

## Prof. Dr. Karsten Meyer, FRSC

Karsten Meyer studied chemistry (October 1989 – 1994) at the Ruhr-University of Bochum (Germany) and received his Diploma in May 1995. Starting in summer 1995, he performed his PhD thesis work under the direction of Professor Karl Wieghardt at the Max-Planck-Institute in Mülheim / Ruhr (Germany) and received his Ph.D. (Dr. rer. nat., *summa cum laude*) in January 1998. With a DFG postdoctoral fellowship, Karsten proceeded to gain research experience in the laboratory of Professor Christopher Cummins at the Massachusetts Institute of Technology (1998 – 2000, MIT, Cambridge, MA, USA). In January 2001, he was appointed to the faculty of the University of California, San Diego (UCSD) as an Assistant Professor and was named an Alfred P. Sloan Fellow in 2004. In 2006, he accepted an offer (C4/W3) to be the Chair of the Institute of Inorganic & General Chemistry at the Friedrich-Alexander-University of Erlangen-Nürnberg (FAU), Germany.

### Professional Career

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|------|------|---|
| 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., <i>summa cum laude</i> )<br>“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

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| 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, Pacificchem 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 | <a href="#">Elhuyar-Goldschmidt Award</a> , Royal Society of Chemistry of Spain      |
| 2017 | <a href="#">Ludwig-Mond Award</a> , 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, Peking University, China   |
| 2022 | <a href="#">Japan Society of Coordination Chemistry International Award</a> , JP     |
| 2022 | <a href="#">Horizon Prize</a> , Royal Society of Chemistry, UK                       |
| 2023 | Guest Professor, ETH Zürich, CH  |

### Publications and Invitations

Karsten Meyer has published 270+ publications in peer-reviewed journals, leading to an *h*-Index of 64 with a total of 12,000+ citations ([Scopus](#), 01/2023). 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 more than 200 invited talks, including opening and plenary lectures, at conferences as well as research and academic institutions worldwide.

## Editorial Activities

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|------------|--|
| 2005       | Volume Editor, Elsevier "Comprehensive Organometallic Chemistry III, Vol. 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" |
| since 2014 | Associate Editor, ACS "Organometallics"  |
| 2019–2022  | Editor-in-Chief, Elsevier "Comprehensive Organometallic Chemistry-IV"              |
| since 2022 | Co-Editor, Academic Press "Advances in Inorganic Chemistry"                        |

## Research Interests

In general, synthetic chemistry is at the heart of the Meyer group research program. Studies focus on the synthesis of custom-tailored ligand architectures and their transition and light actinide metal coordination complexes. Special attention is drawn to molecularly engineered, ordered structures that provide well-defined confined spaces for highly selective molecular and catalytic transformations. While transition metals are traditionally a very important source of inspiration for our research, the Meyer group has developed a 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 the reactive metal-substrate complexes as well as computational methods aid the elucidation of coordination modes, underlying electronic structures, and reactivities. The combination of synthesis, spectroscopy, electrochemistry, and computation facilitates deep understanding of molecular reactivity and better knowledge of structure-function relationships. Ultimate long-term objectives of the 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. "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
2. "A Series of Iron Nitrosyl Complexes {Fe–NO}<sup>6-9</sup> and a Fleeting Intermediate {Fe–NO}<sup>10</sup> en Route to a Metallacyclic Iron Nitrosoalkane"  
M. Keilwerth, J. Hohenberger, F.W. Heinemann, J. Sutter, A. Scheurer, H. Fang, E. Bill, F. Neese, Shengfa Ye and K. Meyer\*  
*J. Am. Chem. Soc.* **2019**, *141*, 17217 – 17235
3. "The Role of Uranium-Arene Bonding in H<sub>2</sub>O Reduction Catalysis"  
D. P. Halter, F. W. Heinemann, L. Maron and K. Meyer\*  
*Nature Chem.* **2018**, *10*, 259 – 267
4. "Electrocatalytic H<sub>2</sub>O 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
5. "Uranium-Mediated Electrocatalytic Dihydrogen Production from Water"  
D. P. Halter, F. W. Heinemann, J. Bachmann and K. Meyer\*  
*Nature* **2016**, *530*, 317 – 321
6. "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

7. "Synthesis and Characterization of a Uranium(II) Monoarene Complex Supported by  $\delta$  Backbonding"  
H.S. La Pierre, A. Scheurer, F.W. Heinemann, W. Hieringer and K. Meyer\*  
*Angew. Chem. Int. Ed.* **2014**, *53*, 7158 – 7162
8. "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
9. "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
10. "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
11. "Towards Uranium Catalysts"  
A.R. Fox, S.C. Bart, K. Meyer and C.C. Cummins  
*Nature* **2008**, *455*, 341 – 349
12. "A Linear, O-Coordinated  $\eta^1$ -CO<sub>2</sub> Bound to Uranium"  
I. Castro-Rodriguez, H. Nakai, L. N. Zakharov, A.L. Rheingold and K. Meyer\*  
*Science* **2004**, *305*, 1757 – 1759

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

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