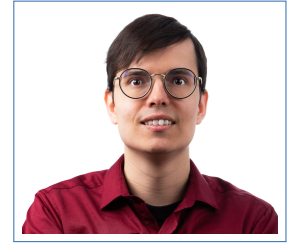


# Dr. Kim Greis

Curriculum Vitae

 [linkedin.com/in/greiskim/](https://www.linkedin.com/in/greiskim/)



## Education

- 11/2019–07/2023 **Doctor of Natural Sciences in Chemistry**, Freie Universität Berlin  
Received with the grade *summa cum laude* (with distinction)
- 02–07/2022 **Visiting Assistant in Research**, Yale University  
In the group of Prof. Mark Johnson
- 10/2017–09/2019 **Master of Science in Chemistry**, Humboldt-Universität zu Berlin  
Received with the grade 1,0 (very good), ranked 1/93
- 09–12/2018 **Exchange Semester**, University of Melbourne  
Research project in the group of Prof. Richard O’Hair
- 10/2014–08/2017 **Bachelor of Science in Chemistry**, Humboldt-Universität zu Berlin  
Received with the grade 1,0 (very good), ranked 1/116
- 09/2007–07/2014 **General Certificate of Secondary Education**, Lycée Classique de Diekirch  
Received with the grade: 52/60 (*Excellent*)

## Professional Experience

- 11/2023–now **Postdoctoral Scientist**, Eidgenössische Technische Hochschule Zürich  
In the group of Prof. Renato Zenobi
- 11/2019–10/2023 **Scientific Coworker**, Freie Universität Berlin  
In the group of Prof. Kevin Pagel
- 02/2019–10/2023 **Guest Scientist**, Fritz Haber Institute of the Max Planck Society  
Department of Molecular Physics (Prof. Gert von Helden and Prof. Gerard Meijer)
- 09/2014–12/2019 **Freelance Journalist**, Lëtzebuenger Journal  
Correspondent for culture and youth for a Luxembourgish daily newspaper
- 12/2015–09/2019 **Student Research Assistant**, Humboldt-Universität zu Berlin  
In the group of Prof. Klaus Rademann
- 08/2013 **Internship**, DuPont de Nemours

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## Memberships

- 2019–now Deutsche Gesellschaft für Massenspektrometrie (DGMS)
- 2016–now Gesellschaft Deutscher Chemiker (GDCh)
- 2015–now Deutsche Bunsen-Gesellschaft für Physikalische Chemie

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## Fellowships and Awards

- 11/2019–10/2023 **AFR Individual PhD Grant**, ca. 175,000 €, Luxembourg National Research Fund
- 10/2022 **Emerging Scientist in Analytical Sciences**, Analytical Science Advances (Wiley)
- 09/2022 **JMS Award**, 1,200 €, International Mass Spectrometry Foundation and Wiley
- 02–07/2022 **Fulbright Scholarship**, 10,000 €
- 06–07/2022 **Participation at the 71<sup>st</sup> Lindau Nobel Laureate Meeting**, ca. 6,500 €
- 03/2020 **Master Award**, 500 €, German Chemical Society (GDCh)
- 04–09/2019 **Humboldt-Stipendium**, 1,800 €, Humboldt-Universität zu Berlin
- 09–12/2018 **Scholarship of the German Academic Exchange Service (DAAD)**, 4,990 €
- 04/2016–03/2018 **Deutschlandstipendium**, 7,200 €, Humboldt-Universität zu Berlin
- 2014 & 2015 **Scholarship of the Fondation Félix Chomé**, ca. 3,000 €

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## Community Service

- 09/2022–09/2023 Volunteer in the social media team of the DGMS Young Scientists
- 01/2022–09/2023 Volunteer in the social media team of the Max Planck PhDNet
- 04–09/2019 Elected member of the Academic Council of Humboldt-Universität zu Berlin
- 10/2018–09/2019 Elected member of the Department Council of the Department of Chemistry of Humboldt-Universität zu Berlin
- 04/2017–09/2019 Elected member of the Student Parliament of Humboldt-Universität zu Berlin for the list *Power of Science*
- 01/2017–09/2019 Student representative of the Department of Chemistry of Humboldt-Universität zu Berlin
- 07/2012–01/2014 Board member of the Luxembourgish Green Youth

## Publications

[32] C.-W. Chang, K. Greis, C. Kirschbaum, S. Lechnitz, G. Meijer, G. von Helden, P. H. Seeberger, K. Pagel\*: Benzylidene-Directed Glycosylations – Mechanistic Insights from Cryogenic Infrared Spectroscopy, *submitted*.

[31] V. Kontodimas, M. Yaman, K. Greis, M. Lettow, K. Pagel, M. Marianski\*: Reinvestigation of the Internal Glycan Rearrangement of Lewis a and Blood Group Type 2 Epitopes, *submitted*.

[30] K. Greis\*, C. Kirschbaum, K. Ober, M. I. Taccone, A. Y. Torres-Boy, G. Meijer, K. Pagel, G. von Helden\*: Infrared Spectroscopy of Fluorenyl Cations at Cryogenic Temperatures, *J. Phys. Chem. Lett.* **2023**, *14*, 11313.

DOI: <https://doi.org/10.1021/acs.jpcllett.3c02928>

[29] M. Safferthal, K. Greis, R. Chang, C. Kirschbaum, W. Hoffmann, G. Meijer, G. von Helden, K. Pagel\*: Cryogenic Infrared Spectroscopy Reveals Remarkably Short NH<sup>+</sup>⋯F Hydrogen Bonds in Fluorinated Phenylalanines, *Phys. Chem. Chem. Phys.* **2023**, *25*, 23783.

DOI: <https://doi.org/10.1039/D3CP03776B>

[28] C. A. Lutomski, T. J. El-Baba, J. D. Hinkle, I. Liko, J. L. Bennett, N. V. Kalmankar, A. Dolan, C. Kirschbaum, K. Greis, L. Urner, P. Kapoor, H.-Y. Yen, K. Pagel, C. Mullen, J. E. P. Syma, C. V. Robinson\*: Infrared Multiphoton Dissociation Enables Top-Down Characterization of Membrane Protein Complexes and G Protein-Coupled Receptors, *Angew. Chem. Int. Ed.* **2023**, *62*, e202305694.

DOI: <https://doi.org/10.1002/anie.202305694>

[27] S. J. Stropoli, K. Greis, T. Schleif, M. A. Johnson\*: Characterization of Oxidation Products from HOCl Uptake by Microhydrated Methionine Anions Using Cryogenic Ion Vibrational Spectroscopy, *J. Phys. Chem. A* **2023**, *127*, 4269.

DOI: <https://doi.org/10.1021/acs.jpca.3c00509>

[26] K. Greis, C. E. Griesbach, C. Kirschbaum, G. Meijer, G. von Helden, K. Pagel\*, M. W. Pecuh\*: Characterization and Fate of a Septanosyl Ferrier Cation in the Gas and Solution Phases, *J. Org. Chem.* **2023**, *88*, 5543.

DOI: <https://doi.org/10.1021/acs.joc.3c00079>

[25] M. Lettow, K. Greis, E. Mucha, T. R. Lambeth, M. Yaman, V. Kontodimas, C. Manz, W. Hoffmann, G. Meijer, R. R. Julian, G. von Helden, M. Marianski\*, K. Pagel\*: Decoding the Fucose Migration Product during Mass-Spectrometric Analysis of Blood Group Epitopes, *Angew. Chem. Int. Ed.* **2023**, *62*, e202302883.

DOI: <https://doi.org/10.1002/anie.202302883>

[24] C. Kirschbaum, R. S. E. Young, K. Greis, J. P. Menzel, S. Gewinner, W. Schöllkopf, G. Meijer, G. von Helden, T. Causon, V. R. Narredulla, B. L. J. Poad, S. J. Blanksby\*, K. Pagel\*: Establishing Fatty Acid Double Bond Position and Configuration by Gas-Phase Infrared Spectroscopy. *Chem. Sci.* **2023**, *14*, 2518.†

DOI: <https://doi.org/10.1039/D2SC06487A>

† 2023 Chemical Science HOT Article Collection and 2023 ChemSci Pick of the Week Collection

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<sup>a</sup> According to Google Scholar on 15 December 2023

- [23] [K. Greis](#), S. Lechnitz, C. Kirschbaum, C.-W. Chang, M.-H. Lin, G. Meijer, G. von Helden, P. H. Seeberger\*, K. Pagel\*: The Influence of the Electron Density in Acyl Protecting Groups on the Selectivity of Galactose Formation. *J. Am. Chem. Soc.* **2022**, *144*, 20258.  
DOI: <https://doi.org/10.1021/jacs.2c05859>
- [22] [K. Greis\\*](#): Emerging scientists in analytical sciences: Kim Greis. *Anal. Sci. Adv.* **2022**, *3*, 258.  
DOI: <https://doi.org/10.1002/ansa.202200036>
- [21] E. H. Perez, T. Schleif, J. P. Messinger, A. G. Rullán Buxó, O. C. Moss, [K. Greis](#), M. A. Johnson\*: Structures and Chemical Rearrangements of Benzoate Derivatives Following Gas Phase Decarboxylation. *J. Am. Soc. Mass Spectrom.* **2022**, *33*, 1914.  
DOI: <https://doi.org/10.1021/jasms.2c00188>
- [20] T. Khuu, S. J. Stropoli, [K. Greis](#), N. Yang, M. A. Johnson\*: Microhydration of the metastable *N*-Protomer of 4-Aminobenzoic acid by condensation at 80 K: H/D exchange without conversion to the more stable *O*-Protomer. *J. Chem. Phys.* **2022**, *157*, 131102.  
DOI: <https://doi.org/10.1063/5.0119027>
- [19] [K. Greis](#), C. Kirschbaum, M. I. Taccone, M. Götze, S. Gewinner, W. Schöllkopf, G. Meijer, G. von Helden, K. Pagel\*: Studying the Key Intermediate of RNA Autohydrolysis by Cryogenic Gas-Phase Infrared Spectroscopy. *Angew. Chem. Int. Ed.* **2022**, *61*, e202115481.†  
DOI: <https://doi.org/10.1002/anie.202115481>  
Frontispiece DOI: <https://doi.org/10.1002/anie.202281961>  
† Hot Paper
- [18] [K. Greis](#), C. Kirschbaum, G. Fittolani, E. Mucha, R. Chang, G. Meijer, G. von Helden, M. Delbianco, P. H. Seeberger, K. Pagel\*: Neighboring Group Participation of Benzoyl Protecting Groups in C3- and C6-Fluorinated Glucose. *Eur. J. Org. Chem.* **2022**, e202200255.  
DOI: <https://doi.org/10.1002/ejoc.202200255>
- [17] C. Kirschbaum, [K. Greis](#), S. Gewinner, W. Schöllkopf, G. Meijer, G. von Helden, K. Pagel\*: Cryogenic infrared spectroscopy provides mechanistic insight into the fragmentation of Ag(I)-adducted phospholipid isomers. *Anal. Bioanal. Chem.* **2022**, *414*, 5275.  
DOI: <https://doi.org/10.1007/s00216-022-03927-6>
- [16] [K. Greis](#), C. Kirschbaum, G. von Helden, K. Pagel\*: Gas-phase infrared spectroscopy of glycans and glycoconjugates. *Curr. Opin. Struct. Biol.* **2022**, *72*, 194.  
DOI: <https://doi.org/10.1016/j.sbi.2021.11.006>
- [15] M. Grabarics, M. Lettow, C. Kirschbaum, [K. Greis](#), C. Manz, K. Pagel\*: Mass Spectrometry-Based Techniques to Elucidate the Sugar Code. *Chem. Rev.* **2022**, *122*, 7840.  
DOI: <https://doi.org/10.1021/acs.chemrev.1c00380>
- [14] C. Kirschbaum, [K. Greis](#), L. Polewski, S. Gewinner, W. Schöllkopf, G. Meijer, G. von Helden, K. Pagel\*: Unveiling Glycerolipid Fragmentation by Cryogenic Infrared Spectroscopy. *J. Am. Chem. Soc.* **2021**, *143*, 14827.  
DOI: <https://doi.org/10.1021/jacs.1c06944>
- [13] M. Lettow\*, [K. Greis](#), M. Grabarics, J. Horlebein, R. L. Miller, G. Meijer, G. von Helden, K. Pagel\*: Chondroitin Sulfate Disaccharides in the Gas Phase: Differentiation and Conformational Constraints. *J. Phys. Chem. A* **2021**, *125*, 4373.  
DOI: <https://doi.org/10.1021/acs.jpca.1c02463>

[12] C. Kirschbaum, K. Greis, M. Lettow, S. Gewinner, W. Schöllkopf, G. Meijer, G. von Helden, K. Pagel\*: Non-covalent double bond sensors for gas-phase infrared spectroscopy of unsaturated fatty acids. *Anal. Bioanal. Chem.* **2021**, *413*, 3643.†

DOI: <https://doi.org/10.1007/s00216-021-03334-3>

† Paper in Forefront

[11] C. Kirschbaum, K. Greis, E. Mucha, L. Kain, S. Deng, A. Zappe, S. Gewinner, W. Schöllkopf, G. von Helden, G. Meijer, P. B. Savage, M. Marianski, L. Teyton, K. Pagel\*: Unravelling the structural complexity of glycolipids with cryogenic infrared spectroscopy. *Nat. Commun.* **2021**, *12*, 1201.†

DOI: <https://doi.org/10.1038/s41467-021-21480-1>

† Editors' Highlights in "Organic chemistry and chemical biology"

[10] K. Greis, C. Kirschbaum, S. Lechnitz, S. Gewinner, W. Schöllkopf, G. von Helden, G. Meijer, P. H. Seeberger, K. Pagel\*: Direct Experimental Characterization of the Ferrier Glycosyl Cation in the Gas Phase. *Org. Lett.* **2020**, *22*, 8916.†

DOI: <https://doi.org/10.1021/acs.orglett.0c03301>

† Featured in: <https://doi.org/10.1002/nadc.20214105947>

[9] D. A. Thomas, R. Chang, E. Mucha, M. Lettow, K. Greis, S. Gewinner, W. Schöllkopf, G. von Helden\*: Probing the conformational landscape and thermochemistry of DNA dinucleotide anions *via* helium nanodroplet infrared action spectroscopy. *Phys. Chem. Chem. Phys.* **2020**, *22*, 18400.†

DOI: <https://doi.org/10.1039/D0CP02482A>

† 2020 HOT PCCP article

[8] M. Lettow, M. Grabarics, K. Greis, E. Mucha, D. A. Thomas, P. Chopra, G.-J. Boons, R. Karlsson, J. E. Turnbull, G. Meijer, R. L. Miller, G. von Helden, K. Pagel\*: Cryogenic Infrared Spectroscopy Reveals Structural Modularity in the Vibrational Fingerprints of Heparan Sulfate Diastereomers. *Anal. Chem.* **2020**, *92*, 10228.

DOI: <https://doi.org/10.1021/acs.analchem.0c02048>

[7] K. Greis, E. Mucha, M. Lettow, D. A. Thomas, C. Kirschbaum, S. Moon, A. Pardo-Vargas, G. von Helden, G. Meijer, K. Gilmore, P. H. Seeberger, K. Pagel\*: The Impact of Leaving Group Anomericity on the Structure of Glycosyl Cations of Protected Galactosides. *ChemPhysChem* **2020**, *21*, 1905.

DOI: <https://doi.org/10.1002/cphc.202000473>

[6] C. Kirschbaum, E. M. Saied, K. Greis, E. Mucha, S. Gewinner, W. Schöllkopf, G. Meijer, G. von Helden, B. L. J. Poad, S. J. Blanksby, C. Arenz\*, K. Pagel\*: Resolving Sphingolipid Isomers using Cryogenic Infrared Spectroscopy. *Angew. Chem. Int. Ed.* **2020**, *59*, 13638.†

DOI: <https://doi.org/10.1002/anie.202002459>

Cover Picture DOI: <https://doi.org/10.1002/anie.202007701>

† Hot Paper

[5] M. Marianski\*, E. Mucha, K. Greis, S. Moon, A. Pardo, C. Kirschbaum, D. A. Thomas, G. Meijer, G. von Helden, K. Gilmore, P. H. Seeberger, K. Pagel\*: Remote Participation during Glycosylation Reactions of Galactose Building Blocks: Direct Evidence from Cryogenic Vibrational Spectroscopy. *Angew. Chem. Int. Ed.* **2020**, *59*, 6166.

DOI: <https://doi.org/10.1002/anie.201916245>

[4] K. Greis, K. Bethke\*, J. B. Stückerath, T. T. K. Ingber, S. Valiyaveetil, K. Rademann: One-Pot Synthesis of Xanthate Functionalized Cellulose for the Detection of Micromolar Copper(II) and Nickel(II) Ions. *Clean – Soil, Air, Water* **2019**, *47*, 1900179.†

DOI: <https://doi.org/10.1002/clen.201900179>

† Top Downloaded Paper in 2018-2019 and 2019-2020

[3] K. Greis, Y. Yang, A. J. Canty, R. A. J. O’Hair\*: Gas-Phase Synthesis and Reactivity of Ligated Group 10 Ions in the Formal +1 Oxidation State. *J. Am. Soc. Mass Spectrom.* **2019**, *30*, 1867.

DOI: <https://doi.org/10.1007/s13361-019-02231-5>

[2] K. Greis, A. J. Canty, R. A. J. O’Hair\*: Gas-Phase Reactions of the Group 10 Organometallic Cations, [(phen)M(CH<sub>3</sub>)]<sup>+</sup> with Acetone: Only Platinum Promotes a Catalytic Cycle via the Enolate [(phen)Pt(OC(CH<sub>2</sub>)CH<sub>3</sub>)]<sup>+</sup>. *Z. Phys. Chem.* **2019**, *233*, 845.

DOI: <https://doi.org/10.1515/zpch-2018-1355>

[1] K. Bethke, S. Palantöken, V. Andrei, M. Roß, V. S. Raghuwanshi, F. Kettemann, K. Greis, T. T. K. Ingber, J. B. Stückerath, S. Valiyaveetil, K. Rademann\*: Functionalized Cellulose for Water Purification, Antimicrobial Applications, and Sensors. *Adv. Funct. Mater.* **2018**, *28*, 1800409.

DOI: <https://doi.org/10.1002/adfm.201800409>

## Preprints

[1] S. Ponath, C. Joshi, A. T. Merrill, V. Schmidts, K. Greis, M. Lettow, M. Weber, S. Steinhauer, K. Pagel\*, C. Thiele\*, D. J. Tantillo\*, M. J. Veticatt\*, M. Christmann\*: On Stereocontrol in Organocatalytic  $\alpha$ -Chlorinations of Aldehydes. *ChemRxiv* **2021**.

DOI: <https://doi.org/10.26434/chemrxiv.14229875.v1>

## Oral Presentations

[15] Structural Insight into Reactive Intermediates by Cryogenic Vibrational Spectroscopy and Computational Methods, *122<sup>nd</sup> Annual Conference of the German Bunsen Society for Physical Chemistry*, Berlin, Germany, June **2023**.

[14] Structural Insight into Reactive Intermediates by Cryogenic Vibrational Spectroscopy and Computational Methods, *54<sup>th</sup> Annual Conference of the DGMS*, Dortmund, Germany, May **2023**.

[13] Invited Seminar Presentation: Combining Cryogenic Vibrational Spectroscopy and Density Functional Theory to Determine Structures and Mechanisms in Chemistry, *Eidgenössische Technische Hochschule Zürich*, Zürich, Switzerland, November **2022**.

[12] Isolating Elusive Cyclopentadienyl and Fluorenyl Cations in the Gas Phase, *DGMS Young Scientists Fall Meeting*, Hünfeld, Germany, September **2022**.

[11] Determining Structural Motifs and Conformations of Glycosyl Cations by Cryogenic Gas-Phase Ion Infrared Spectroscopy, *24<sup>th</sup> International Mass Spectrometry Conference (JMS Awardees session)*, Maastricht, Netherlands, September **2022**.

[10] Invited Seminar Presentation: Cryogenic Vibrational Spectroscopy – A Tool for Studying Reactive Intermediates, *University of Rhode Island*, Kingston, USA, August **2022**.

[9] Invited Seminar Presentation: Cryogenic Vibrational Spectroscopy – A Tool for Studying Reactive Intermediates, *Northern Illinois University*, DeKalb, USA, July **2022**.

[8] Invited Seminar Presentation: Cryogenic Vibrational Spectroscopy – A Tool for Studying Reactive Intermediates, *City University of New York*, New York, USA, June **2022**.

[7] Invited Seminar Presentation: Cryogenic Vibrational Spectroscopy – A Tool for Studying Reactive Intermediates, *University of Connecticut*, Storrs, USA, April **2022**.

[6] Cryogenic Infrared Spectroscopy – A Tool for Understanding Mechanisms in Organic Chemistry, *Chicago Mass Spec Day*, online, July **2021**.†

† Award for the best oral presentation

[5] Cryogenic Infrared Spectroscopy – A Tool for Understanding Mechanisms in Organic Chemistry, *DGMS Young Scientists 1<sup>st</sup> Digital Meeting*, online, June **2021**.

[4] Cryogenic Infrared Spectroscopy – A Tool for Understanding Mechanisms in Organic Chemistry, *120<sup>th</sup> Annual Conference of the German Bunsen Society for Physical Chemistry*, online, May **2021**.

[3] Combining Mass Spectrometry-based Techniques with Quantum Chemical Modelling to Study Reactive Intermediates, *Colloquium of the CRC 1349*, online, April **2021**.

[2] Direct Evidence for Remote Participation Revealed by Cryogenic Vibrational Spectroscopy, *DGMS Young Scientists Fall Meeting*, Hünfeld, Germany, September **2019**.

[1] Catalytic Decomposition of Acetone and Acetic Acid Mediated by  $[(\text{phen})\text{Pt}(\text{O}_2\text{CCH}_3)]^+$ , *Victorian Mass Spectrometry Symposium*, Melbourne, Australia, December **2018**.

## Poster Presentations

[10] Rearrangement of Certain Glycosyl Cations in the Gas Phase, *GRS and GRC on Gaseous Ions: Structures, Energetics and Reactions*, Ventura, USA, February **2023**.

[9] Gas Phase Vibrational Analysis of Elusive Carbocations at Cryogenic Temperatures, *Fachbeirat FHI*, Berlin, Germany, November **2022**.

[8] Studying the Key Intermediate of RNA Autohydrolysis by Cryogenic Gas-Phase Infrared Spectroscopy, *Mass Spectrometry Summer School*, Berlin, Germany, October **2022**.

[7] Studying the Key Intermediate of RNA Autohydrolysis by Cryogenic Gas-Phase Infrared Spectroscopy, *24<sup>th</sup> IMSC*, Maastricht, Netherlands, September **2022**.

[6] Gas-Phase Vibrational Analysis of Elusive Carbocations at Cryogenic Temperatures, *Chicago MassSpec Day*, Chicago, USA, July **2022**.

[5] Cryogenic Vibrational Spectroscopy – A Tool for Understanding Reaction Mechanisms, *70<sup>th</sup> ASMS Conference*, Minneapolis, USA, June **2022**.

[4] Neighboring and Remote Participation Studied by Cryogenic Vibrational Spectroscopy, *Fachbeirat FHI*, Berlin, Germany, November **2019**.

[3] Remote Participation in Glycosylations Revealed by Cryogenic Vibrational Spectroscopy, *Tag der Chemie*, Berlin, Germany, July **2019**.

[2] Catalytic Decomposition of Acetone and Acetic Acid Mediated by  $[(\text{phen})\text{Pt}(\text{O}_2\text{CCH}_3)]^+$ , *RACI Victorian Inorganic Symposium*, Melbourne, Australia, November **2018**.

[1] Cellulose Based Chemicals for Heavy Metal Removal Studied by X-Ray-Fluorescence Spectroscopy (XRF), *ICMAT*, Singapore, June **2017**.

