

# Curriculum Vitae

**Dr. J. Mathias Weber**

Professor, Department of Chemistry

Fellow of JILA

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## 1. Educational Background

**1994 to 1998 – Graduate Student:** Experimental Physics, Universität Kaiserslautern, Germany  
(*summa cum laude* = with distinction)

**1988 to 1994 – Undergraduate Student:** Experimental Physics, Universität Kaiserslautern, Germany  
Diploma (graduated with “excellent“)

## 2. Academic Employment and Work History

**Since July 2019: Professor, Department of Chemistry and Fellow of JILA, University of Colorado at Boulder, CO, USA**

Research Topics: Spectroscopy of mass-selected ions *in vacuo*; cryogenic ion spectroscopy; supramolecular assemblies and materials under high pressure.

**August 2012 – June 2019: Associate Professor, Department of Chemistry and Biochemistry (now Department of Chemistry) and Fellow of JILA, University of Colorado at Boulder, CO, USA**

Research Topics: Spectroscopy of mass-selected ions *in vacuo*; cryogenic ion spectroscopy; supramolecular assemblies and materials under high pressure.

**January 2006 – August 2012: Assistant Professor, Department of Chemistry and Biochemistry and Associate JILA Fellow, University of Colorado at Boulder, CO, USA**

Research Topics: Spectroscopy of ions *in vacuo*; supramolecular assemblies under high pressure.

**March 2002 to December 2005 Independent Junior Research Group Leader, Institut für Physikalische Chemie, Universität Karlsruhe, Germany**

Fellow of the Emmy-Noether-Program of the Deutsche Forschungsgemeinschaft (DFG, the German equivalent of NSF), non-tenure-track position. Research Topics: Infrared spectroscopy of isolated ion-molecule complexes, experiments on multiply charged anions in the gas phase. Habilitation in November 2005, *venia legendi* in Physical Chemistry.

**April 2001 to February 2002: Postdoctoral Associate, Universität Karlsruhe, Germany**

Group of Prof. Manfred M. Kappes, Institut für Physikalische Chemie. Research Topics: Electronic spectroscopy of gold cluster cations, photoelectron spectroscopy of gas phase multiply charged anions.

**April 1999 to March 2001: Postdoctoral Associate, Yale University, New Haven, CT, USA**

Group of Prof. M. A. Johnson, Sterling Chemistry Laboratory, Department of Chemistry, Yale University.

Research Topics: Infrared spectroscopy of solvated atomic and molecular anions, femtosecond photoelectron spectroscopy of water cluster anions.

**January to March 1999: Postdoctoral Associate, Universität Kaiserslautern, Germany**

Publishing the results of my doctoral dissertation.

**September 1994 to December 1998: Graduate Student, Universität Kaiserslautern, Germany**

Group of Prof. H. Hotop, Fachbereich Physik. Topic of the Doctoral Dissertation: “Anlagerung langsamer Elektronen an Moleküle und Cluster” (Attachment of Slow Electrons to Molecules and Clusters); Grade: *summa cum laude*.

**March 1993 to May 1994: Diploma Student, Universität Kaiserslautern, Germany**

Group of Prof. H. Hotop, Fachbereich Physik. Topic of the Diploma Thesis: “Laserspektroskopische Untersuchungen von Ar(ns,nd)-Rydbergzuständen und Diagnostik kleiner elektrischer Felder“ (Laser spectroscopic Studies of Ar(ns, nd) Rydberg States and Diagnostics of Small Electric Fields).

### **3. Awards and Honors**

- 1999** Wolfgang-Paul-Award of the Deutsche Gesellschaft für Massenspektrometrie (German Society for Mass Spectrometry DGMS).
- 1999** Dissertation Award of the Freundeskreis der Universität Kaiserslautern
- 2002** Emmy-Noether-Fellow of the Deutsche Forschungsgemeinschaft (DFG), March 2002 – December 2005
- 2009** CAREER Award of the National Science Foundation
- 2010** Alfred P. Sloan Research Fellow
- 2012** Guest Professorship, Department of Physics and Astronomy, Aarhus University, Denmark
- 2012** Kavli Fellow
- 2013 - 2018** Member of Advisory Editorial Board for Chemical Physics Letters

### **4. Past and Current Funding** (only CU Boulder funding is reported here)

- DOE Gas Phase Chemical Physics, “Experimental and Computational Study of Quantum Nuclear and Many-Body Effects in Water Network Formation and Water-Surface Interaction in PAH-Water Cluster Ions”, 09/01/2020 – 08/31/2023, **US\$ 550,255**.
- NSF Chemistry, “Characterizing Structures and Intra-/Intermolecular Forces in Molecular CO<sub>2</sub> Reduction Catalysts and Reaction Intermediates by Infrared Spectroscopy of Cryogenic Ions”, 09/01/2018 – 08/31/2022, **US\$ 475,000**.
- Member of the NSF Atomic, Molecular and Optical Physics Frontier Center at JILA since August 2007 (current annual allocation for my program: **US\$ 135,000**).
- Petroleum Research Fund of the American Chemical Society, “Pressure Response of Organic Photonic Materials at the Nano- and Mesoscale”, 2016 – 2019, **US\$ 110,000**.
- NSF Chemistry, “SusChEM: Studying Catalysts and Reaction Intermediates for Water Oxidation by Spectroscopy of Cryogenic Mass-Selected Ions”, 2014 – 2019, **US\$ 426,900**.
- NREL/DOE LDRD Grant for Collaboration with Dr. Arthur Nozik, “Synthesis and Characterization of Si XII Nanocrystals”, 2011, **US\$ 33,700**.
- Alfred P. Sloan Research Fellowship, 2010 – 2013, **US\$ 50,000**.

- NSF Chemistry, “CAREER: Spectroscopic Studies of Ionic Transition Metal Complexes”, 2009 – 2016, **US\$ 617,500.**
- CU Innovative Grant Program, "Supramolecular Chemistry at High Pressures", 2008 – 2009, **US\$ 43,500.**
- Petroleum Research Fund of the American Chemical Society, “Infrared Spectroscopy of Cluster Anions Containing Aromatic Molecules”, 2007 – 2009, **US\$ 90,000.**

## **5. Current and Past Collaborations (last 5 years)**

- G. Dukovic (Univ. of Colorado at Boulder)
- J. D. Eaves (Univ. of Colorado at Boulder)
- K. Hansen (Göteborgs Univ., Sweden, and Tianjin University, P. R. China)
- Manfred M. Kappes (Karlsruhe Institute of Technology, Germany)
- I. Krylov (Univ. of Southern California)
- Paul Mulvaney (Univ. of Melbourne, Australia)
- S. B. Nielsen (Aarhus Univ., Denmark)
- S. Sharma (Univ. of Colorado at Boulder)
- J. R. R. Verlet (Durham University, UK)

## **6. Memberships**

- American Chemical Society
- American Physical Society
- Deutsche Physikalische Gesellschaft (German Physical Society)
- Deutsche Gesellschaft für Massenspektrometrie (German Society for Mass Spectrometry)
- Deutsche Bunsen-Gesellschaft für Physikalische Chemie (German Bunsen-Society for Physical Chemistry)
- Deutscher Hochschulverband (German Association of University Teachers)

## 7. List of Publications

### *Remarks for interpreting the publication list and my contributions:*

- This publication list is current as of January 12, 2022
- h-index: 33 (January 12, 2022)
- Interpretation of authorship positions: The people who have done the main laboratory work are first authors, while senior authors typically come last. If corresponding authorship is not with the last author, then the person who has corresponding authorship contributed the main ideas to the experiment and its interpretation. For #20 and higher, I have corresponding authorship for all entries except those printed in italics. In cases where several research groups (not just researchers visiting the “main group”) were involved, the authors of the “outside” groups are in parentheses. Students or postdocs in the author list for whom I was primary mentor (during my Habilitation at the University of Karlsruhe) or supervisor (at the University of Colorado) are underlined.
- For Journals that have article numbers instead of page numbers, the number of pages for each article is included, otherwise, inclusive page citation is used.
- Articles #35 and higher are from work done at least partially at the University of Colorado, unless marked with an asterisk.

### **7.1. Peer-Reviewed Journal Articles (published, in press, or accepted for publication):**

1. D. Klar, K. Ueda, J. Ganz, K. Harth, W. Bußert, S. Baier, J. M. Weber, M.-W. Ruf, H. Hotop  
“High resolution measurement and quantum defect analysis for the Ne nd’ J=1, 2 and 3 autoionizing resonances”  
J. Phys. B. At. Mol. Opt. Phys. **27** (1994) 4897 – 4907.
2. J. M. Weber, M.-W. Ruf, H. Hotop  
“Rydberg electron transfer to C<sub>60</sub> and C<sub>70</sub>”  
Z. Phys. D - Atoms, Molecules and Clusters **37** (1996) 351 – 357.
3. A. Schramm, J. M. Weber, J. Kreil, D. Klar, M.-W. Ruf, H. Hotop  
“Laser Photoelectron Attachment to Molecules in a Skimmed Supersonic Beam: Diagnostics of Weak Electric Fields and Attachment Cross Sections Down to 20 µeV”  
Phys. Rev. Lett. **81** (1998) 778 – 781.
4. J. M. Weber, K. Hansen, M.-W. Ruf, H. Hotop  
“Penning ionisation of C<sub>60</sub> and C<sub>70</sub>”  
Chem. Phys. **239** (1998) 271 – 286.
5. J. M. Weber, E. Leber, M.-W. Ruf, H. Hotop  
“Nuclear-Excited Feshbach Resonances in Electron Attachment to Molecular Clusters”  
Phys Rev. Lett. **82** (1999) 516 – 519.

6. Schramm, I. I. Fabrikant, J. M. Weber, E. Leber, M.-W. Ruf, H. Hotop  
 “Vibrational resonance and threshold effects in inelastic electron collisions with methyl iodide molecules”  
*J. Phys. B: At. Mol. Opt. Phys.* **32** (1999) 2153 – 2171.
7. J. M. Weber, K. Ueda, D. Klar, J. Kreil, M.-W. Ruf, H. Hotop  
 “Odd Rydberg spectrum of  $^{40}\text{Ar}(\text{I})$ : high resolution laser spectroscopy and multichannel quantum defect analysis of the  $J=2$  and 3 levels”  
*J. Phys. B: At. Mol. Opt. Phys.* **32** (1999) 2381 – 2398.
8. J. Bömmels, J. M. Weber, A. Gopalan, N. Herschbach, E. Leber, A. Schramm, K. Ueda, M.-W. Ruf, H. Hotop  
 “Odd Rydberg spectrum of  $^{40}\text{Ar}(\text{I})$ : high resolution laser spectroscopy and MQDT analyses of the nd,  $J=4$  levels and the ng’,  $J=4$  resonances”  
*J. Phys. B: At. Mol. Opt. Phys.* **32** (1999) 2399 – 2414.
9. J. M. Weber, E. Leber, M.-W. Ruf, H. Hotop  
 “Formation of small water cluster anions by attachment of very slow electrons at high resolution”  
*Eur. Phys. J. D* **7** (1999) 587 – 594.
10. J. M. Weber, J. A. Kelley, S. B. Nielsen, P. Ayotte, M. A. Johnson  
 “Isolating the Spectroscopic Signature of a Hydration Shell with the Use of Clusters: Superoxide Tetrahydrate”  
*Science* **287** (2000) 2461 – 2463.
11. E. Leber, S. Barsotti, J. Bömmels, J. M. Weber, I. I. Fabrikant, M.-W. Ruf, H. Hotop  
 “Vibrational Feshbach resonances in electron attachment to nitrous oxide clusters: decay into heterogeneous and homogeneous cluster anions”  
*Chem. Phys. Lett.* **325** (2000) 345 – 353.
12. J. M. Weber, I. I. Fabrikant, E. Leber, M.-W. Ruf, H. Hotop  
 “Effects of solvation on dissociative electron attachment to methyl iodide clusters”  
*Eur. Phys. J. D* **11** (2000) 247 – 256.
13. J. A. Kelley, J. M. Weber, K. M. Lisle, W. H. Robertson, P. Ayotte, M. A. Johnson  
 “The infrared predissociation spectra of  $\text{Cl} \cdot \text{H}_2\text{O} \cdot \text{Ar}_n$  ( $n = 1 - 5$ ): experimental determination of the influence of Ar solvent atoms”  
*Chem. Phys. Lett.* **327** (2000) 1 – 6.
14. E. Leber, S. Barsotti, I. I. Fabrikant, J. M. Weber, M.-W. Ruf, H. Hotop  
 “Vibrational Feshbach resonances in electron attachment to carbon dioxide clusters”  
*Eur. Phys. J. D* **12** (2000) 125 – 131.
15. J. M. Weber, J. A. Kelley, W. H. Robertson, M. A. Johnson  
 “Hydration of a structured excess charge distribution: infrared spectroscopy of the  $\text{O}_2^- \cdot (\text{H}_2\text{O})_n$ , ( $1 \leq n \leq 5$ ) clusters”  
*J. Chem. Phys.* **114** (2001) 2698 – 2706.

16. J. M. Weber, J. Kim, E. A. Woronowicz, G. H. Weddle, I. Becker, O. Cheshnovsky, M. A. Johnson  
 “Observation of resonant two-photon photodetachment of water cluster anions via femtosecond photoelectron spectroscopy”  
 Chem. Phys. Lett. **339** (2001) 337 – 342.
17. J. Bömmels, E. Leber, A. Gopalan, J. M. Weber, S. Barsotti, M.-W. Ruf, H. Hotop  
 “Energy broadening due to photoion space charge in a high resolution laser photoelectron source”  
 Rev. Sci. Instrum. **72** (2001) 4098 – 4105.
18. J. M. Weber, W. H. Robertson, M. A. Johnson  
 “Argon predissociation and electron autodetachment spectra of size selected  $\text{CH}_3\text{NO}_2^- \cdot \text{Ar}_n$  clusters”  
 J. Chem. Phys. **115** (2001) 10718 – 10723.
19. K. Arnold, T. S. Balaban, M. N. Blom, O. T. Ehrler, S. Gilb, O. Hampe, J. E. van Lier, J. M. Weber, M. M. Kappes  
 “Electron Autodetachment from Isolated Nickel and Copper Phthalocyanine-Tetrasulfonate-Tetraanions: Isomer Specific Rates”  
 J. Phys. Chem. A **107** (2003) 794 – 803.
20. A. Schweizer, J. M. Weber, S. Gilb, H. Schneider, D. Schooss, M. M. Kappes  
 “Electronic photodissociation spectroscopy of  $\text{Au}_4^+ \cdot \text{Ar}_n$  ( $n = 0 - 4$ ): experiment and theory”  
 J. Chem. Phys. **119** (2003) 3699 – 3710.
21. *W. H. Robertson, E. A. Price, J. M. Weber, J.-W. Shin, G. H. Weddle, M. A. Johnson*  
 “*Infrared Signatures of a Water Molecule Attached to Triatomic Domains of Molecular Anions: Evolution of the H-Bonding Configuration With Domain Length*”  
 J. Phys. Chem. A **107** (2003) 6527 – 6532.
22. O. T. Ehrler, J. M. Weber, F. Furche, M. M. Kappes  
 “Photoelectron Spectroscopy of  $\text{C}_{84}$  Dianions”  
 Phys. Rev. Lett. **91** (2003) art. no. 113006 (4 pages).
23. J. M. Weber and H. Schneider  
 ”Infrared Spectra of  $\text{X}^- \cdot \text{CO}_2 \cdot \text{Ar}$  Cluster Anions ( $\text{X} = \text{Cl}, \text{Br}, \text{I}$ )”  
 J. Chem. Phys. **120** (2004) 10056 – 10061, erratum in J. Chem. Phys. **122** (2005), 069901 (1 page).
24. J. M. Weber, I. N. Ioffe, K. M. Berndt, D. Löffler, J. Friedrich, O. T. Ehrler, (A. S. Danell), (J. H. Parks), M. M. Kappes  
 “Photoelectron Spectroscopy of Isolated Multiply Negatively Charged Oligonucleotides”  
 J. Am. Chem. Soc. **126** (2004) 8585 – 8589.
25. *E. G. Diken, G. H. Weddle, J. M. Headrick, J. M. Weber, M. A. Johnson*  
 “*Argon Cluster-Mediated Trapping and Vibrational Spectroscopic Characterization of an  $\text{OH} \cdot \text{HCH}_2^-$  Intermediate in the  $\text{O}^- + \text{CH}_4$  Reaction*”  
 J. Phys. Chem. A **108** (2004) 10116 – 10121.

26. O. T. Ehrler, F. Furche, J. M. Weber, M. M. Kappes  
 “Photoelectron spectroscopy of fullerene dianions  $C_{76}^{2-}$ ,  $C_{78}^{2-}$ ,  $C_{84}^{2-}$ ”  
 J. Chem. Phys. **122** (2005) art. no. 094321 (8 pages).
27. (J.-W. Shin), (N. I. Hammer), (M. A. Johnson), H. Schneider, A. N. Glöb, J. M. Weber  
 “An Infrared Investigation of the  $(CO_2)_n^-$  Clusters: Core Ion Switching from Both the Ion and Solvent Perspectives”  
 J. Phys. Chem. A **109** (2005) 3146 – 3152.
28. J. M. Weber  
 “A pulsed ion source for the preparation of metal containing cluster ions using supersonic entrainment of laser vaporized metal”  
 Rev. Sci. Instrum. **76** (2005) art. no. 043301 (5 pages).
29. A. D. Boese, H. Schneider, A. N. Glöb, J. M. Weber  
 “The infrared spectrum of  $Au^- \cdot CO_2$ ”  
 J. Chem. Phys. **122** (2005) art. no. 154301 (7 pages).
30. (I. N. Ioffe), (S. M. Avdoshenko), (O. V. Boltalina), (L. N. Sidorov), K. N. Berndt, J. M. Weber  
 “Mass spectrometry, photoelectron spectroscopy, and quantum chemical studies of fluorofullerene dianions”  
 Int. J. Mass Spectrom. **243** (2005) 223 – 230.
31. H. Schneider, A. D. Boese, J. M. Weber  
 “Unusual hydrogen bonding behavior in binary complexes of coinage metal anions with water”  
 J. Chem. Phys. **123** (2005) art. no. 084307 (6 pages).
32. H. Schneider, A. D. Boese, J. M. Weber  
 “Infrared spectra of  $O_2^- \cdot (CO_2)_n$  clusters ( $n = 1 - 6$ ): asymmetric docking at the  $\pi^*$  orbital”  
 J. Chem. Phys. **123** (2005) art. no. 074316 (6 pages).
33. M. Braun, S. Barsotti, S. Marienfeld, E. Leber, J. M. Weber, M.-W. Ruf, H. Hotop  
 “High resolution study of anion formation in low-energy electron attachment to  $SF_6$  molecules in a seeded supersonic beam”  
 Eur. Phys. J. D **35** (2005) 177 – 191.
34. D. Löffler, J. M. Weber, M. M. Kappes  
 “Photodetachment spectroscopy of  $PtBr_4^{2-}$ : Probing the Coulomb barrier of a doubly charged anion”  
 J. Chem. Phys. **123** (2005) art. no. 224308 (6 pages).
35. H. Schneider, J. M. Weber  
 “Infrared spectra of  $HC_2^- \cdot (C_2H_2)_n$  and  $O_2^- \cdot (C_2H_2)_n$  clusters ( $n = 2 - 5$ )”  
 J. Chem. Phys. **125** (2006) art. no. 094307 (7 pages).
36. H. Schneider, J. M. Weber, (E. M. Myshakin), (K. D. Jordan), (J. Bopp), (T. Herden), (M. A. Johnson)  
 “Theoretical and infrared spectroscopic investigation of the  $O_2^- \cdot$ benzene and  $O_4^- \cdot$ benzene complexes”  
 J. Chem. Phys. **127** (2007) art. no. 084319 (6 pages).

37. H. Schneider, K. M. Vogelhuber and J. M. Weber  
 “Infrared spectroscopy of anionic hydrated fluorobenzenes”  
 J. Chem. Phys. **127** (2007) art. no. 114311 (7 pages).
38. H. Schneider, K. M. Vogelhuber, F. Schinle, and J. M. Weber  
 “Aromatic Molecules in Anion Recognition: Electrostatics versus H-Bonding”  
 J. Am. Chem. Soc. **129** (2007) 13022 – 13026.
39. H. Schneider, J. M. Weber  
 “Infrared spectra of  $\text{SF}_6^-\cdot(\text{H}_2\text{O})_n$  ( $n = 1 - 3$ ): Incipient reaction and delayed onset of water network formation”  
 J. Chem. Phys. **127** (2007) art. no. 244310 (7 pages).
40. (\*)A. N. Gloess, H. Schneider, J. M. Weber, and M. M. Kappes  
 “Electronically excited states and visible region photodissociation spectroscopy of  $\text{Au}_m^+\cdot\text{Ar}_n$  Clusters ( $m = 7-9$ ): Molecular dimensionality transition?”  
 J. Chem. Phys. **128** (2008) art. no. 114312 (9 pages).
41. H. Schneider, K. M. Vogelhuber, F. Schinle, (J. F. Stanton), J. M. Weber  
 “Vibrational spectroscopy of nitroalkane chains using Ar predissociation and electron autodetachment”  
 J. Phys. Chem. A **112** (2008) 7498 – 7506.
42. J. C. Marcum, A. Halevi, and J. M. Weber  
 “UV Photodamage to Isolated Mononucleotides Photodissociation Spectra and Fragment Channels”  
 Phys. Chem. Chem. Phys. **11** (2009) 1740 – 1751.
43. C. L. Adams, H. Schneider, (K. M. Ervin), J. M. Weber  
 “Low-energy photoelectron imaging spectroscopy of nitromethane anions: Electron affinity, vibrational features, anisotropies, and the dipole-bound state”  
 J. Chem. Phys. **130** (2009) art. no. 074307 (10 pages).
44. H. Schneider, (K. Takahashi), (R. T. Skodje), and J. M. Weber  
 “Infrared spectra of  $\text{SF}_6^-\cdot\text{HCOOH}\cdot\text{Ar}_n$  ( $n = 0 - 2$ ): Infrared-triggered reaction and Ar-induced inhibition”  
 J. Chem. Phys., **130** (2009) art. no. 174302 (10 pages).
45. J. C. Marcum, J. M. Weber  
 “Electronic photodissociation spectra and decay pathways of gas-phase  $\text{IrBr}_6^{2-}$ ”  
 J. Chem. Phys., **131** (2009) art. no. 194309 (8 pages).
46. C. L. Adams, H. Schneider, J. M. Weber  
 “Vibrational Autodetachment – Intramolecular Vibrational Relaxation Translated Into Electronic Motion“, J. Phys. Chem. A, **114** (2010) 4017 – 4030, Corrections: J. Phys. Chem. A, **114** (2010) 8021 and **115** (2010) 8588.
47. J. C. Marcum, J. M. Weber  
 “Microsolvation of nitromethane anions from both a solute and solvent perspective”  
 J. Phys. Chem A **114** (2010) 8933 – 8938.



48. J. C. Marcum, S. H. Kaufman, J. M. Weber  
“UV-photodissociation of cyclic and non-cyclic nucleotides”  
Int. J. Mass Spectrom. **303** (2011) 129 – 136.
49. J. C. Marcum, S. H. Kaufman, J. M. Weber  
“Gas-phase experiments on Au(III) photochemistry”  
J. Phys. Chem. A **115** (2011) 3006 – 3015.
50. C. L. Adams, J. M. Weber  
“Photoelectron imaging spectroscopy of nitroethane anions”  
J. Chem. Phys. **134** (2011) art. no. 244301 (8 pages).
51. J. C. Marcum, (Anna I. Krylov), J. M. Weber  
“Spectroscopy and Fragmentation of Undercoordinated Bromoiridates”  
J. Phys. Chem. A **115** (2011) 13482 – 13488.
52. C. L. Adams, B. J. Knurr, J. M. Weber  
“Photoelectron spectroscopy of 1-nitropropane and 1-nitrobutane anions”  
J. Chem. Phys. **136** (2012) art. no. 064307 (9 pages).
53. E. A. Pozzi, (L. R. Schwall), (R. Jimenez), J. M. Weber  
“Pressure-Induced Changes in the Fluorescence Behavior of Red Fluorescent Proteins”  
J. Phys. Chem. B **116** (2012) 10311 – 10316.
54. B. J. Knurr, C. L. Adams, J. M. Weber  
“Infrared spectroscopy of hydrated naphthalene cluster anions”  
J. Chem. Phys. **137** (2012) art. no. 104303 (9 pages).
55. B. J. Knurr, J. M. Weber  
“Solvent-Driven Reductive Activation of Carbon Dioxide by Gold Anions”  
J. Am. Chem. Soc. **134** (2012) 18804 – 18808.
56. S. H. Kaufman, J. M. Weber  
“Spectroscopy and Photochemistry of Sodium Chromate Ester Cluster Ions”  
J. Phys. Chem. A **117** (2013) 2144 – 2151.
57. (J. Houmøller), S. H. Kaufman, (K. Støchkel), (L. C. Tribedi), (S. B. Nielsen), J. M. Weber  
“On the Photoabsorption by Permanganate Ions in Vacuo and the Role of a Single Water Molecule.  
New Experimental Benchmarks for Electronic Structure Theory”  
ChemPhysChem **14** (2013) 1133 – 1137 (featured on journal cover).
58. B. J. Knurr, (Anne B. McCoy), J. M. Weber  
“Vibrationally induced charge transfer in a bimolecular model complex *in vacuo*”  
J. Chem. Phys. **138** (2013) 224301 (6 pages).
59. B. J. Knurr, J. M. Weber  
“Solvent-Mediated Reduction of Carbon Dioxide in Anionic Complexes with Silver Atoms”  
J. Phys. Chem. A **117** (2013) 10764 – 10771.

60. S. H. Kaufman, J. M. Weber, (M. Pernpointner),  
“Electronic structure and UV spectrum of hexachloroplatinate dianions in vacuo”  
J. Chem. Phys. **139** (2013) art. no. 194310 (10 pages).
61. B. J. Knurr, J. M. Weber  
“Infrared Spectra and Structures of Anionic Complexes of Cobalt with Carbon Dioxide Ligands”  
J. Phys. Chem. A **118** (2014) 4056 – 4062.
62. B. J. Knurr, J. M. Weber  
“Interaction of Nickel with Carbon Dioxide in  $[\text{Ni}(\text{CO}_2)_n]^-$  Clusters Studied by Infrared Spectroscopy”  
J. Phys. Chem. A, **118** (2014) 8753 – 8757.
63. S. H. Kaufman, J. M. Weber  
“Photodissociation Spectroscopy of the Anionic Copper Nitrate Association Complex  $\text{Cu}(\text{NO}_3)_3^-$ ”  
J. Phys. Chem. A **118** (2014) 9687 – 9691.
64. J. M. Weber  
“The interaction of negative charge with carbon dioxide - insight into solvation, speciation and reductive activation from cluster studies”  
Int. Rev. Phys. Chem. **33** (2014) 489 – 519.
65. B. J. Knurr, J. M. Weber  
“Structural Diversity of Copper-CO<sub>2</sub> Complexes: Infrared Spectra and Structures of  $[\text{Cu}(\text{CO}_2)_n]^-$  Clusters”  
J. Phys. Chem. A **118** (2014) 10246 – 10251.
66. (C. Skinnerup Byskov), J. M. Weber, (S. Brøndsted Nielsen)  
“Gas-phase spectroscopy of singly reduced tris(bipyridine)ruthenium ions,  $\text{Ru}(\text{bipy})_3^+$ ”  
Phys. Chem. Chem. Phys. **17** (2015) 5561 – 5564.
67. B. J. Knurr, J. M. Weber  
“Structures of  $[\text{CoO}(\text{CO}_2)_n]^-$  and  $[\text{NiO}(\text{CO}_2)_n]^-$  Clusters Studied by Infrared Spectroscopy”  
J. Phys. Chem. A **119** (2015) 843 – 850.
68. M. C. Thompson, (J. H. Baraban), (D. A. Matthews), (J. F. Stanton), J. M. Weber  
“Heavy atom vibrational modes and low-energy vibrational autodetachment in nitromethane anions”  
J. Chem. Phys. **142** (2015) art. no. 234304 (6 pages).
69. S. Xu, (S. Gozem), C. R. Christopher, (A. I. Krylov), J. M. Weber  
“Ligand Influence on the Electronic Spectra of Monocationic Copper-Bipyridine Complexes”  
Phys. Chem. Chem. Phys. **17** (2015) 31938 – 31946.
70. S. Xu, J. M. Weber  
“Absorption Spectrum of a Ru(II)-Aquo Complex in Vacuo: Resolving Individual Charge Transfer Transitions”  
J. Phys. Chem. A **119** (2015) 11509 – 11513.

71. M. C. Thompson, J. M. Weber  
“Infrared spectroscopic studies on the cluster size dependence of charge carrier structure in nitrous oxide cluster anions”  
J. Chem. Phys. **144** (2016) art. no. 104302 (7 pages).
72. S. Xu, J. E.T. Smith, J. M. Weber  
“Ligand Influence on the Electronic Spectra of Dicationic Ruthenium-Bipyridine-Terpyridine Complexes”  
J. Phys. Chem. A, **120** (2016) 2350 – 2356.
73. S. Xu, J. E.T. Smith, J. M. Weber  
“The electronic spectrum of cryogenic ruthenium-tris-bipyridine dications *in vacuo*”  
J. Chem. Phys. **145** (2016) art. no. 024304 (6 pages).
74. S. Xu, J. E.T. Smith, J. M. Weber  
“Hydration of a Binding Site With Restricted Access: Solvatochromic Shift of the Electronic Spectrum of a Ruthenium Polypyridine Complex, One Molecule at a Time”  
J. Phys. Chem. A **120** (2016) 7650 – 7658.
75. M. C. Thompson, J. Ramsay, J. M. Weber  
“Solvent-Driven Reductive Activation of CO<sub>2</sub> by Bi: Switching From Metalloformate Complexes to Oxalate Products”  
Angew. Chem. Int. Ed. **55** (2016) 15171 – 15174, featured on inside cover.  
German Translation: “Solvens-induzierte reduktive Aktivierung von CO<sub>2</sub> durch Bismut und Änderung des Reaktionsprodukts von Metalloformiat nach Oxalat”  
Angew. Chem. **128** (2016) 15396 – 15399.
76. S. Xu, J. E.T. Smith, J. M. Weber  
“UV Spectra of Tris(2,2'-bipyridine)-M(II) Complex Ions in Vacuo (M = Mn, Fe, Co, Ni, Cu, Zn)”  
Inorg. Chem. **55** (2016) 11937 – 11943.
77. M.C. Thompson, J. M. Weber  
“Enhancement of infrared activity by moving electrons through bonds – The case of CO<sub>2</sub> anion and carboxylate”  
Chem. Phys. Lett. **683** (2017) 586 – 590; Corrigendum: Chem. Phys. Lett. **702** (2018) 117.
78. M. C. Thompson, Leah G. Dodson, J. M. Weber  
“Structural Motifs of [Fe(CO<sub>2</sub>)<sub>n</sub>]<sup>-</sup> Clusters (*n* = 3 – 7)”  
J. Phys. Chem. A **121** (2017) 4132 – 4138.
79. S. Xu, J. E. T. Smith, (S. Gozem), (A. I. Krylov), J. M. Weber  
“Electronic Spectra of Tris(2,2'-Bipyridine)-M(II) Complex Ions in Vacuo (M = Fe and Os)”  
Inorg. Chem. **56** (2017) 7029 – 7037.
80. M. C. Thompson, J. Ramsay, J. M. Weber  
“Interaction of CO<sub>2</sub> with Atomic Manganese in the Presence of an Excess Negative Charge Probed by Infrared Spectroscopy of [Mn(CO<sub>2</sub>)<sub>n</sub>]<sup>-</sup> Clusters”  
J. Phys. Chem. A **121** (2017) 7534 – 7542.

81. L. G. Dodson, M. C. Thompson, J. M. Weber  
"Titanium Insertion into CO Bonds in Anionic Ti-CO<sub>2</sub> Complexes"  
J. Phys. Chem. A **122** (2018) 2983–2991.
82. M. C. Thompson, J. M. Weber  
"Infrared Photodissociation Spectra of [Sn(CO<sub>2</sub>)<sub>n</sub>]<sup>-</sup> Cluster Ions"  
J. Phys. Chem. A **122** (2018) 3772–3779.
83. L. G. Dodson, M. C. Thompson, J. M. Weber  
"Characterization of Intermediate Oxidation States in CO<sub>2</sub> Activation"  
Annu. Rev. Phys. Chem. **69** (2018) 231–252.
84. J. C. Beimborn II, (L. M. G. Hall), (P. Tongying), (G. Dukovic), J. M. Weber, "Pressure Response of Photoluminescence in Cesium Lead Iodide Perovskite Nanocrystals"  
J. Phys. Chem. C **122** (2018) 11024–11030.
85. L. G. Dodson, M. C. Thompson, J. M. Weber  
"Interactions of Molecular Titanium Oxides TiO<sub>x</sub> (x = 1–3) with Carbon Dioxide in Cluster Anions"  
J. Phys. Chem. A **122** (2018) 6909–6917.
86. W. Zagorec-Marks, L. G. Dodson, J. E. T. Smith, S. Xu, J. M. Weber  
"Intrinsic photophysics of nitrophenolate ions studied by cryogenic ion spectroscopy"  
Phys. Chem. Chem. Phys. **20** (2018) 28535–28543.
87. C. L. Adams, K. Hansen, J. M. Weber  
"Vibrational Autodetachment from Anionic Nitroalkane Chains - From Molecular Signatures to Thermionic Emission"  
J. Phys. Chem. A **123** (2019) 8562 - 8570.
88. W. Zagorec-Marks, M. M. Foreman, J. R. R. Verlet, J. M. Weber  
"Cryogenic Ion Spectroscopy of the Green Fluorescent Protein Chromophore in Vacuo"  
J. Phys. Chem. Lett. **10** (2019) 7817 - 7822.
89. W. Zagorec-Marks, M. M. Foreman, J. R. R. Verlet, J. M. Weber, "Probing the Microsolvation Environment of the Green Fluorescent Protein Chromophore in Vacuo", J. Phys. Chem. Lett. **11** (2020) 1940-1946.
90. J. C. Beimborn II, L. R. Walther, K. D. Wilson, J. M. Weber, "Size-Dependent Pressure-Response of the Photoluminescence of CsPbBr<sub>3</sub> Nanocrystals", J. Phys. Chem. Lett. **11** (2020) 1975-1980.
91. J. C. Beimborn II, W. Zagorec-Marks, J. M. Weber, "Spectroscopy of Resonant Intermediate States for Triplet-Triplet Annihilation Upconversion in Crystalline Rubrene – Radical Ions as Sensitizers", J. Phys. Chem. Lett. **11** (2020) 7212-7217
92. W. Zagorec-Marks, M. M. Foreman, J. M. Weber "Tag-Free, Temperature Dependent Infrared Spectra of the GFP Chromophore – Revisiting the Question of Isomerism", J. Phys. Chem. A, **124** (2020) 7827–7831
93. W. Zagorec-Marks, J. E. T. Smith, M. M. Foreman, S. Sharma, J. M. Weber, "Intrinsic Electronic Spectra of Cryogenically Prepared Protoporphyrin IX Ions in Vacuo – Deprotonation-Induced Stark Shifts" Phys. Chem. Chem. Phys. **22** (2020) 20295-20302.

94. M. M. Foreman, R. J. Hirsch, J. M. Weber, “Effects of Formate Binding to a Bipyridine-Based Cobalt-4N Complex”, *J. Phys. Chem. A* **125** (2021) 7297–7302.
95. W. Zagorec-Marks, L. G. Dodson, P. Weis, E. K. Schneider, M. M. Kappes, J. M. Weber, “Intrinsic Structure and Electronic Spectrum of Deprotonated Biliverdin: Cryogenic Ion Spectroscopy and Ion Mobility”, *J. Am. Chem. Soc* **143** (2021) 17778–17785.

## 7.2. Book Chapters (editorial review only)

1. J. Mathias Weber, Jesse Marcum, (S. B. Nielsen)  
“UV Photophysics of DNA and RNA Nucleotides in Vacuo: Dissociation Channels, Time Scales, and Electronic Spectra”, in “Photophysics of Ionic Biochromophores” (S. Brøndsted Nielsen, J. A. Wyer, eds.), pp. 181-207, Springer-Verlag, Berlin Heidelberg, 2013
2. J. Mathias Weber  
“Gas Phase Chemistry of Gold”, in “The Chemistry of Organogold Compounds” (Zvi Rappoport, Ilan Marek, Joel Liebman, eds.), John Wiley and Sons, Chichester, UK, 2014, pp. 41–56

## 7.3. Other Articles (not peer-reviewed):

1. J. Kreil, J. M. Weber, D. Klar, A. Schramm, M.-W. Ruf, H. Hotop  
”Attachment of Very Slow Electrons to Molecules and Clusters”  
Symp. Atomic, Cluster and Surface Physics 1994 Contributions pp. 339-342 (T. D. Märk, R. Schrittwieser, D. Smith, eds.) Maria Alm, Austria, 20-26 March 1994
2. H. Hotop, D. Klar, J. Kreil, M.-W. Ruf, A. Schramm, J. M. Weber  
”Studies of Low Energy Electron Collisions at Sub-meV Resolution”  
in ”The Physics of Electronic and Atomic Collisions“, Proc. 19th ICPEAC, Whistler, Canada, 26 July - 1 August 1995, Eds: L. J. Dubé, J. B. A. Mitchell, J. W. McConcey, C. E. Brion, AIP Conference Proceedings **360** (1995) AIP Press, New York
3. J. M. Weber, K. Ueda, J. Kreil, M.-W. Ruf and H. Hotop  
”High-Resolution Laser Spectroscopy and Multichannel Quantum Defect Analysis on Odd Rydberg Levels of  $^{40}\text{Ar}$ ”  
XIX ICPEAC, Whistler, British Columbia, Canada, 26 July - 1 August 1995, Abstracts of Contributed Papers, p. 648 ( J. B. A Mitchell, J. W. McConcey, C. E. Brion, eds.)
4. E. Leber, I. I. Fabrikant, J. M. Weber, M.-W. Ruf, H. Hotop  
”Resonance and Threshold Phenomena in Electron Attachment to Molecules and Clusters”  
Proc. 4<sup>th</sup> Int. Conf. on Diss. Recombination: Theory, Experiment, and Applications, June 16 - 20, 1999, Nässlingen (Sweden), World Scientific, Singapore
5. E. Leber, J. M. Weber, I. I. Fabrikant, A. Gopalan, S. Barsotti, M.-W. Ruf, H. Hotop  
”Vibrational Feshbach Resonances in Electron Attachment to Molecular Clusters”  
XXI ICPEAC, Sendai, Japan, 1999, Abstracts of Contributed Papers
6. E. Leber, J. M. Weber, S. Barsotti, M.-W. Ruf, H. Hotop  
”Narrow Vibrational Feshbach Resonances in Low-Energy Electron Attachment to Molecular

Clusters”, Int. Symposium on Electron-Molecule Collisions and Swarms, July 18 – 20, 1999, Koto-ku, Tokyo, Japan, Contributed Papers

7. E. A. Woronowicz, A. R. Keimowitz, G. H. Weddle, J. M. Weber, M. A. Johnson  
“Observation of resonant two-photon photodetachment of water cluster anions via femtosecond photoelectron spectroscopy”. Abst. Pap. Am. Chem. Soc. 222: 217 Part 2 (PHYS) 2001
8. J. M. Weber, O. T. Ehrler, (F. Furche), M. M. Kappes  
"Photoelectron spectroscopy of gas phase fullerene dianions"  
Abst. Pap. Am. Chem. Soc. **227**: 215 Part 2 (PHYS) 2004.
9. J. M. Weber, H. Schneider, K. M. Vogelhuber  
“Interaction of water with extended anionic charge distributions”  
Abst. Pap. Am. Chem. Soc. **234**: 242-PHYS, 2007.
10. J. M. Weber  
“One Ring to Rule Them All”, JILA: Light & Matter, Winter 2008, 6 – 7
11. J. M. Weber  
Infrared spectroscopic probes of molecular interactions in anionic complexes and clusters  
Abst. Pap. Am. Chem. Soc. **236**: 48-PHYS, 2008
12. J. M. Weber  
“Low-energy photoelectron spectroscopy of nitroalkane anions”  
Abst. Pap. Am. Chem. Soc. **238**: 291-PHYS, 2009
13. J. C. Marcum, J. M. Weber  
“Electronic photodissociation spectra and decay pathways of gas-phase  $\text{IrBr}_6^{2-}$ ”  
Abst. Pap. Am. Chem. Soc. **239**: 397-PHYS, 2010
14. J. C. Marcum, S. H. Kaufman, J. M. Weber  
“Exploring the photoreduction of Au(III) complexes in the gas-phase”  
Abst. Pap. Am. Chem. Soc. **240**: 72-AEI, 2010

## 8. Invited Talks

1. “Anlagerung langsamer Elektronen an Moleküle und Cluster”, Conference of the German Science Foundation on Molecular Clusters, Niederpöcking, Germany, June 1998
2. “Resonanzen und Schwelleneffekte bei der Anlagerung langsamer Elektronen an Moleküle und Cluster“, Seminar, Department of Physics, University of Freiburg, Germany, Jan. 1999
3. “Anlagerung langsamer Elektronen an Moleküle und Cluster“, Main Talk, DPG Spring Meeting, Heidelberg, Germany, March 1999
4. “Attachment of slow electrons to molecules and clusters“, Physical Chemistry Graduate Student Seminar, Yale University, New Haven, CT, USA, April 1999

5. "Anlagerung langsamer Elektronen an Moleküle und Cluster", Award Winner's Talk on the occasion of receiving the Wolfgang-Paul-Award of the Deutsche Gesellschaft für Massenspektrometrie (DGMS), 32. DGMS Conference, Carl-von-Ossietsky-University, Oldenburg, Germany, May 1999
6. "Attachment of slow electrons to molecules and clusters at very high resolution", Gordon Research Conference on Photoions, Photoionization, and Photodetachment, Plymouth, NH, USA, July 1999
7. "Ions on the Rocks: Infrarotspektroskopie an kalten hydratisierten Anionen in der Gasphase", Physical Chemistry Group Seminar (Prof. Dr. F. Merkt) at the ETH Zürich, Switzerland, Nov. 1999
8. "Ions on the Rocks: Infrarotspektroskopie an kalten hydratisierten Anionen in der Gasphase", Special Seminar of the Research Group "Low Energy Electron Collisions", University of Kaiserslautern, Germany, Nov. 1999
9. "Ions on the Rocks: IR-Spektroskopie an kalten Clusteranionen in der Gasphase", Physical Chemistry Group Seminar (Prof. Dr. B. Brutschy) at the Johann-Wolfgang-Goethe-University, Frankfurt / Main, Germany, April 2000
10. "Ions on the Rocks: IR-Spektroskopie an kalten Clusteranionen in der Gasphase", Physical Chemistry Group Seminar (Prof. Dr. M. M. Kappes), University of Karlsruhe, April 2000
11. "Infrarotspektroskopie an kalten molekularen Clusteranionen", Clustersymposium 2001, Herzogenhorn, Germany, Oct. 2001
12. "Ions on the Rocks: Infrarotspektroskopie an kalten anionischen Clustern in der Gasphase", Group Seminar (Prof. Dr. Drs. h. c. H. Schwarz), Technical University of Berlin, Germany, April 2002
13. "Experiments on multiply-charged anions in the gas phase", Workshop of the Research Group "Low Energy Electron Collisions", University of Kaiserslautern, Germany, April 2003
14. "Photoelectron spectroscopy of gas phase fullerene dianions", National Meeting of the American Chemical Society, Anaheim, CA, USA, April 2004
15. "Photoelectron spectroscopy of isolated multiply negatively charged oligonucleotides", Molecules of Biological Interest in the Gas Phase, Exeter, United Kingdom, April 2004
16. "Experiments on Isolated Multiply Charged Anions", Institut für Physikalische Chemie, Universität Heidelberg, Germany, April 2004
17. "Untersuchungen an negativen Ionen: Photoelektronen-Spektroskopie und Infrarot-Spektroskopie", Physical Chemistry Seminar, University of Kaiserslautern, Germany, May 2004
18. "Laserspektroskopie an isolierten Ionen – Von kleinen Aggregaten und großen Molekülen", Physics Colloquium, Johann-Wolfgang-Goethe Universität Frankfurt, Germany, Nov. 2004
19. "Laserspektroskopie an negativen Clusterionen – Strukturaufklärung molekularer Aggregate", Special Colloquium in Physics, Technische Universität Berlin, Germany, Dec. 2004
20. "Infrared Spectra of Molecular Cluster Anions", Special Symposium in Physical Chemistry, Yale University, New Haven, CT, USA, Dec. 2004

21. "Laser Spectroscopy of Ions – Small Aggregates and Large Molecules", Special Colloquium, JILA and Department of Chemistry and Biochemistry, University of Colorado, Boulder, CO, USA, Dec. 2004
22. "Infrarot-Spektroskopie an negativ geladenen Ion-Molekül-Komplexen und Cluster-Anionen", Physikalisch-Chemisches Kolloquium, University of Karlsruhe, Germany, May 2005
23. "Infrarot-Spektroskopie an negativ geladenen Ion-Molekül-Komplexen und Cluster-Anionen", Physikalisch-Chemisches Kolloquium, University of Marburg, Germany, June 2005
24. "Infrarot-Spektroskopie an negativ geladenen Ion-Molekül-Komplexen und Cluster-Anionen", Physikalisch-Chemisches Kolloquium, Johann-Wolfgang-Goethe-Universität, Frankfurt am Main, Germany, July 2005
25. "Photoelectron spectroscopy of isolated multiply negatively charged oligonucleotides", Low Energy Electron-Molecule Interaction, Smolenice, Slovakia, Oct. 2005
26. "Photodetachment from doubly charged anions – from small molecules to nanoparticles", Gordon Research Conference on Photoions, Photoionization, and Photodetachment, Ventura, CA, USA, Feb. 2006
27. "Infrared spectroscopy of gas-phase anions", OSEP Seminar Series, JILA, University of Colorado, Boulder, CO, USA, March 2006
28. "Gas phase experiments on nucleotides", Department of Pharmacology, University of Colorado Health Sciences Center, Aurora, CO, USA, Sept. 2006
29. "Probing the molecular structure of ions by photodissociation spectroscopy", New Laser Scientists Conference, Rochester, New NY, USA, Oct. 2006
30. "Good vibrations – Infrared spectroscopy of anions by photodissociation and photodetachment", AMOP Seminar, Department of Physics, University of Nebraska, Lincoln, NE, USA, Nov. 2006
31. "Infrared spectroscopy of anions by photodissociation and photodetachment", Workshop "Horizons in Vibrational Spectroscopy with Free Electron Lasers", Ringberg, Germany, Feb. 2007
32. "Infrared spectroscopy of anions by photodissociation and photodetachment", Workshop "Vibrational Dynamics", Telluride, CO, USA, Aug. 2007
33. "Good vibrations – Infrared spectroscopy of anions by photodissociation and photodetachment", Physical Chemistry Colloquium, University of Texas at Austin, TX, USA, Sept. 2007
34. "Infrared spectroscopic probes of molecular interactions in anionic complexes and clusters", National Meeting of the American Chemical Society, Philadelphia, PA, USA, Aug. 2008
35. "Gas Phase Ion Spectroscopy - Clusters, Chains, and Biomolecules", Workshop of the Physical & Chemical Graduate School Göttingen and the Dahlem Research School of Molecular Science, Berlin, Germany, Sept. 2008



36. "Vibrational Autodetachment in Molecular Anions", Control of Molecular Processes Induced by Electrons and Photons, Rome, Italy, Oct. 2008
37. "Ion spectroscopy of small and "large" molecules", Physical Chemistry Colloquium, University of Notre Dame, Notre Dame, IN, USA, Feb. 2009
38. "Infrared spectroscopy of cluster anions", Gordon Research Conference on Gaseous Ions, Galveston, TX, USA, March 2009
39. "Ion spectroscopy of small and "large" molecules" Physical Chemistry Colloquium, Colorado State University, Fort Collins, CO, USA, April 2009
40. "Ion spectroscopy of small and "large" molecules" Physical Chemistry Colloquium, University of Illinois, Urbana-Champaign, IL, USA, April 2009
41. "Ion spectroscopy of small and "large" molecules" Physical Chemistry Colloquium, University of Indiana, Bloomington, IN, USA, April 2009
42. "Ion spectroscopy of small and "large" molecules", Physical Chemistry Colloquium, Yale University, New Haven, CT, USA, May 2009
43. "Clusters", Introductory talk on cluster spectroscopy, Dynamics of Molecular Collisions Meeting, Snow Bird, UT, USA, July 2009
44. "Vibrational Autodetachment from Nitroalkane Anions", ACS National Meeting, Washington (DC), Aug. 2009
45. "Infrared and Photoelectron Spectroscopy of Anions", Physical Chemistry Colloquium, University of Nevada, Reno, NV, USA, Sept. 2009
46. "Infrared and Photoelectron Spectroscopy of Anions", Chemistry Colloquium, Baylor University, Waco, TX, USA, Oct. 2009
47. "Photoelectron Imaging Studies on Vibrational Autodetachment", Gordon Research Conference on Photoions, Photoionization & Photodetachment, Galveston, TX, USA, Feb. 2010
48. "Infrared spectroscopic probes of the hydration of large anionic charge distributions using clusters", 4<sup>th</sup> Jekyll Island Conference on Clusters and Nanostructures, Jekyll Island, GA, USA, Feb. 2010
49. "Infrared spectroscopic probes of the hydration of large anionic charge distributions using clusters", ACS National Meeting, San Francisco, CA, USA, March 2010
50. "Spectroscopic Probes of Molecular and Cluster Ions", Physical Chemistry Colloquium, Universität Würzburg, Germany, July 2010
51. "Photodissociation and Photoelectron Spectroscopy of Anions", Molecular Physics Seminar, Fritz-Haber-Institut, Berlin, Germany, July 2010

52. "Photodissociation and Photoelectron Spectroscopy of Anions", Molecular Physics Seminar, Aarhus University, Denmark, July 2010
53. "Solution chemistry of ions outside the beaker – Gas phase spectroscopy of anionic molecules and clusters", Physical Chemistry Colloquium, University of Southern California, Los Angeles, CA, USA, Oct. 2010
54. "Solution chemistry of ions outside the beaker – Gas phase spectroscopy of anionic molecules and clusters", Physical Chemistry Colloquium, University of Utah, Salt Lake City, UT, Oct. 2010
55. "Solution chemistry of ions outside the beaker – Gas phase spectroscopy of anionic molecules and clusters", Physical Chemistry Colloquium, University of Pennsylvania, Philadelphia, PA, USA, Oct. 2010
56. "The molecular picture – Vibrational and electronic processes studied by gas phase ion spectroscopy", Physical Chemistry Colloquium, University of British Columbia, Vancouver, BC, Canada, Oct. 2010
57. "Solution chemistry of ions outside the beaker – Gas phase spectroscopy of anionic molecules and clusters", Physical Chemistry Colloquium, University of California, Berkeley, CA, USA, Oct. 2010
58. "Solution chemistry of ions outside the beaker – Gas phase spectroscopy of anionic molecules and clusters", Chemistry Colloquium, University of Kentucky, Lexington, KY, Oct. 2010
59. "Solution chemistry of ions outside the beaker – Gas phase spectroscopy of anionic molecules and clusters", Physical Chemistry Colloquium, University of California, Santa Barbara, CA, USA, Nov. 2010
60. "Solution chemistry of ions outside the beaker – Gas phase spectroscopy of anionic molecules and clusters", Physical Chemistry Colloquium, The Ohio State University, Columbus, OH, USA, Nov. 2010
61. "Solution chemistry of ions outside the beaker – Gas phase spectroscopy of anionic molecules and clusters", Physical Chemistry Colloquium, Brown University, Providence, RI, USA, Dec. 2010
62. "UV Response of Nucleotide Ions in the Gas Phase", Astrobiology Seminar, University of Colorado, Boulder, CO, USA, Jan. 2011
63. "Spectroscopy of Hydrogen Bonded Clusters", Gordon Research Conference on Gaseous Ions, Introductory Talk for Session on Clusters, Galveston, TX, USA, Feb. 2011
64. "Vibrational autodetachment: Intramolecular vibrational relaxation to electronic motion", 4th International Workshop on Electrostatic Storage Devices (ESD 2011), Gatlinburg, TN, USA, June 2011
65. "Gas Phase Studies of Ion-Solvent Interactions – Water Networks, Ion Reactivity and Photochemistry", Special Colloquium, Department of Chemistry & Biochemistry, University of Colorado at Boulder, CO, Oct. 2011

66. "Light-triggered reactions in small molecular ions", Physical Chemistry Colloquium, Johns Hopkins University, Baltimore, MD, USA, Nov. 2011
67. "Vibrational Spectroscopy of Cluster Anions", 59th Western Spectroscopy Association Meeting, Asilomar, CA, USA, Jan. 2012
68. "Vibrational Spectroscopy of Cluster Anions", Gordon Research Conference on Molecular and Ionic Clusters, Ventura, CA, USA, Jan. 2012
69. "Vibrational activation of electron emission and transfer", Telluride Workshop "Spectroscopy and Dynamics on Multiple Potential Energy Surfaces," Telluride, CO, USA, July 2012
70. "Charge redistribution and charge transfer reactions in clusters", Gordon Research Conference on Vibrational Spectroscopy, Biddeford, MN, USA, Aug. 2012
71. "Fragile Electronic States - Detaching Weakly Bound Electrons from Molecular Anions", Atomic, Molecular and Optical Physics Seminar, Aarhus University, Denmark, Sept. 2012
72. "Good Vibrations – Spectroscopy of Ion-Molecule Complexes and Clusters", Chemistry Colloquium, University of Copenhagen, Denmark, Sept. 2012
73. "Transition Metal Complexes *In Vacuo*", Chemistry Seminar, Washington University, St. Louis, MO, USA, Nov. 2012
74. "Molecular Level Insight into the Chemistry of Transition Metal Complexes – Spectroscopy of Mass-Selected Clusters in Vacuo", University of Wisconsin, Madison, WI, USA, April 2013
75. "Solvent-Driven Reductive Activation of CO<sub>2</sub> by Gold and Silver Anions", International Conference on Chemical Bonding, Kauai, HI, USA, July 2013
76. "Effects of Solvation on Transition Metal Complexes", Physical Chemistry Colloquium, Universität Kaiserslautern, Germany, July 2013
77. "Vibrationally Triggered Autodetachment and Electron Transfer from Nitroalkane Anions" Gordon Research Conference on Photoionization and Photodetachment, Galveston, TX, USA, February 2014
78. "Anionic Transition Metal Complexes with CO<sub>2</sub>", Telluride Workshop "Spectroscopy and Dynamics on Multiple Potential Energy Surfaces," Telluride, CO, USA, July 2014
79. "Photodissociation of Mass-Selected Ions – Spectroscopy and Fragmentation Channels" - 24th Winter I-APS Conference, Lido Beach Resort, Sarasota, FL, USA, January 2015
80. "Molecular Level Insight into the Chemistry of Transition Metal Complexes – Spectroscopy of Mass-Selected Ions *in Vacuo*", Hebrew University, Jerusalem, Israel, February 2015
81. "Solvation Effects on Structure and Charge Distribution in Anionic Clusters", March Meeting of the American Physical Society, San Antonio, TX, USA, March 2015
82. "Molecular Level Insight into the Chemistry of Transition Metal Complexes – Spectroscopy of Mass-Selected Ions *in Vacuo*", Hiroshima University, Japan, June 2015

83. "Trap-Aided Spectroscopy of Transition Metal Complexes", 6th International Workshop on Electrostatic Storage Devices, Tokyo, Japan, June 2015
84. "Infrared spectroscopy of metal-CO<sub>2</sub> complexes – Candidates for large amplitude vibrations?" ACS National Meeting, San Diego, CA, USA, March 2016
85. "Molecular Level Insight into the Chemistry of Transition Metal Complexes – Spectroscopy of Mass-Selected Ions *in Vacuo*", Universität Würzburg, Würzburg, Germany, July 2016
86. "Molecular Level Insight into the Chemistry of Transition Metal Complexes – Spectroscopy of Mass-Selected Ions *in Vacuo*", University of Florida, Gainesville, FL, USA, November 2016
87. "Effects of excited state dynamics on the linewidth of electronic spectra of large molecular ions", Workshop From Ultrafast to Ultraslow Dynamics in Molecules and Clusters, Weizmann Institute of Science, Rehovot, Israel, January 2017
88. "Molecular Level Insight into the Chemistry of Transition Metal Complexes and Catalysis – Spectroscopy of Mass-Selected Ions in Vacuo", Frontiers in Physical Chemistry Lecture, Department of Chemistry, University of Wyoming, Laramie, WY, USA, March 2017
89. "UV Photofragmentation of Nucleotides ... and Others", Workshop Photophysics of Biomolecular Ions, Telluride, CO, USA, July 2017
90. "Metal-Ligand Motifs in Metal-CO<sub>2</sub> Cluster Anions", Gordon Research Conference on Molecular & Ionic Clusters, Barga, Italy, February 2018
91. "Molecular Level Insight into the Chemistry of Transition Metal Complexes - Spectroscopy of Mass Selected Ions", Wilhelm-Ostwald-Institut, Universität Leipzig, Leipzig, Germany, June 2018
92. "Molecular Level Insight into the Chemical Physics of Ions – Spectroscopy of Mass Selected Ions in Vacuo", Institut für Ionenphysik, Universität Innsbruck, Innsbruck, Austria, June 2018
93. "Molecular Level Insight into the Chemistry of Transition Metal Complexes - Spectroscopy of Mass Selected Ions", Fritz-Haber-Institut, Berlin, Germany, June 2018
94. "Interaction of CO<sub>2</sub> with transition metal atoms – from models for CO<sub>2</sub> reduction catalysis to metal-organic complexes", Gordon Research Conference on Molecular Interactions, Stone Hill College, Easton, MA, USA, July 2018
95. "Electronic Spectra of Ionic Molecules and Complexes Prepared in a Cryogenic Ion Trap", Gordon Research Conference on Gaseous Ions, Ventura, CA, USA, February 2019
96. "Electronic and Vibrational Information on Solution Species from Cryogenic Ion Spectroscopy", National Meeting of the American Chemical Society, Orlando, FL, USA, April 2019
97. "Cryogenic Ion Spectroscopy of Biochromophores", Tokyo Institute of Technology, Yokohama, Japan, October 2019
98. "Cryogenic Ion Spectroscopy of Biochromophores", Karlsruhe Institute of Technology, Karlsruhe, Germany, November 2019

99. "Cryogenic Ion Spectroscopy of Biochromophores", Radboud University, Nijmegen, Netherlands, November 2019
100. "Cryogenic Ion Spectroscopy of Phenolate Chromophores, University of Colorado, Boulder, CO, USA, October 2020

## 9. Teaching Experience

*Entries in Italics pertain to teaching experience before joining the University of Colorado*

### Classes:

- *Advanced Physical Chemistry Laboratory Class in Physical Chemistry, including Student's Seminar (University of Karlsruhe, Winter 2001 – Summer 2003, 4 semesters). At the end of my time coaching this class, I headed a committee improving the content, procedures and grading concepts of the Student's Seminar.*
- *Molecular Spectroscopy II (University of Karlsruhe, special class for advanced chemistry students, 2 hours per week, Summer 2004; this class had not been taught previously)*
- *Molecular Spectroscopy I (University of Karlsruhe, regular class for advanced chemistry students, 2 hours per week, 1<sup>st</sup> half of Winter 2005/06)*
- CHEM 1134: General Chemistry 2 Laboratory (Freshman/Sophomore Undergraduate Level, University of Colorado, 1 credit hour, Fall 2020)
- CHEM 4511: Physical Chemistry 1 (Junior/Senior Undergraduate Level, University of Colorado, 3 credit hours, Spring 2015, Fall 2016, Fall 2017)
- CHEM 4531: Physical Chemistry 2 (Junior/Senior Undergraduate Level, University of Colorado, 3 credit hours, Spring 2007, Spring 2008, Spring 2010, Spring 2011, Fall 2011)
- CHEM 4581/4591: Physical Chemistry Laboratory I and II (Undergraduate Level, University of Colorado, 3 credit hours, Spring 2013, Spring 2016, Fall 2018)
- CHEM 5501 and CHEM 6411: Advanced Topics in Physical Chemistry (Graduate Level, University of Colorado, 3 credit hours, Fall 2009, team-taught with Prof. David Nesbitt in Fall 2010)
- CHEM 5581: Graduate Level Introductory Quantum Chemistry (University of Colorado, 3 credit hours, Fall 2006, Fall 2007, Fall 2008, Fall 2014, Fall 2015)
- CHEM 5591: Advanced Molecular Spectroscopy (Graduate Level, University of Colorado, 3 credit hours, Spring 2012, Spring 2013, Spring 2014, Spring 2018, Spring 2019, Spring 2020, Spring 2021)
- CHEM 6401: Physical Chemistry Seminar (Graduate Level Seminar, University of Colorado, 3 credit hours, Fall 2008, Spring 2009, Fall 2016, Spring 2017)

### Coaching Students:

- *Coaching Diplom Students during my PhD work, University of Kaiserslautern (Pascal Marinkovic, Jürgen Bömmels)*
- *Undergraduate Students (University of Karlsruhe): Oliver Ehrler (2001/02), Dimitri Rappoport (2002), Andreas Reisinger (2001/02), Holger Schneider (2002-2004), Daniel Löffler (2003), Katia Berndt (2003/04), Anne Lechtken (2003/04)*
- *Diplom Students (University of Karlsruhe): Alexia Schweizer (2001/02), Oliver Ehrler (2002), Holger Schneider (2004), Katia Matheis (2005)*
- *Graduate Students (University of Karlsruhe): Alexia Glöß (nee Schweizer, 04/2002 – 12/2005), Oliver Ehrler (10/2002 – 12/2005), Holger Schneider (01/2005 – 12/2005, continued at CU Boulder)*

- Undergraduate Students in Independent Study (University of Colorado, 11 total): Elisabeth C. Holick (nee Saenim) (Fall 2007), Florian Schinle (visiting undergraduate student from the University of Karlsruhe, Fall 2007), Allan Wun (Spring 2008), Amit Halevi (Spring and Summer 2008), Robert D. Warner, (Fall 2008), Eric A. Pozzi (Summer 2009-Summer 2011), Grant G. Gogul (Fall 2010-Spring 2012), Caitlin E. Majlinger (Spring 2011 – Spring 2012), Luke Long (Spring 2013-Fall 2015), Martin Meissner (Jan – March 2014), Kenneth D. Wilson (Summer 2018- Summer 2020), Patrick Yehle (Spring/Fall 2019), Luke Walther (Spring/Fall 2019)
- Graduate Students (University of Colorado, 15 total): Holger Schneider (01/2005 – 12/2008, transferred from University of Karlsruhe, PhD 2008), Jesse Marcum (01/2006 – 05/2011, PhD 2011), Kristen M. Vogelhuber (Rotation Student, Fall 2006), Christopher L. Adams (11/2006 – 07/2011, PhD 2011), Sydney H. Lienemann (nee Kaufman, 11/2008-07/2013, PhD 2013), Benjamin J. Knurr (11/2009–12/2014, PhD 2014), Casey Christopher (11/2010 – 05/2013, MS 2013), Dennis B. Rahbek (Visiting Student, 09/2011 – 12/2011), Shuang Xu (08/2012 – 12/2016, PhD 2016), Michael C. Thompson (12/2013 – 05/2018), James E. T. Smith (12/2014 – 12/2016), Jacob S. Ramsay (visiting graduate student, 01/2015 – 05/2015), J. Curtis Beimborn (05/2015 – 11/2020, PhD 2020), Liang-Chun Lin (12/2016-12/2017), Wyatt Zagorec-Marks (12/2016 – 05/2021), Madison Foreman (since 12/2018), Rebecca Hirsch (12/2018 – 08/2021), Heinrich Salzmann (since 12/2020), Lane Terry (since 12/2021).

### **Postdoctoral Associates**

- Dr. Leah G. Dodson (08/2016 – 06/2019)

## 10. Service

### Current Departmental Committees

- Department of Chemistry
  - Chair of the Committee for Disbursement of Instructional Fees of the Departments of Chemistry & Biochemistry since Fall 2016
  - Chair of Undergraduate Scholastic Committee
  - Executive Committee of the Department of Chemistry since July 2020
  - Physical Chemistry Division Coordinator since Fall 2020
  - Member of Undergraduate Curriculum Committee
  - Several Personnel Committees
- JILA:
  - Chemical Safety Advisor since Fall 2010
  - Fellow Advisor for JILA Instrument Shop since 2021
- Chemical Physics Graduate Program Committee since Fall 2014
- Thesis Committees, Comprehensive Exam Committees, Graduate Student Progress Committees

### Conference Organization:

- Co-Organizer of Workshop on Photo Physics of Biomolecules, July 2017 in Telluride, CO
- Co-Chair of Gordon Research Conference on Molecular & Ionic Clusters, January 2016, Ventura, CA (with Prof. Otto Dopfer, TU Berlin)
- Member of the International Advisory Committee for International Symposium on Molecular Spectroscopy July 2015 – July 2018
- Co-Chair of the Workshop “Defining New Directions in Cold Chemical Physics”, July 2015, Boulder, CO, USA (with Prof. Heather Lewandowski, CU Boulder)
- Co-Chair of 2<sup>nd</sup> US-Israeli Kavli Frontiers of Science Symposium, Feb. 2015, Jerusalem, Israel (with Prof. Eran Rabani, Tel Aviv University)
- Vice Chair of Gordon Research Conference on Molecular & Ionic Clusters, April 2014, Barga, Italy
- Organizing Team for First US-Israeli Kavli Frontiers of Science Symposium, June 2013, Irvine, CA, USA
- Co-Organizer of Symposium “Electrons in Biomolecules” at National Meeting of the American Chemical Society, 08/2010, Boston, MA (with Prof. Jack Simons, Univ. of Utah)

### Journals

- Reviewer for Journal of Physical Chemistry A, Journal of Physical Chemistry Letters, Journal of Chemical Physics, Journal of the American Chemical Society, Chemical Physics Letters, ChemPhysChem, International Journal of Mass Spectrometry, Physical Chemistry Chemical Physics, Angewandte Chemie International Edition, Rapid Communications in Mass Spectrometry, Journal of Molecular Spectroscopy, Journal of Chemical Theory and Computation, Journal of Organic Chemistry, Topics in Catalysis, Chemistry – A European Journal, Science Advances
- Member of Advisory Editorial Board for Chemical Physics Letters (Jan. 1, 2013 – April 30, 2018)



**Reviewer for Funding Agencies**

- Department of Energy
- National Science Foundation
- Petroleum Research Fund of the American Chemical Society