III) bis-diketonato complexes,
J. Phys. Chem. A, 2010, 114, 12870-12874.

28. M. Hübner, D. Koziej, M. Bauer, N. Barsan, K. Kvashnina, M.D. Rossell, U. Weimar, J.-D. Grunwaldt*:
Catching the state of Pt in SnO₂-based sensors under working conditions,
Angew. Chem. Int. Ed., 2011, 50, 2841-2844.
Struktur und Verhalten von Platin in SnO₂-basierten Gassensoren unter
realistischen Arbeitsbedingungen,
Angew. Chem., 2011, 123, 2893-2896.
29. M. Bauer*, T. Stalinski, E.F. Aziz*:
Insights into the ultrafast electron delocalization for iron carbonyls using dark
channel fluorescence yield X-ray absorption,
ChemPhysChem., 2011, 12, 2088-2091.
30. O. Clemens, M. Bauer, R. Haberkorn, H.P. Beck*:
On the Existence of LiFeVO₄ – Tales and Imagination,
Z. Anorg. Allg. Chem., 2011, 637, 1036-1044.
31. K. Butsch, A. Klein*, M. Bauer:
Highly flexible O,O',N ligands and their Fe, Ni, Cu and Zn complexes,
Inorg. Chim. Acta., 2011, 374, 350-358.
32. S.H. Eitel, M. Bauer*, D. Schweinfurth, B. Sarkar*, H. Kelm, H.-J. Krüger*, W.
Frey, R. Peters*:
Paramagnetic Palladacycles with Pd^{III} Centers are Highly Active Catalysts for
Asymmetric Aza-Claisen Rearrangements,
J. Am. Chem. Soc., 2012, 134 (10), 4683–4693.
33. R. Jennerjahn, R. Jackstell, I. Piras, R. Franke, H. Jiao, M. Bauer, and M. Beller*:
Benign Catalysis with Iron: Unique Selectivity in Catalytic Isomerization Reactions of
Olefins,
ChemSusChem, 2012, 5 (4), 734-739.
34. A. Welther, M. Bauer*, M. Mayer, A. Jacobi von Wangelin*:
Iron(0) Particles: Catalytic Hydrogenations and Spectroscopic Studies,
ChemCatChem., 2012, 4(8), 1088-1093.
35. F. Conrad, M. Bauer, D. Sheptyakov, S. Weyeneth, D. Jaeger, K. Hametner, P.-E.
Car, J. Patscheider, D. Günther, G.R. Patzke*:
New Spinel-type catalysts for visible-light-driven water oxidation,
RSC Advances, 2012, 2, 3076-3082.
36. A.J. Atkins, C.R. Jacob*, M. Bauer*:
Probing the electronic structure of substituted ferrocenes with high resolution XANES
spectroscopy,
Chem. Eur. J., 2012, 18, 7021-7025.
37. F. Conrad, M. Bauer, S. Weyeneth, Y. Zhou, K. Hametner, D. Günther, G.R. Patzke*:
Hierarchically structured copper gallium spinels through microwave hydrothermal
methods,
Solid State Sci., 2013, 24, 125-132.
38. J. Rabeah, M. Bauer, W. Baumann, A.E.C. McConnell, W.F. Gabrielli, P.B. Webb, D.
Selent, A. Brückner*:

- Formation, operation and deactivation of Cr catalysts in ethylene tetramerization directly assessed by operando EPR and XAS, ACS Catalysis, 2013, 3, 95-102.
39. H. Junge, N. Marquet, A. Kammer, S. Denurra, M. Bauer*, S. Wohlrab, F. Gärtner, M.-M. Pohl, A. Spannenberg, S. Gladiali, M. Beller*:
Water Oxidation with molecular-defined Iridium complexes: Insights into Homogeneous vs. Heterogeneous Catalysis, Chem. Eur. J., 2012, 18, 12749-12758.
 40. K. Butsch, A. Klein*, S. Nitsche, K. Stirnat, J.R. Hawke, E.J.L. McInnes, M. Bauer:
Generation and characterisation of the phenoxyl-radical containing Cu^{II} complex [Cu(triaz)₂]⁺ (triaz⁻ = O,N chelating triazole-phenolate), Dalton Trans., 2012, 41, 11464-11475.
 41. M. Bauer*, R. Schoch, L. Shao, B. Zhang, A. Knop-Gericke, M.-G. Willinger, R. Schlögl, D. Teschner*:
Structure-activity studies on highly active palladium hydrogenation catalysts by X-ray absorption spectroscopy, J. Phys. Chem. C., 2012, 116, 22375-22385.
 42. S. Schuster, E. Klemm*, M. Bauer*:
The role of Pd²⁺/Pd⁰ in hydrogenation by [Pd(2-pymo)₂]_n: A combined X-ray absorption and IR spectroscopic study, Chem. Eur. J., 2012, 18, 15831-15837.
 43. O. Clemens*, M. Bauer, R. Haberkorn, M. Springborg, H.P. Beck:
Synthesis and Characterization of Vanadium-Doped LiMnPO₄-Compounds – LiMn(PO₄)_x(VO₄)_{1-x} (0.8 ≤ x ≤ 1.0), Chem. Mater., 2012, 24, 4717-4724.
 44. Chr. Jensen, D. Buck, H. Dilger, M. Bauer, F. Phillipp, E. Roduner*:
Maximum hydrogen chemisorption on KL zeolite supported Pt cluster, Chem. Commun., 2013, 49, 588-590.
 45. A. Atkins, M. Bauer*, C. Jacob*:
The chemical sensitivity of X-ray spectroscopy: High energy resolution XANES versus valence-to-core X-ray emission spectroscopy of substituted ferrocenes, Phys. Chem. Chem. Phys., 2013, 15, 8095-8105.
 46. H. Alex, N. Steinfeldt, K. Jähnisch, M. Bauer*, S. Hübner*:
On the Selective Aerobic Oxidation of Benzyl Alcohol with Pd/Au-Nanoparticles in Batch and Flow, Nanotechnol. Rev., 2014, 3, 99-110.
 47. E. Suljoti, R. Garcia-Diez, S. Bokarev, K. M. Lange, R. Schoch, B. Dierker, M. Dantz, K. Yamamoto, N. Engel, K. Atak, O. Kühn, J.-E. Rubensson, M. Bauer*, E. F. Aziz*:
Direct observation of charge transfer in solvated organometallic complex, Angew. Chem., 2013, 125, 10024 – 10027 / Angew. Chem. Int. Ed., 2013, 52, 9841-9844.

48. K.S.M. Salih, S. Bergner, H. Kelm, Y. Sun, A. Grün, Y. Schmitt, R. Schoch, M. Busch, N. Deibel, S. Bräse, B. Sarkar, M. Bauer, M. Gerhards, W.R. Thiel*:
Trinuclear diamagnetic nickel(II) complexes bridged by 3-arylpirazolato ligands,
Eur. J. Inorg. Chem., 2013, 6049-6059.
49. R. Schoch, W. Desens, Th. Werner*, M. Bauer*:
The active species in iron-catalyzed cross-coupling reactions by X-ray absorption spectroscopy,
Chem. Eur. J., 2013, 19, 15816-15821.
50. M.U. Delgado-Jaime, S. DeBeer*, M. Bauer*:
Valence-to-Core X-ray Emission Spectroscopy of Iron Carbonyl Complexes:
Implications for the Examination of Catalytic Intermediates,
Chem. Eur. J., 2013, 19, 15888-15897.
51. I. Bräunlich, A. Sánchez-Ferrer, M. Bauer, R. Schepper, P. Knüsel, J. Dshemuchadse, R. Mezzenga, P. Smith, W. Caseri*:
Spin-crossover iron(II)-aminotriazole coordination polymers in solution,
Inorg. Chem., 2014, 53, 3546-3557.
52. J.E.M.N. Klein, B. Miehlich, M.S. Holzwarth, M. Bauer, M. Milek, M.M. Khusniyarov, G. Knizia, H.-J. Werner, B. Plietker*:
Der elektronische Grundzustand von $[\text{Fe}(\text{CO})_3(\text{NO})]^-$: Eine spektroskopische und theoretische Studie,
Angew. Chem., 2014, 126, 1820-1824 / *Angew. Chem. Int. Ed.*, 2014, 53, 1790-1794.
53. M. Bauer*:
HERFD-XAS and valence-to-core XES: New tools to push the limits in research with hard X-rays?
Phys. Chem. Chem. Phys., 2014, 16, 13827-13837.
54. E. Keceli, M. Hemgesberg, R. Grüner, V. Bon, C. Wilhelm, T. Philippi, R. Schoch, Y. Sun, M. Bauer, S. Ernst, S. Kaskel, W.R. Thiel*:
A series of amide functionalized isorecticular metal organic frameworks,
Micropor. Mesopor. Mater., 2014, 194, 115-125.
55. T. Werner*, M. Bauer*, A.M. Rihai, H. Schramm:
Catalytic system for the activation of diorganozinc reagents,
Eur. J. Org. Chem., 2014, 22, 4876-4883.
56. D. Mellmann, E. Barsch, M. Bauer, K. Grabow, A. Boddien, A. Kammer, P. Sponholz, U. Bentrup, R. Jackstell, H. Junge, G. Laurenczy, R. Ludwig*, M. Beller*:
Base-free non-noble metal catalyzed Hydrogen Generation from Formic Acid – Scope and Mechanistic Insights
Chem. Eur. J., 2014, 20, 13589-13602
57. A. Walli, S. Dechert, M. Bauer, S. Demeshko, F. Meyer*:
BOX Ligands in Biomimetic Copper-Mediated Dioxygen Activation – A New Hemocyanin Model,
Eur. J. Inorg. Chem., 2014, 4660-4676.
58. R. Schoch, H. Huang, V. Schünemann, M. Bauer*:
A new iron based CO oxidation catalyst: Structure-activity correlation,

- ChemPhysChem., 2014, 15, 3768-3775.
59. A. Sánchez-Ferrer, I. Bräunlich, J. Ruokolainen, M. Bauer, R. Schepper, P. Smith, W. Caseri,* R. Mezzenga:
Gels, Xerogels and Films of Polynuclear Iron(II)–Aminotriazole Spin crossover Complexes,
RSC Advances, 2014, 4, 60842-60852.
 60. M. Bauer*:
Configuration Determination of Transition Metal Complexes by Multiple Scattering EXAFS Analysis: A Case Study,
Zeitschr. f. Physik. Chemie, 2014, 228, 1077-1088.
 61. F. Faccioli, M. Bauer, D. Pedron, A. Sorarù, M. Carraro, S. Gross*:
Hydrolytic stability and peroxide activation by zirconium-based oxoclusters: a comparative study,
Eur. J. Inorg. Chem., 2015, 210-225.
 62. M. Gotthardt, R. Schoch, T.S. Brunner, M. Bauer*, W. Kleist*:
Design of highly porous single site catalysts through two-step postsynthetic modification of mixed linker MIL-53(Al),
ChemPlusChem., 2015, 80, 188-195.
 63. D. Dehe, L. Wang, M.K. Müller, G. Dörr, Z. Zhou, R.N. Klupp Taylor, Y. Sun, S. Ernst, M. Hartmann, M. Bauer, W.R. Thiel*:
A Rhodium Triphenylphosphine Catalyst for Alkene Hydrogenation Supported on Neat Superparamagnetic Iron Oxide Nanoparticles,
ChemCatChem., 2015, 7, 127-136.
 64. M.A. Gotthardt, R. Schoch, S. Wolf, M. Bauer*, W. Kleist*:
Synthesis and characterization of bimetallic metal-organic framework Cu-Ru-BTC,
Dalton Trans., 2015, 44, 2052-2056.
 65. R. V. Jagadeesh, T. Stemmler, A.-E. Surkus, M. Bauer, K. Junge, H. Junge, M. Beller*:
Cobalt-based nanocatalyst for green oxidation and hydrogenation processes,
Nature Protocols, 2015, 10, 916-926.
 66. G.W. Busser, B. Mei, P. Weide, P.C.K. Vesborg, I. Chorkendorff, K. Stührenberg, M. Bauer, X. Huang, M.-G. Willinger, R. Schlögl, M. Muhler*:
Co-catalyst designing: A regenerable molybdenum containing ternary co-catalyst system for efficient photocatalytic water splitting,
ACS Catal., 2015, 5, 5530-5539.
 67. A. Atkins, C. Jacob*, M. Bauer*:
High-Resolution X-ray Absorption Spectroscopy of Iron Carbonyl Complexes,
Phys. Chem. Chem. Phys., 2015, 17, 13937-13948.
 68. W. Sinha, M.G. Sommer, N. Deibel, F. Ehret, M. Bauer, B. Sarkar, S. Kar:
Experimental and Theoretical Investigations of the Existence of Cu^{II}, Cu^{III}, and Cu^{IV} in Copper Corrolato Complexes,
Angew. Chem. Int. Ed., 2015, 54, 13769-13774.

- Experimentelle und theoretische Untersuchung der Existenz von Cu^{II}, Cu^{III}, and Cu^{IV} in Kupfercorrolen,
Angew. Chem. Int. Ed., 2015, 127, 13973-13978.
69. C. Wilfer, P. Liebhäuser, A. Hoffmann, H. Erdmann, O. Grossmann, L. Runtsch, E. Pfaffenholz, R. Schepper, R. Dick, M. Bauer, M. Dürr, I. Ivanović-Burmazović, S. Herres-Pawlis*:
Efficient biomimetic hydroxylation catalysis with a bis(pyrazolyl) imidazolyl-methane copper-peroxide complex,
Chem. Europ. J., 2015, 21, 17639-17649.
70. M. Bauer:
Mit Röntgenabsorption chemische Prozesse verstehen,
Nachrichten aus der Chemie, 63, Juli/August 2015, 771-776.
71. A. Hoffmann, J. Stanek, B. Dicke, L. Peters, B. Grimm-Lebsanft, A. Wetzels, A. Jesser, M. Bauer, M. Gnida, W. Meyer-Klaucke, M. Rübhausen, S. Herres-Pawlis*:
Implications of Guanidine Substitution on Copper Complexes as Entatic-State Models,
Europ. J. Inorg. Chem., 2016, 29, 4731-4743.
72. R. Schoch, M. Bauer*:
Pollution control meets sustainability: Structure-Activity studies on new iron-based CO oxidation catalysts,
ChemSusChem, 2016, 9, 1996-2004.
73. N. J. Vollmers, P. Müller, A. Hoffmann, S. Herres-Pawlis, M. Rohrmüller, W. G. Schmidt, U. Gerstmann*, M. Bauer*:
Experimental and Theoretical High-Energy-Resolution X-ray Absorption Spectroscopy: Implications for the Investigation of the Entatic State,
Inorg. Chem., 2016, 55, 11694-11706.
74. A. Kalinko*, M. Bauer, J. Timoshenko, A. Kuzmin:
Molecular dynamics and reverse Monte Carlo modeling of scheelite-type AWO₄ (A=Ca, Sr, Ba) W L₃-edge EXAFS spectra,
Phys. Scr., 2016, 91, 114001/1-9.
75. I. Bräunlich, C. Mair, M. Bauer, W. Caseri*:
Structural Transitions and Thermochromism of linear polynuclear Cobalt(II)-4-Octadecyl-1,2,4-triazole,
Journal of Inorganic and Organometallic Polymers and Materials, 2017, 27, 605-611.
76. P. Zimmer, P. Müller, L. Burkhardt, R. Schepper, A. Neuba, J. Steube, F. Dietrich, U. Flörke, S. Mangold, M. Gerhards, M. Bauer*:
N-heterocyclic carbene complexes of iron as photosensitizers for light-induced water reduction,
Eur. J. Inorg. Chem., 2017, 11, 1504-1509.
77. N.M. Martin, P. Velin, M. Skoglundh, M. Bauer, P.-A. Carlsson*:
Catalytic hydrogenation of CO₂ to methane over supported Pd, Rh and Ni catalysts,
Catal. Sci. Technol., 2017, 7, 1086-1094.

78. S. Preiß, C. Förster, S. Otto, M. Bauer, P. Müller, D. Hinderberger, H.H. Haeri, L. Carella, K. Heinze*:
Structure and reactivity of a mononuclear gold(II) complex,
Nature Chem., 2017, 9, 1249-1255.
79. L. Burkhardt, M. Holzwarth, B. Plietker, M. Bauer*:
Detection and characterization of hydride ligands in iron complexes by high resolution hard X-ray spectroscopy and implications for catalytic processes,
Inorg. Chem., 2017, 56, 13300-13310.
80. P. Zimmer, L. Burkhardt, A. Friedrich, J. Steube, A. Neuba, R. Schepper, P. Müller, U. Flörke, M. Huber, S. Lochbrunner, M. Bauer*:
The connection between NHC ligand count and photophysical properties in Fe(II) photosensitizers: An experimental study,
Inorg. Chem., 2018, 57, 360-373.
81. S. Otto, M. Dorn, C. Förster, M. Bauer, M. Seitz, K. Heinze*:
Understanding and exploiting long-lived near-infrared emission of a molecular ruby,
Coord. Chem. Rev., 2018, 359, 102-111.
82. M. Naumova*, D. Khakhulin, M. Rebarz, M. Rohrmüller, B. Dicke, M. Biednov, A. Britz, S. Espinoza, B. Grimm-Lebsanft, M. Kloz, N. Kretzschmar, A. Neuba, J. Ortmeyer, R. Schoch, J. Andreasson, M. Bauer, C. Bressler, W.G. Schmidt, G. Henkel*, M. Rübhausen*:
Structural dynamics upon photoexcitation-induced charge transfer in a dicopper(I)-disulfide complex,
Phys. Chem. Chem. Phys., 2018, 20, 6274-6286.
83. A. Garai, S. Sobottka, R. Schepper, W. Sinha, M. Bauer*, B. Sarkar*, S. Kar*:
Chromium Complexes with Oxido and Corrolato Ligands: Metal-Based Redox Processes versus Ligand Non-Innocence,
Chem. Eur. J., 2018, 24, 12613-12622.
84. K. Wissel, S. Dasgupta, A. Benes, R. Schoch, M. Bauer, R. Witte, A. Dominic Fortes, E. Erdem, J. Rohrer, O. Clemens*:
Developing intercalation based anode materials for fluoride-ion batteries: topochemical reduction of $\text{Sr}_2\text{TiO}_3\text{F}_2$ via a hydride based defluorination process,
J. Mat. Chem. A, 2018, 6, 22013-22026.
85. N.M. Martin, F. Hemmingsson, X. Wang, L.R. Merte, U. Hejral, J. Gustafson, M. Skoglundh, D. Motta Meira, A.-C. Dippel, O. Gutowski, M. Bauer, P.-A. Carlsson*:
Structure-function relationship during CO_2 methanation over Rh/ Al_2O_3 and Rh/ SiO_2 catalysts under atmospheric pressure conditions,
Catal. Sci. Technol., 2018, 8, 2686-2696.
86. P. Zimmer, L. Burkhardt, R. Schepper, K. Zheng, D. Gosztola, A. Neuba, U. Flörke, C. Wölper, R. Schoch, S.E. Canton*, M. Bauer*:
Towards noble-metal free dyads: Ground end excited state tuning by a cobalt dimethylglyoxime catalyst connected to an iron N-heterocyclic carbene photosensitizer,
Eur. J. Inorg. Chem., 2018, 5203-5214.

87. S. Fischer, A. Rösel, A. Kammer, L. Burkhardt, R. Schoch, H. Junge, M. Bauer, M. Beller, R. Ludwig*:
In situ Generated Diferrate $[\text{Fe}_2(\text{CO})_6(\mu\text{-CO})(\mu\text{-P(aryl)}_2)]^-$ as Iron Based Water Reduction Catalyst in Photocatalytic Hydrogen Production – Spectroscopic Insights, *Chem. Eur. J.*, 2018, 24, 16052-16065.
88. M. Tünnermann, P. Rehsies, U. Flörke, M. Bauer*:
A straightforward synthesis to novel 1,10-phenanthrolines with fused thiophene structure, *Synlett*, 2018, 29, 2638-2642.
Highlight in Synform News: <https://www.thieme.de/en/thieme-chemistry/synthesis-of-thiophene-fused-phenathrolines-138698.htm>
89. P. Müller, K. Karhan, M. Krack, U. Gerstmann, W.G. Schmidt, M. Bauer, T.D. Kühne*:
Impact of finite-temperature and condensed-phase effects on theoretical X-ray absorption spectra of transition metal complexes, *J. Comput. Chem.*, 2019, 40, 712-716.
90. S. Preiß, A. Pöpcke, L. Burkhardt, L. Großmann, S. Lochbrunner, M. Bauer, T. Opatz, K. Heinze*:
Gold(II) Porphyrins in Photoinduced Electron Transfer Reactions, *Chem. Eur. J.*, 2019, 25, 5940-5949.
91. P. Veit, C. Volkert, C. Förster, V. Ksenofontov, M. Bauer, K. Heinze*:
Gold(II) in Redox-Switchable Gold(I) Catalysis, *Chem. Comm.*, 2019, 55, 4615-4618.
92. P. Müller, A. Neuba, U. Flörke, G. Henkel, T.D. Kühne, M. Bauer*:
Experimental and Theoretical High Energy Resolution Hard X-Ray Absorption and Emission Spectroscopy on Biomimetic Cu_2S_2 Complexes, *J. Phys. Chem. A*, 2019, 123, 16, 3575-3581.
93. L. Burkhardt, C. Mueller, O.A. Groß, Y. Sun, H. Sitzmann, M. Bauer*:
The Bonding Situation in the Dinuclear Tetra-Hydrido Complex $[\{^5\text{CpFe}\}_2(\mu\text{-H})_4]$ Revisited by Hard X-Ray Spectroscopy, *Inorg. Chem.*, 2019, 58, 6609-6618.
94. S. Kreft, R. Schoch, J. Schneidewind, J. Rabeah, E.V. Kondratenko, V.A. Kondratenko, H. Junge, M. Bauer, S. Wohlrab, M. Beller*:
Improving Selectivity and Activity of CO_2 Reduction Photocatalysts with Oxygen, *Chem*, 2019, 5, 1818-1833.
95. B.J. Gregori, F. Schwarzhuber, S. Pöllath, J. Zweck, L. Fritsch, R. Schoch, M. Bauer, A. Jacobi von Wangelin*:
Stereoselective Alkyne Hydrogenation by a Simple Iron Catalyst, *ChemSusChem*, 2019, 12, 3864-3870.
96. J. Steube, L. Burkhardt, A. Pöpcke, J. Moll, P. Zimmer, R. Schoch, C. Wölper, K. Heinze, S. Lochbrunner, M. Bauer*:
Excited-State Kinetics of an Air-Stable Cyclometalated Iron(II) Complex, *Chem. Eur. J.*, 2019, 25, 11826-11830.

97. A. Schoch, L. Burkhardt, R. Schoch, K. Stührenberg, M. Bauer*:
Hard X-ray spectroscopy: An exhaustive toolbox for mechanistic studies (?),
Faraday Discussions, 2019, 220, 113-132.
98. R. Grauke, R. Schepper, J. Rabeah, R. Schoch, U. Bentrup, M. Bauer*, A. Brückner*:
Impact of Al activators on structure and catalytic performance of Cr catalysts in
homogeneous ethylene oligomerization – A multitechnique in situ/operando study,
ChemCatChem, 2020, 12, 1025-1035.
99. A. Kalinko*, W. Caliebe, R. Schoch, M. Bauer:
A von Hamos-type hard X-ray spectrometer at the Petra III beamline P64,
J. Synchrotron Rad. 2020, 27, 31-36.
100. M. Naumova, A. Kalinko, J.W.L. Wong, M. Abdellah, H. Geng, E. Domenichini, J.
Meng, S.A. Gutierrez, P.-A. Mante, W. Lin, P. Zalden, A. Galler, F. Lima, K. Kubicek, M.
Biednov, A. Britz, S. Checchia, V. Kabanova, M. Wulff, J. Zimara, D. Schwarzer, S.
Demeshko, V. Murzin, D. Gosztola, M. Jarenmark, J. Zhang, M. Bauer, M.L.L. Daku,
W. Gawelda, D. Khakhulin, C. Bressler, F. Meyer, K. Zheng, S.E. Canton*:
Revealing Hot and Long-Lived Metastable Spin-States in the Photoinduced Switching
of Solvated Metallogrid Complexes with Femtosecond Optical and X-ray
Spectroscopies,
J. Chem. Phys. Lett., 2020, 11, 6, 2133-2141.
101. L. Burkhardt, Y. Vukadinovic, M. Nowakowski, A. Kalinko, J. Rudolph, P.-
A. Carlsson, C.R. Jacob, M. Bauer*:
The electronic structure of the Hieber anion $[\text{Fe}(\text{CO})_3(\text{NO})]^-$ revisited by X-ray
emission and absorption spectroscopy,
Inorg. Chem., 2020, 59, 6, 3551-3561.
102. M. Naumova, A. Kalinko, J. Wong, S.L. Gutierrez Alvarez, J. Meng, M. Liang, M.
Abdellah, H. Geng, W. Lin, K. Kubicek, M. Biednov, F. Lima, A. Galler, P. Zalden, S.
Checchia, P.-A. Mante, J. Zimara, D. Schwarzer, S. Demeshko, V. Murzin, D. Gosztola,
M. Jarenmark, J. Zhang, M. Bauer, L.M. Lawson Daku, D. Khakhulin, W. Gawelda, C.
Bressler, F. Meyer, K. Zheng, S. Canton*:
Exploring the light-induced dynamics in solvated metallogrid complexes with
femtosecond pulses across the electromagnetic spectrum,
J. Chem. Phys., 2020, 152, 214301/1-11.
103. M.A. Nowroozi, K. Wissel, M. Donzelli, N. Hosseinpourkahvaz, S. Plana-Ruiz, U. Kolb,
R. Schoch, M. Bauer, A.M. Malik, J. Rohrer, S. Ivlev, F. Kraus, O. Clemens*:
An all-solid-state fluoride ion battery using $\text{La}_2\text{NiO}_{4+d}$ as a high voltage cathode
material with ultra-high cycle life,
Comm. Mater., 2020, 1, 27 (Article number).
104. Y. Vukadinovic, L. Burkhardt, A. Pöpcke, A. Miletic, L. Fritsch, B. Altenburger, R.
Schoch, A. Neuba, S. Lochbrunner, M. Bauer*:
When Donors turn into Acceptors: Ground and excited state properties of Fe(II)
complexes with amin-substituted tridentate bis-imidazol-2-ylidene pyridine ligands,
Inorg. Chem., 2020, 59, 13, 8762–8774.
105. N. Prinz, L. Schwensow, S. Wendholt, A. Jentys, M. Bauer*, W. Kleist*, M. Zobel*:
Hard X-ray-based techniques for structural investigations of CO_2 methanation
catalysts pre-pared by MOF decomposition,

- Nanoscale, 2020, 12, 15800-15813.
106. J. Gujt, P. Zimmer, F. Zysk, V. Süß, C. Felser, M. Bauer*, T.D. Kühne*:
Water structure near the surface of Weyl semimetals as catalysts in photocatalytic proton reduction,
Struct. Dyn., 2020, 7, 034101-1 - 034101-6.
 107. M. Görlin, O. Diaz-Morales, S. Koroidov, J. Halldin Stenlid, H.-Y. Wang, M. Börner, M. Shipilin, A. Kalinko, V. Murzin, O.V. Safonova, M. Nachtegaal, A. Uheida, J. Dutta, M. Bauer, A. Nilsson*:
Implications of alkali metal cations on the performance of Ni-Fe oxygen evolution electrocatalysts explained by the electrolyte pH as principal activity descriptor,
Nature Comm., 2020, 11, 6181 (Article number).
 108. M. Kirchhof, K. Gugeler, F.R. Fischer, M. Nowakowski, A. Bauer, S. Alvarez-Barcia, K. Abitaev, M. Schnierle, Y. Qawasmi, W. Frey, A. Baro, D.P. Estes, T. Sottmann,* M. R. Ringenberg,* B. Plietker,* M. Bauer,* J. Kästner,* S. Laschat*:
Experimental and Theoretical Study on the Role of Monomeric vs. Dimeric Rhodium Oxazolidinone Norbornadiene Complexes in Catalytic Asymmetric 1,2- and 1,4-Additions,
Organometallics, 2020, 39, 17, 3131–3145.
 109. B.J. Gregori, M. Nowakowski, A. Schoch, S. Pöllath, J. Zweck, M. Bauer*, A. Jacobi von Wangelin*:
Stereoselective Chromium-Catalyzed Semi-Hydrogenation of Alkynes,
ChemCatChem, 2020, 12, 5359–5363.
 110. J.P. Zobel, O.S. Bokareva, P. Zimmer, C. Wölper, M. Bauer, L. González*:
Intersystem Crossing Dynamics in an Fe(II) N-heterocyclic carbene Photosensitizer,
Inorg. Chem., 2020, 59, 20, 14666–14678.
 111. P. Dierks, A. Pöpcke, B. Altenburger, O.S. Bokareva, T. Reuter, K. Heinze, O. Kühn, S. Lochbrunner, M. Bauer*:
Ground and excited state properties of iron(II) complexes linked to organic chromophores,
Inorg. Chem., 2020, 59, 20, 14746–14761.
 112. M. Benedikter, J. Musso, M. Kesharvani, K. Sterz, I. Elser, F. Ziegler, F. Fischer, B. Plietker, W. Frey, J. Kästner, M. Winkler, J. van Slageren, M. Nowakowski, M. Bauer, M. Buchmeiser*:
Charge Distribution in Cationic Molybdenum Imido Alkylidene N-Heterocyclic Carbene Complexes: A Combined X-Ray, XAS, XES, DFT, Moessbauer and Catalysis Approach,
ACS Catal., 2020, 10, 14810–14823.
 113. K. Wissel, R. Schoch, T. Vogel, M. Donzelli, G. Matveeva, U. Kolb, M. Bauer, P.R. Slater, O. Clemens*:
Electrochemical reduction and oxidation of Ruddlesden-Popper type $\text{La}_2\text{NiO}_3\text{F}_2$ within Fluoride-Ion Batteries,
Chem. Mater., 2021, 33, 2, 499–512.
 114. M. Winkler, M. Schnierle, F. Ehrlich, K.-I. Mehnert, D. Hunger, A.M. Sheveleva, L. Burkhardt, M. Bauer, F. Tuna, M.R. Ringenberg,* J. van Slageren*:

- Electronic Structure of a Diiron Complex: A Multitechnique Experimental Study of $[(\text{dppf})\text{Fe}(\text{CO})_3]^{+/0}$,
Inorg. Chem., 2021, 60, 5, 2856–2865 (Selected as Editors Choice).
115. U. Chakraborty, P. Bügel, L. Fritsch, F. Weigend,* M. Bauer,* A. Jacobi von Wangelin*:
Planar Iron Hydride Nanoclusters: A Combined Spectroscopic and Theoretical Insight into Structures and Building Principles,
ChemistryOpen, 2021, 10, 265–271.
116. F.A. Watt, L. Burkhardt, R. Schoch, S. Mitzinger, M. Bauer, F. Weigend, F. Tambornino, J.M. Goicoechea, S. Hohloch*:
 η^3 -Coordination and Functionalization of the 2-Phosphaethynthiolate Anion at Lanthanum(III),
Angew. Chem. Int. Ed., 2021, 60, 9534–9539.
117. M. Huber-Gedert, M. Nowakowski, A. Kertmen, L. Burkhardt, N. Lindner, R. Schoch, R. Herbst-Irmer, A. Neuba, L. Schmitz, T.-K. Choi, J. Kubicki, W. Gawelda, M. Bauer*:
Fundamental Characterization, Photophysics and Photocatalysis of a Base Metal Iron(II)-Cobalt(III) Dyad,
Chem. Eur. J., 2021, 27, 9905–9918.
118. S. Maier, S.P. Cronin, M.-A. Vu Dinh, Z. Li, M. Dyballa, M. Nowakowski, M. Bauer, D.P. Estes*:
Immobilized Platinum Hydride Species as Catalysts for Olefin Isomerizations and Enyne Cycloisomerizations,
Organometallics, 2021, 40, 11, 1751–1757.
119. P. Dierks, A. Kruse, O.S. Bokareva, M. J. Al-Marri, J. Kalmbach, M. Baltrun, A. Neuba, R. Schoch, S. Hohloch, K. Heinze, M. Seitz, O. Kühn, S. Lochbrunner, M. Bauer*:
Distinct photodynamics of κ -N and κ -C pseudoisomeric iron(II) complexes,
Chem. Comm., 2021, 57, 6640–6643.
120. T. Reuter, A. Kruse, R. Schoch, S. Lochbrunner, M. Bauer, K. Heinze*:
Higher MLCT Lifetime of Carbene Iron(II) Complexes by Chelate Ring Expansion,
Chem. Comm., 2021, 57, 7541–7544.
121. H.-H. Nguyen, Z. Li, T. Enenkel, M. Bauer, M. Dyballa, D.P. Estes*:
Probing the Interactions of Immobilized Ruthenium Dihydride Complexes with Metal Oxide Surfaces by MAS NMR: Effects on CO_2 Hydrogenation,
J. Phys. Chem. C, 2021, 125, 27, 14627–14635.
122. F. Ziegler, H. Kraus, M.J. Benedikter, D. Wang, J.R. Bruckner, M. Nowakowski, K. Weißer, H. Solodenko, G. Schmitz, M. Bauer, N. Hansen, M.R. Buchmeiser*:
Confinement Effects For Efficient Macrocyclization Reactions With Supported Cationic Molybdenum Imido Alkylidene N-Heterocyclic Carbene Complexes,
ACS Catal., 2021, 11, 11570–11578.
123. P.K.R. Panyam, B. Atwi, F. Ziegler, W. Frey, M. Nowakowski, M. Bauer, M.R. Buchmeiser*:
Rh(I) and Rh(III)-N-Heterocyclic Carbene Complexes: Effect of Ligand Confinement and Immobilization on Regio- and Stereoselectivity in the Hydrosilylation of Alkynes,
Chem. Eur. J., 2021, 27, 17220–17229.

124. P. Ghosh, R. Schoch, M. Bauer, A. Jacobi von Wangelin*:
Selective Benzylic CH-Borylations by Tandem Cobalt Catalysis,
Angew. Chem. Int. Ed., 2022, 61, e202110821.
125. S.T. Emmerling, F. Ziegler, F.R. Fischer, R. Schoch, M. Bauer, B. Plietker, M.R. Buchmeiser, B.V. Lotsch*:
Olefin Metathesis in Confinement: Towards Covalent Organic Framework Scaffolds for Increased Macrocyclization Selectivity,
Chem. Eur. J., 2022, 28, e202104108.
126. P. Dierks, Y. Vukadinovic, M. Bauer:
Photoactive iron complexes: More sustainable, but still a challenge (?)
Inorg. Chem. Front., 2022, 9, 206–220.
127. H. Oh, F. Bernardini, K. Wissel, S. Vasala, R. Schoch, B. Blaschkowski, P. Glatzel, M. Bauer, O. Clemens, A. Cano*:
Single-layer T' nickelates: synthesis of the La and Pr members and electronic properties across the rare-earth series,
Chem. Mater., 2022, 34, 16, 7201–7209
128. S. Weber, R.T. Zimmermann, J. Bremer, K.L. Abel, D. Poppitz, N. Prinz, J. Ilsemann, S. Wendholt, Q. Yang, R. Pashminehazar, F. Monaco, P. Cloetens, X. Huang, C. Kübel, E. Kondratenko, M. Bauer, M. Bäumer, M. Zobel, R. Gläser, K. Sundmacher, T.L. Sheppard*:
Digitization in Catalysis Research: Towards a Holistic Description of a Ni/Al₂O₃ Reference Catalyst for CO₂ Methanation,
ChemCatChem, 2022, 14, e202101878.
129. S. Schlicher, N. Prinz, J. Bürger, A. Omlor, C. Singer, M. Zobel, R. Schoch, J.K.N. Lindner, V. Schünemann, S. Kureti, M. Bauer*:
Quality or Quantity? How Structural Parameters Affect Catalytic Activity of Iron Oxides for CO Oxidation,
Catalysts, 2022, 12, 675/1-22.
130. M. Nowakowski*, A. Kalinko, J. Szlachetko, R. Fanselow, M. Bauer:
High resolution off resonant spectroscopy as a probe of the oxidation state,
J. Anal. At. Spectrom., 2022, 37, 2383-2391.
131. J. Moll, R. Naumann, L. Sorge, C. Förster, N. Gessner, L. Burkhardt, N. Ugur, P. Nuernberger, W. Seidel, C. Ramanan, M. Bauer, K. Heinze*:
Pseudo-Octahedral Iron(II) Complexes with Near-Degenerate Charge Transfer and Ligand Field States at the Franck-Condon Geometry,
Chem. Eur. J., 2022, 28, e202201858.
132. Y. Feng, A. Schaefer, A. Hellman, Me. Di, H. Härelind, M. Bauer, P.-A. Carlsson*:
Synthesis and Characterization of Catalytically Active Au Core-Pd Shell Nanoparticles Supported on Alumina,
Langmuir 2022, 38, 12859–12870.

133. J. Steube, A. Kruse, O.S. Bokareva, T. Reuter, S. Demeshko, R. Schoch, M.A. Argüello Cordero, A. Krishna, S. Hohloch, F. Meyer, K. Heinze, O. Kühn, S. Lochbrunner, M. Bauer*:
Janus-type emission from a Cyclometalated Iron(III) complex,
Nature Chem., 2023, 15, 468–474.
134. M. Nowakowski, M. Huber-Gedert, H. Elgabarty, J. Kubicki, A. Kertmen, N. Lindner, D. Khakhulin, F. A. Lima, T.-K. Choi, M. Biednov, N. Piergies, P. Zalden, K. Kubicek, A. Rodriguez-Fernandez, M-A. Salem, T.D. Kühne, W. Gawęda, M. Bauer*:
Ultrafast two-colour X-ray emission spectroscopy reveals excited state landscape in a base metal dyad,
Advanced Science, submitted (Preprint: DOI 10.48550/arXiv.2301.04425).
135. M. Kirchhof, K. Gugeler, A.-K. Beurer, F.R. Fischer, D. Batman, S.M. Bauch, S. Kolin, E. Nicholas, R. Schoch, C. Vogler, S.R. Kousik, A. Zens, B. Plietker, P. Atanasova, S. Naumann, M. Bauer, J.R. Bruckner, Y. Traa, J. Kästner, S. Laschat*:
Tethering chiral Rh diene complexes inside mesoporous solids: Experimental and theoretical study of confinement effects on asymmetric catalysis,
Catal. Sci. Technol., 2023, 13, 3709-3724.
136. J. Kappler, G. Tonbul, R. Schoch, S. Murugan, M. Nowakowski, P.L. Lange, S.V. Klostermann, M. Bauer, T. Schleid, J. Kästner, M. R. Buchmeiser*:
Understanding the Redox Mechanism of Sulfurized Poly(acrylonitrile) as Highly Rate and Cycle Stable Cathode Material for Sodium-Sulfur Batteries,
J. Electrochem. Soc., 2023, 170, 010526.
137. A. Rogolino, J.B.G. Filho, L. Fritsch, J.D. Ardisson, M.A.R. da Silva, G. Ali Atta Diab, C.A. Ferreira Moraes, M.R. Forim, M. Bauer, T.D. Kühne, M. Antonietti, I.F. Teixeira*:
Direct synthesis of acetone by aerobic propane oxidation promoted by photoactive iron(III) chloride under mild conditions,
ACS Catal., 2023, 13, 13, 8662-8669.
138. L. Rohrbach, S. Strübbe, N. Prinz, C. Wilhelm, P. Müller, M. Nowakowski, A. Schökel, M. Zobel*, M. Bauer, W. Kleist*:
Investigation of MOF-derived Ni@C catalysts in the methanation of CO₂ under dynamic gas feed conditions using in-situ XAS and PDF,
ChemCatChem, in revision.
139. N. Prinz, S. Strübbe, M. Bauer, M. Zobel*:
Structural transitions during Ni nanoparticle formation by decomposition of a Ni-containing metal-organic framework using in-situ total scattering,
New J. Chem., 2023, 47, 11623-11635.
140. T. Hirschhausen, L. Fritsch, F. Lux, J. Steube, R. Schoch, A. Neuba, H. Egold, M. Bauer*:
Iron(III) Complexes with N-Phenylpyrazole-Based Ligands,
Inorganics, 2023, 11, 282.
141. S. Strübbe, M. Nowakowski, M. Bauer*:
High-Resolution X-ray Absorption and Emission Spectroscopy for Detailed Analysis of New CO₂ Methanation Catalysts,
ChemPhysChem, 2023, 24, e202300113.

142. W. Kitzmann, D. Hunger, A.-P. Reponen, C. Förster, R. Schoch, M. Bauer, S. Feldmann, J. van Slageren, K. Heinze*:
Electronic Structure and Excited State Dynamics of the NIR-II Emissive Molybdenum (III) Analog to the Molecular Ruby,
Inorg. Chem., 2023, 62, 15797–15808.
143. F. Ziegler, J.R. Bruckner, M. Nowakowski, M. Bauer, P. Probst, B. Atwi, M.R. Buchmeiser*:
Macrocyclization of Dienes Under Confinement with Cationic Tungsten Imido/Oxo Alkylidene N-Heterocyclic Carbene Complexes,
ChemCatChem, 2023, 15, e202300871.
143. L. Fritsch, Y. Vukadinovic, M. Lang, R. Naumann, M.-S. Bertrams, A. Kruse, R. Schoch, P. Müller, A. Neuba, P. Dierks, S. Lochbrunner, C. Kerzig, K. Heinze, M. Bauer*:
Chemical and photophysical properties of amine functionalized bis-NHC-pyridine-Ru^{II} complexes,
ChemPhotoChem, 2024, 8, e20230028.
144. V. Vanita, A. I. Waidha, S. Vasala, P. Puphal, R. Schoch, P. Glatzel, M. Bauer, O. Clemens*:
Insights into the First Multi-Transition-Metal Containing Ruddlesden Popper-Type Cathode for all-solid-state Fluoride Ion Batteries,
J. Mat. Chem. A, 2024, 12, 8769-8784.
145. L. Fritsch, P. Rehsies, W. Barakat, D.P. Estes, M. Bauer*:
Detection and Characterization of Hydride Ligands in Copper Complexes by Hard X-ray Spectroscopy,
Chem. Eur. J., 2024, e202400357
146. L. Fritsch, M. Nowakowski, M. Bauer*:
Hard X-ray Absorption and Emission Spectroscopy – Method and Applications in organometallic chemistry (Tutorial)
Organometallics, submitted.

Talks

1. M. Bauer, M. Feth, W. Rupp, V. Torma, G. Kickelbick, U. Schubert, H. Bertagnolli:
Röntgenabsorptionsspektroskopie an Aero- und Xerogelen;
Bunsentagung 2004, Dresden, 21. Mai 2004.
2. M. Bauer, M. Feth, V. Krishnan, H. Bertagnolli:
Applications of EXAFS spectroscopy - from materials chemistry to catalysis;
HASYLAB XAFS Satellite Meeting (INVITED), Hamburg, 29. Januar 2005.
3. M. Bauer:
Why chemistry needs EXAFS;
ANKA Users Meeting (INVITED), Karlsruhe, 7. Oktober 2005.
4. M. Bauer, H. Bertagnolli:
EXAFS-Spektroskopie als zentrale Methode in der Untersuchung homogen-katalytischer Reaktionen;

- Bunsentagung für Physikalische Chemie 2006, Erlangen, 26. Mai 2006.
5. M. Bauer:
XAS as analytical tool in solution chemistry;
Institutsseminar, LSU, EPFL Lausanne, 15. März 2007.
 6. M. Bauer:
Basic principles of EXAFS spectroscopy and its application to nanostructured hybrid materials;
One day meeting of inorganic and hybrid nanomaterials (INVITED), Università di Padova, Padua, 24. September 2007.
 7. M. Bauer:
The combination of EXAFS, UV-Vis and Raman spectroscopy for investigations of Homogeneous reactions;
SNBL workshop on simultaneous Raman-X-ray diffraction/absorption studies for the in-situ investigation of solid state transformations, and reactions at non ambient conditions 2010 (INVITED), ESRF, Grenoble, 28. Juni 2008.
 8. M. Bauer:
Iron-catalysis through the XAS-eye: Structures, mechanisms and beyond;
XAFS 14 Conference, Università degli Studi di Camerino, 29. Juli 2009.
 9. M. Bauer:
Homogeneous catalysis and X-ray spectroscopy: Methods, timescales and perspectives;
ESRF Users Meeting, ESRF Grenoble (INVITED), 10. Februar 2010.
 10. M. Bauer:
Moderne Methoden der Röntgenspektroskopie - Von der Grundlagenforschung zur mehrdimensionalen Spektroskopie in der Katalyse;
Bunsentagung für Physikalische Chemie 2010, Bielefeld, 14. Mai 2010.
 11. M. Bauer:
Die Röntgenabsorptions-Spektroskopie in der Nano-Materialforschung - Von Clustern und Hybridmaterialien;
Bunsentagung für Physikalische Chemie 2010, Bielefeld, 15. Mai 2010.
 12. M. Bauer:
Probing catalysts in real time using X-ray spectroscopy;
European Crystallographic Meeting (ECM-26) 2010 (INVITED), Darmstadt, 30. August 2010.
 13. M. Bauer:
Recent developments in X-ray absorption spectroscopy – From *operando*-spectroscopy to fundamental science;
Leibniz-Institut für Katalyse (LIKAT) Institutskolloquium 2010, Rostock, 28. Oktober 2010.
 14. M. Bauer:
Characterization of catalysts - X-ray absorption spectroscopy and beyond;
Opening Workshop on Helmholtz Research School Energy-Related Catalysis;
Karlsruhe Institute of Technology, Karlsruhe (INVITED), 17. November 2010.

15. M. Bauer:
From fundamental to applied research: X-ray spectroscopy on different time scales,
Symposium „Frontiers in physical chemistry“ (INVITED), Zürich, 8. April 2011.
16. M. Bauer:
Röntgenspektroskopie auf verschiedenen Zeitskalen: Methodische Grundlagen und
Anwendungen in der Katalyse und Materialforschung,
GDCh-Kolloquium, Universität des Saarlandes, Saarbrücken, 18. April 2011.
17. M. Bauer:
New methods in X-ray spectroscopy: Fundamentals and applications to catalysis
research,
Institutskolloquium, Max-Planck-Institut für Kohlenforschung, Mülheim, 2. Mai 2011.
18. M. Bauer:
Where Synchrotron meets solution chemistry – a beneficial symbiosis for new insights
into homogeneous reactions,
Bunsentagung für Physikalische Chemie 2011, Berlin, 3. Juni 2011.
19. M. Bauer:
X-ray spectroscopy: New developments and applications to catalysis and material
science,
Anorganisches Institutskolloquium, Technische Universität München, München 18.
Juni 2011.
20. M. Bauer:
Synchrotron radiation and catalysis: New insights into structure and electronic
details by exotic but powerful methods,
Europacat X 2011, Glasgow, 30. August 2011.
21. M. Bauer:
The electronic structure of catalysts by X-ray emission based methods:
Fundamental investigations and applications,
Jum@p PSI 2011, Swiss Light Source, Villigen (INVITED), 16. September 2011.
22. M. Bauer:
From homogeneous to heterogeneous catalysis, from QEXAFS to RIXS, needs (and
opportunities) for catalysis research at PETRA III,
Workshop on future XAS beamline at PETRA III, Hasylab, Hamburg (INVITED), 30.
September 2011.
23. M. Bauer:
X-ray absorption and emission: Potential of exotic methods from materials chemistry
to catalysis, Anorganisches Institutskolloquium, ETH Zürich, Zürich, 13. Juli 2012.
24. M. Bauer:
X-ray absorption and emission: Shining synchrotron light on metal complexes and
catalysis, Anorganisches Institutskolloquium, Universität Göttingen, Göttingen, 24.
April 2012.
25. R. Schoch, M. Bauer:

- From the preparation of iron nanoparticles to CO oxidation catalysis: Applications of X-ray absorption spectroscopy for condensed matter research, Bunsentagung für Physikalische Chemie 2012, Leipzig, 18. Mai 2012.
26. M. Bauer:
X-ray spectroscopy as powerful tool to study metal containing structures,
(Bio)Organik 2012, Rostock (INVITED), 3. September 2012.
 27. M. Bauer:
X-ray absorption and X-ray emission spectroscopy: Shining hard X-ray light on the geometric and electronic structure of metal complexes
3Met International Workshop on Metal-to-Metal Communication in Oligonuclear complexes, TU Kaiserslautern (INVITED), 9. Oktober 2012.
 28. M. Bauer:
Hard X-ray absorption and emission spectroscopy: Methods connecting chemical disciplines,
GDCh-Kolloquium, Universität Rostock, 8. November 2012.
 29. M. Bauer:
Hard X-ray absorption and emission spectroscopy: Methods in chemistry and material science,
Institutskolloquium, Institut für Elektronik- und Sensormaterialien, Technische Universität Bergakademie Freiberg, 6. Dezember 2012.
 30. M. Bauer:
Nachhaltige Chemie am Synchrotron - Über die Untersuchung chemischer Reaktionen auf unterschiedlichen Zeitskalen,
Insitutskolloquium, Inst. f. Anorganische Chemie, Universität Paderborn, 23. Januar 2013.
 31. M. Bauer:
Röntgenabsorptions-- und Röntgenemissions--Spektroskopie: Beiträge zur geometrischen und elektronischen Struktur von Metallzentren und ihrer Veränderung,
Insitutskolloquium, Inst. f. Physikalische Chemie, Universität Freiburg, 6. Februar 2013.
 32. M. Bauer:
The chemical sensitivity of X-ray spectroscopy: High energy resolution XANES versus valence-to-core X-ray emission spectroscopy,
11th Ferrocene Kolloquium 2013, Hannover, 8. Februar 2013.
 33. M. Bauer:
Bridging catalytic disciplines: X-ray absorption and emission spectroscopy,
46. Jahrestreffen Deutscher Katalytiker 2013, Weimar, 13. März 2013.
 34. M. Bauer:
The chemical sensitivity of X-ray spectroscopy: High energy resolution XANES versus valence-to-core X-ray emission spectroscopy,
112. Bunsentagung für Physik. Chemie, Karlsruhe, 10. Mai 2013.
 35. M. Bauer:

Möglichkeiten und Grenzen neuer und alter röntgenspektroskopischer Methoden in der Katalyseforschung,
BASF, Ludwigshafen, 21. Mai 2013

36. M. Bauer:
Bridging the catalytic disciplines – X-ray absorption and emission spectroscopy,
Europacat XI 2013, Lyon, 2. September 2013
37. M. Bauer:
High energy resolution XAS and XES – Applications in catalysis,
National conference on Condensed Matter Physics – 21st meeting of the Società Italiana di Luce di Sincrotrone (SILS), Mailand (INVITED), 12. September 2013
38. M. Bauer:
X-ray absorption and emission spectroscopy – From theory to homogeneous catalysis,
ANKA International Users meeting 2013, Karlsruhe (INVITED), 27. September 2013.
40. M. Bauer:
X-ray spectroscopy and catalysis research - Possibilities and perspectives,
Instituts-Kolloquium Technische Chemie, Universität Leipzig, 18. Dezember 2013.
41. M. Bauer:
X-ray spectroscopy - A Tutorial,
MRS Spring Meeting, San Francisco (INVITED), 21. – 25. April 2014.
42. M. Bauer:
High energy resolution X-ray spectroscopy in solar water splitting,
EW-Heraeus Seminar "From sunlight to fuels", Bad Honnef (INVITED), 12. Mai 2014
43. M. Bauer:
X-ray absorption and X-ray emission spectroscopy: Shining hard X-ray light on the geometric and electronic structure of metal complexes and chemical reactions,
Anorganisches Kolloquium, RWTH Aachen, 23. Mai 2014.
44. M. Bauer:
X-ray absorption and X-ray emission spectroscopy: Shining hard X-ray light on the geometric and electronic structure of metal complexes and chemical reactions,
Anorganischer Kolloquium, Christian-Albert Universität Kiel, 27. Mai 2014.
45. M. Bauer:
High energy resolution XAS and XES: Applications in catalysis and materials science,
Schuit catalysis lecture, Inorganic materials chemistry, Department of Chemical Engineering and Chemistry, Technische Universität Eindhoven (INVITED), 12. November 2014.
46. M. Bauer:
New developments in X-ray spectroscopy: High energy resolution XAS, X-ray emission and RIXS,

Physikalisch Chemisches Kolloquium, Technische Universität Braunschweig, 9. Dezember 2014.

47. M. Bauer:
Nachhaltige Chemie und Synchrotronstrahlung – eine nachhaltige Symbiose,
Chemisches Kolloquium, Universität Wuppertal, 6. Mai 2015.
48. L. Burkhardt, M. Bauer:
Bridging catalytic disciplines – X-ray absorption spectroscopy,
North American Catalysis Meeting 2015, Pittsburgh, 16. Juni 2015.
49. R. Schoch, M. Bauer:
A new iron based CO oxidation catalyst: Structure activity correlation,
North American Catalysis Meeting 2015, Pittsburgh, 17. Juni 2015.
50. M. Bauer:
Homogeneous catalysis and high resolution hard X-ray absorption and emission
spectroscopy,
XAFS 16 Conference on X-ray absorption spectroscopy, KIT Karlsruhe (INVITED
KEYNOTE), 25. August 2015.
51. R. Schepper, M. Bauer:
High energy resolution X-ray absorption and emission spectroscopy for the
investigation of spin crossover processes,
XAFS 16 Conference on X-ray absorption spectroscopy, KIT Karlsruhe, 27. August
2015.
52. R. Dick, M. Bauer:
Entwicklung neuer Iridium-Photosensibilisatoren zur photokatalytischen
Wasserreduktion,
Koordinationschemikertagung 2016, Kiel, 28. Februar 2016.
53. P. Müller, M. Bauer:
High Energy Resolution X-ray Absorption Spectroscopy and TD-DFT Calculations
on Copper Systems,
Bunsentagung 2016, Rostock, 7. Mai 2016.
54. M. Bauer:
Übergangsmetallkomplexe als zentrale Elemente nachhaltiger chemischer
Prozesse,
Anorganisches Kolloquium, Universität Duisburg-Essen, 30. Januar 2017.
55. M. Bauer:
Übergangsmetallkomplexe, nachhaltige Chemie und Synchrotronstrahlung,
Anorganisches Kolloquium, Universität Hamburg, 12. Juni 2017.
56. M. Bauer:
Synchrotronstrahlung, Übergangsmetallchemie und Nachhaltigkeit - Wie passt das
zusammen?,
Anorganisches Kolloquium, Heinrich-Heine Universität Düsseldorf, 30. Juni 2017.
57. M. Bauer:

- Heteroleptic N-heterocyclic carbene complexes of iron as photosensitizers for light-induced water reduction,
International conference on photochemistry (ICP2017), Strasbourg, 18. Juli 2017.
58. M. Bauer:
Metal complexes, sustainability and synchrotron radiation,
Chemisches Kolloquium, Universität Basel, 22. September 2017.
59. M. Bauer:
The connection between NHC ligand count and photophysical properties in Fe(II) photosensitizers,
Central European Conference on Photochemistry, Bad Hofgastein, 16. Februar 2018.
60. L. Burkhardt, M. Bauer:
Exploring the sensitivity of HERFD-XANES and VtC-XES to probe hydride interactions,
XAFS 17 Conference on X-ray absorption spectroscopy, Krakow, 23. Juli 2018.
61. M. Bauer:
New high resolution hard X-ray spectroscopy as powerful tool for mechanistic investigations of chemical reactions,
Institut für Technische Chemie, TU München, 21. August 2018.
62. M. Bauer:
Development of photon-in/photon-out spectroscopy at PETRA III and applications to studies in catalysis,
German conference for research with Synchrotron radiation, Neutrons and Ion Beams at large scale facilities, TU München (INVITED), 18. September 2018.
63. M. Bauer:
X-ray emission and high energy resolution absorption spectroscopy: New developments in inorganic chemistry and catalysis,
Diamond II - Benefits and Opportunities for Spectroscopy Workshop, Diamond Light Source UK (INVITED), 18. September 2018.
64. M. Bauer:
X-ray spectroscopy in catalysis research,
Umicore, Hanau, 24. Oktober 2018.
65. M. Bauer:
Recent Results in the Field of Catalysis and Complex Chemistry,
DESY Photon Science Users' meeting – XAS workshop (INVITED), Hamburg, 25. Januar 2018.
66. M. Bauer:
Recent and not so recent hard X-ray methods to investigate sustainable processes,
MPI-KGF, Golm, 28. Januar 2019.
67. M. Bauer:
X-ray absorption and emission spectroscopy and sustainable chemistry,
Physikalisches Kolloquium, TU Berlin, 29. Januar 2019.

68. M. Bauer:
Establishment of XAS, XES and HERFD-XAS for sustainable chemistry applications,
ISSRN (International School and Symposium on Synchrotron Radiation in Natural
Science), Zakopane (INVITED), 12. Juni 2019.
70. M. Bauer:
Hard X-ray spectroscopy: An exhaustive toolbox for mechanistic studies (?),
Faraday Discussion, York, 3. September 2019.
71. M. Bauer:
Transition metal complexes, sustainability and synchrotron radiation,
Anorganisches Kolloquium, Universität Bayreuth, 22. Oktober 2019
72. M. Bauer:
X-ray emission spectroscopy to understand photochemical reactions and
mechanisms,
EBS workshop on XES, ESRF Grenoble (INVITED), 4. Dezember 2019.
73. M. Bauer:
X-ray spectroscopy,
Tutorial CRC 1073, Göttingen, 22. Januar 2020.
74. M. Bauer:
From slow to ultra-fast: the chemistry and (X-ray) spectroscopy of photoactive
complexes,
Seminar CRC 1073, Göttingen (INVITED), 23. Januar 2020.
75. M. Bauer:
Ultrafast X-ray spectroscopy to understand the photochemistry of base metal
complexes,
Chemical Dynamics Opportunities at the Scientific Instrument FXE workshop,
European XFEL Hamburg (INVITED), 28. Januar 2020.
76. M. Bauer:
Insights into the donor-acceptor properties of base-metal dyads for
photocatalysis,
XFEL users meeting, European XFEL Hamburg (INVITED PLENARY), 29. Januar
2020.
77. M. Bauer:
Understanding photocatalytic proton reduction with base metals using FELs,
11th Ringberg Workshop on Science with XFELs (INVITED), 9. Februar 2020.
78. M. Bauer:
Slow and ultrafast XES to understand base metal complexes in photocatalytic
proton reduction,
CONEXS conference 2020 – Emerging trends in X-ray spectroscopy, Newcastle
(INVITED Keynote), 19. Februar 2020.
79. M. Bauer:
Frontiers in molecular Photocatalysis,

- Frontiers in Nanoscience, Online global Seminar Series, Madrid (INVITED), 19. Mai 2021, online.
80. M. Bauer:
Photocatalytic proton reduction with base metals: Prototype problems for X-ray emission and absorption,
ExpRes (Exploring reactivity with spectroscopy) 2021, 3rd IMPRS Recharge Conference (INVITED), 20. Mai 2021, online.
 81. M. Bauer mit Henning Rehbaum (Mdl):
An Energie gewinnen! – Perspektiven aus Wissenschaft und Politik Teil 3
„Wasserstoff – Eine wirkliche Alternative?!?“
Konrad-Adenauer-Stiftung, 10. Juni 2021, online.
 82. M. Bauer:
Ultrafast X-ray emission at free electron lasers for investigations of photoinduced electron transfer in base metal dyads,
SRI 2021 (postponed to 2022) (INVITED), 31. März 2022, online.
 82. M. Bauer:
Röntgenspektroskopie und nachhaltige Chemie: Von unedlen Metallen und verschiedenen Zeitskalen,
GDCh-Kolloquium, Universität Rostock, 19. Mai 2022
 83. M. Bauer:
Photoinduced electron transfer in base metal dyads by ultrafast X-ray emission at free electron lasers,
PhotoIUPAC, Amsterdam, 21. Juli 2022.
 84. M. Bauer:
Photoinduced electron transfer in base metal dyads by ultrafast X-ray emission at free electron lasers,
ISSRN (International School and Symposium on Synchrotron Radiation in Natural Science), Krakow (INVITED), 24. August 2022.
 85. M. Bauer:
X-Ray spectroscopy and sustainable chemistry: A story of base metals and time scales,
GDCh-Kolloquium, Universität Köln, 25. Oktober 2022.
 86. M. Bauer:
X-Ray spectroscopy and sustainable chemistry: A story of base metals and time scales,
GDCh-Kolloquium, Universität Clausthal, 15. Juni 2023.

Highlights

1. M. Bauer:
Deep insight into catalytic reactions by simultaneous recording of QEXAFS and UV-Vis spectra,
Outstanding scientific achievements at ANKA,

Booklet of the ANKA annual report, p.3 and p.5, 2006.

2. S. Anantharaman, M. Bauer, M.P. Feth, G. Heusel, S. Mangold, B. Marchetti, I. Schlipf, E. Wendel, H. Bertagnolli:
Insights into a homogeneous catalyzed reaction,
Booklet of the ANKA annual report, p.7-8, 2007.

Poster:

1. M. Bauer, I. Schlipf, S. Mangold, H. Bertagnolli :
The combination of EXAFS, UV-Vis and Raman spectroscopy for investigations of Homogeneous reactions;
XAFS 13 Conference, Stanford University, 9. – 14. Juli 2006.
2. M. Bauer, B. Marchetti, J. Bauchert, T. Schleid, H. Bertagnolli:
Characterization of Octahedral Molecular Sieves by XAS-spectroscopy
ANKA Users Meeting 2007, Karlsruhe, 1. – 2. Oktober 2007.
3. M. Bauer, B. Marchetti, S. Mangold, H. Bertagnolli:
Mechanistic insights into a homogeneous metal catalyzed reaction by X-ray Absorption spectroscopy – The Jacobsen-Katsuki reaction;
ANKA Users Meeting 2007, Karlsruhe, 1. – 2. Oktober 2007.
4. M. Bauer, B. Marchetti, H. Bertagnolli :
The combination of EXAFS, UV-Vis and Raman spectroscopy for investigations of Homogeneous reactions;
ANKA Users Meeting 2007, Karlsruhe, 9. – 10. Oktober 2008.
5. M. Bauer, H. Bertagnolli:
Die Röntgenabsorptionsspektroskopie – Neue Aspekte der Datenanalyse am Beispiel von Platin-Nanoclustern und Alkoxid-Precursoren;
Bunsentagung für Physikalische Chemie 2008, Saarbrücken, 1. – 3. Mai 2008.
6. M. Bauer, B. Marchetti, S. Mangold, H. Bertagnolli :
The combination of EXAFS, UV-Vis and Raman spectroscopy for investigations of Homogeneous reactions;
ESRF Users Meeting 2008, Grenoble, 5. – 7. Februar 2008.
7. M. Bauer, B. Marchetti, H. Bertagnolli:
The combination of EXAFS, UV-Vis and Raman spectroscopy for investigations of Homogeneous reactions;
SNBL workshop on simultaneous Raman-X-ray diffraction/absorption studies for the in-situ investigation of solid state transformations, and reactions at non ambient conditions, ESRF, Grenoble, 18. – 19. Juni 2008.
8. M. Bauer, B. Marchetti, S. Mangold, H. Bertagnolli:
Three-dimensional spectroscopy of homogeneous catalytic reactions
XAFS 14 Conference, Università degli Studi di Camerino, 26. – 31. Juli 2009.
9. M. Bauer:
Modern methods of X-ray spectroscopy – From fundamental research to multi dimensional spectroscopy in catalysis,

44. Jahrestreffen Deutscher Katalytiker, Weimar, 16.-18.3.2011.
10. M. Bauer:
Moderne Methoden der Röntgenabsorption – Von Attosekundeneffekten zur angewandten Forschung in der Katalyse,
Bunsentagung für Physikalische Chemie 2011, Berlin, 2.-4. Juni 2011.
 11. M. Bauer:
X-ray absorption spectroscopy on timescales from hours to picoseconds - its application and potentials in solution chemistry, Bunsentagung für Physikalische Chemie 2012, Leipzig, 17.-19. Juni 2012
 12. M. Bauer:
When spectroscopy meets theory: X-ray emission and its potential for catalysis research, Bunsentagung für Physikalische Chemie 2012, Leipzig, 17.-19. Juni 2012
 13. R. Schoch, M. Bauer:
CO oxidation on iron model catalysts: Insights into the mechanism by X-ray absorption AND X-ray emission spectroscopy, International Catalysis Conference 2012, München, 1.-6. Juli 2012.
 14. M. Bauer:
Where Synchrotron meets solution chemistry – a beneficial symbiosis for new insights into homogeneous reactions, International Catalysis Conference 2012, München, 1.-6. Juli 2012.