Prof. Dr. Karsten Meyer, FRSC

Professional Career

Oct.	1989	Study of Chemistry at the Ruhr-University-Bochum in Germany
May	1995	Diploma (Ruhr-University-Bochum)
July	1995	PhD Studies at the Max-Planck-Institute in Mülheim/Ruhr, Germany under the supervision of Prof. Dr. Karl Wieghardt
Jan.	1998	Dissertation (Dr. rer. nat., *summa cum laude*) "Molecular and Electronic Structure of High-Valent Transition-Metal Nitrido Complexes"
Feb.	1998	Postdoctoral Studies at the Max-Planck-Institute Mülheim/Ruhr (Germany)
Oct.	1998	Postdoctoral Studies at the Massachusetts Institute of Technology (MIT) under the direction of Prof. Christopher C. Cummins, USA
Jan.	2001	Assistant Professor at the University of California, San Diego (UCSD), USA
Jan.	2006	University Full Professor (W3/C4), Chair of Inorganic and General Chemistry (FAU)

Awards & Honors

2002	Hellman Fellow, Christ & Warren Hellman Young Faculty Award, USA
2003	Faculty Career Development Award, UC Academic Senate, USA
2004	Alfred P. Sloan Award, USA
2009	Israel Chemical Society, Lifetime Honorary Member, IL
2009	Visiting Professorship, University of Manchester, UK
2009	Japanese Society for the Promotion of Science Award (JSPS), JP
2010	Dalton Transactions European Lectureship Award, RSC, UK
2010	MBRAUN Lecturer, Pacifichem 2010, Honolulu, Hawaii, USA
2011	Fellow of the Royal Society of Chemistry, FRSC, UK
2012	Visiting Professor, Université Paul Sabatier, Toulouse, F
2015	Visiting Professor, Nagoya Institute of Technology, JP
2015	JSPS Professorship "Brain Circulation Project" Nagoya Institute of Technology, JP
2017	Elhuyar-Goldschmidt Award, Royal Society of Chemistry of Spain
2017	Ludwig-Mond Award, Royal Society of Chemistry, UK
2017	Chugaev Commemorative Medal, Kurnakov Institute, Moscow, Russian Academy of Sciences
2018	Guest Professor, ETH Zürich, CH
2022	XingDa Lecture (online), Peking University, China
2022	Japan Society of Coordination Chemistry International Award, JP
2022	Horizon Prize, Royal Society of Chemistry, UK
2023	Guest Professor, ETH Zürich, CH
2024	Earl L. Muetterties Memorial Lecturer, University of California, Berkeley, USA
2024	XingDa Lecture, Peking University, China
2024	Recognition as GEQO Fellow by the Organometallic Chemistry Group of the Spanish Royal Society of Chemistry, ES
2025	Hutchison Memorial Distinguished Lecturer, University of Rochester, NY, USA

Publications and Invitations

Karsten Meyer has published 300+ articles in peer-reviewed journals, leading to an h-index of 68 and 14,500+ citations (Scopus, 10/2024). The list of publications includes, among others, reports and articles in *Science*, *Nature*, *Nature Chem.*, *Chem*, *Journal of the American Chemical Society*, *Angewandte Chemie*, and *Chemical Science*. He has given over 300 invited talks at conferences, research, and academic institutions worldwide, including opening, plenary, and student-invited lectures.

Editorial Activities

2005	Volume Editor, Elsevier "*Comprehensive Organometallic Chemistry III*, Volume 2"
2009	International Advisory Board, Wiley-VCH "*European Journal of Inorganic Chemistry*"
2011	International Advisory Board, ACS "*Inorganic Chemistry*" (2-yr term)
2013	Guest Editor, Wiley-VCH "*European Journal of Inorganic Chemistry*"
2014	International Advisory Board, Taylor & Francis "*Journal of Coordination Chemistry*"
2022	Co-Editor, Academic Press "*Advances in Inorganic Chemistry*, Volume 82"
2019–2023	Editor-in-Chief, Elsevier "*Comprehensive Organometallic Chemistry-IV*"
2014–2024	Associate Editor, ACS "*Organometallics*"

Research Interests

Synthetic chemistry is at the heart of the Meyer group research program. Studies focus on synthesizing custom-tailored ligand architectures and their transition *d*- and *f*-block metal coordination complexes. Special attention is drawn to molecularly engineered, ordered structures that provide well-defined and confined spaces for highly selective molecular and catalytic transformations. While transition metals are traditionally an essential source of inspiration for our research, the Meyer group has developed distinguished expertise in uranium coordination chemistry. Transition-metal-based catalysts in pre-organized materials, such as custom-tailored, including chiral ionic liquids (ILs) and ionic liquid crystals (ILCs), play an important role in our research. Recently, the development of platforms to facilitate charge and light-driven catalytic processes relevant to sustainable energy cycles has been explored.
State-of-the-art spectroscopic investigations of the molecular and electronic structures of reactive metal-substrate complexes and computational methods aid in elucidating coordination modes, underlying electronic structures, and reactivities. Combining synthesis, spectroscopy, electrochemistry, and computation facilitates a deep understanding of molecular reactivity and better knowledge of structure-function relationships. The ultimate long-term objectives of fundamental research are the development of efficient catalysts for the metal complex-assisted conversion of abundant natural substrate resources and the discovery of renewable energy sources.

Selected Publications

1. *An Iron(VII) Nitrido Complex*
M. Keilwerth, W. Mao, M. Malischewski, S.A.V. Jannuzzi, K. Breitwieser, F.W. Heinemann, A. Scheurer, S. DeBeer, D. Munz, E. Bill, and K. Meyer*
Nature Chem. **2024**, *16*, 514 – 520

2. *Uranium-Mediated Peroxide Activation and a Precursor toward an Elusive Uranium cis-Dioxo Fleeting Intermediate*
D.R. Hartline, S.T. Löffler, D. Fehn, J.M. Kasper, F.W. Heinemann, P. Yang, E.R. Batista, and K. Meyer*
J. Am. Chem. Soc. **2023**, *145*, 8927 – 8938

3. *From Divalent to Pentavalent Iron Imido Complexes and an Fe(V) Nitride via N-C Bond Cleavage*
M. Keilwerth, W. Mao, S.A.V. Jannuzzi, L. Grunwald, F.W. Heinemann, A. Scheurer, J.Sutter, S. DeBeer, D. Munz, and K. Meyer*
J. Am. Chem. Soc. **2023**, *145*, 873 – 887

4. *Ligand Tailoring Toward an Air-Stable Iron(V) Nitrido Complex*
M. Keilwerth, L. Grunwald, W. Mao, F.W. Heinemann, J. Sutter, E. Bill and K. Meyer*
J. Am. Chem. Soc. **2021**, *143*, 1458 – 1465

5. *A Series of Iron Nitrosyl Complexes {Fe–NO}$^{6-9}$ and a Fleeting Intermediate {Fe–NO}^{10} en Route to a Metallacyclic Iron Nitrosoalkane*
M. Keilwerth, J. Hohenberger, F.W. Heinemann, J. Sutter, A. Scheurer, H. Fang, E. Bill, F. Neese, S. Ye and K. Meyer*
J. Am. Chem. Soc. **2019**, *141*, 17217 – 17235

6. The Role of Uranium-Arene Bonding in H_2O Reduction Catalysis
D. P. Halter, F. W. Heinemann, L. Maron and K. Meyer*
Nature Chem. **2018**, *10*, 259 – 267

7. Electrocatalytic H_2O Reduction with *f*-Elements: Mechanistic Insight and Overpotential Tuning in a Series of Lanthanide Complexes
D.P. Halter, C.T. Palumbo, J.W. Ziller, M. Gembicky, A. L.Rheingold, W.J. Evans* and K. Meyer*
J. Am. Chem. Soc. **2018**, *140*, 2587 – 2594

8. *Uranium-Mediated Electrocatalytic Dihydrogen Production from Water*
D.P. Halter, F.W. Heinemann, J. Bachmann and K. Meyer*
Nature **2016**, *530*, 317 – 321

9. *Isolation and Structural and Electronic Characterization of Salts of the Decamethylferrocene Dication*
M. Malischewski*, M. Adelhardt, J. Sutter, K. Meyer* and K. Seppelt
Science **2016**, *353*, 678 – 682

10. *Synthesis and Characterization of a Uranium(II) Monoarene Complex Supported by δ Backbonding*
H.S. La Pierre, A. Scheurer, F.W. Heinemann, W. Hieringer and K. Meyer*
Angew. Chem. Int. Ed. **2014**, *53*, 7158 – 7162

11. *Crystal Structure Determination of the Nonclassical 2-Norbornyl Cation*
F. Scholz, D. Himmel, F.W. Heinemann, P.v.R. Schleyer, K. Meyer* and I. Krossing*
Science **2013**, *341*, 62 – 64

12. *Synthesis, Structure, and Reactivity of an Iron(V) Nitride*
J.J. Scepaniak, C.S. Vogel, M.M. Khusniyarov, F.W. Heinemann, K. Meyer* and J.M. Smith*
Science **2011**, *331*, 1049 – 1052

13. *Carbon Dioxide Activation with Sterically Pressured Mid- and High-Valent Uranium Complexes*
S.C. Bart, C. Anthon, F.W. Heinemann, E. Bill, N.M. Edelstein and K. Meyer*
J. Am. Chem. Soc. **2008**, *130*, 12536 – 12546

14. An Iron Nitride Complex
C.S. Vogel, F.W. Heinemann, J. Sutter, C. Anthon and K. Meyer
Angew. Chem. Int. Ed. **2008**, *47*, 2681 – 2684

15. *Towards Uranium Catalysts*
A.R. Fox, S.C. Bart, K. Meyer and C.C. Cummins
Nature **2008**, *455*, 341 – 349

16. *A Linear, O-Coordinated η^1-CO_2 Bound to Uranium*
I. Castro-Rodriguez, H. Nakai, L. N. Zakharov, A.L. Rheingold and K. Meyer*
Science **2004**, *305*, 1757 – 1759

For a more complete and up-to-date list of publications, please see: https://www.inorgchem2.nat.fau.de

ORCiD.org/0000-0002-7844-2998
ResearcherID: G-2570-2012