

Curriculum Vitae

Dr. Cosmin Lupulescu

Personal Data:

Present address: Berlin, Germany
Citizenship: Romanian
Marital status: Married, one child
Birth Date, Place: 12.09.1974 in Lugoj, Romania



Academic Degrees:

- 2004 "Doktor der Naturwissenschaften" (Dr. rer. nat.) in Physics, Freie Universität Berlin, Germany
1999 "Master of Science" at West University, Timisoara,
1997 Physics degree at West University, Timisoara, Romania

Professional Background:

- 2009 - Senior Researcher at Helmholtz Zentrum für Materialien und Energie Berlin
2007-2008 Research Assistant, Institut für Experimentalphysik, Freie Universität Berlin, Germany
2005- 2007 Postdoc at Laboratoire de Spectrométrie Ionique et Moléculaire, Université Claude Bernard Lyon 1, France
2004–2005 Postdoc at BESSY synchrotron radiation facility in Berlin
2000-2004 PhD, Institut für Experimentalphysik, Freie Universität Berlin, Germany

Research Interests:

Photoelectron Spectroscopy,
Mass Spectrometry,
Matrix-Assisted Laser Desorption and Ionization,
Two-dimensional (polarizability vs. mass) mapping of free molecules
Molecular Beams (Electric Deflection of neutrals and ions)
Time-resolved Phenomena in Gas Phase and Condensed Matter
Coherent Control with Shaped Femtosecond Laser Pulses

Teaching:

- 2007 Laboratory course work (Grundpraktikum I and II, F-Praktikum), Fachbereich Physik, Freie Universität Berlin

2000-2006 Laboratory course work, practical exercises and supervision/guidance of master students and visiting PhD students, Laboratoire de Spectrométrie Ionique et Moléculaire Université Claude Bernard Lyon 1 and Institut für Experimentalphysik, Freie Universität Berlin, Germany

1997-1998 Physics and Chemistry teacher; Bârna secondary school, Romania

Patents:

1. U. S. Patent No. 7276103 (Method and device for separating molecules having different excitation spectra)

2. Patent pending, Germany DE000010336057A1 (Verfahren und Vorrichtung zur Trennung von Molekülen mit unterschiedlichen Anregungsspektren)

Awards:

2006 Prize "Post-doctorand" awarded by Association des Amis de l'Université de Lyon

2005 German Research Foundation (Deutsche Forschungsgemeinschaft) scholarship

2000-2001 Daimler-Benz PhD scholarship

1998 Erasmus/Sokrates European mobility scholarship

Publications

35. J. M. Wichmann, C. Lupulescu, L. Wöste and A. Lindinger, *Matrix-Assisted Laser Desorption/Ionization by Using Femtosecond Laser Pulses in the Near-Infrared Wavelength Regime*, Rapid Comm. in Mass Spectrom. **23** (2009), 1105.

34. J. Wichmann, C. Lupulescu, L. Wöste and A. Lindinger, *Matrix-Assisted Laser Desorption/Ionization of Potassium adapted Angiotensine II using Femtosecond Laser Pulses*, Eur. Phys J. D **52** (2009), 151.

33. H. A. Dürr , C. Stamm , T. Kachel , N. Pontius , R. Mitzner , T. Quast , K. Holldack , S. Khan , C. Lupulescu , E. F. Aziz , M. Wietstruk , and W. Eberhardt, *Ultrafast Electron and Spin Dynamics in Nickel Probed with Femtosecond X-Ray Pulses*, IEEE Transactions on Magnetics, **44**, (2008), 1957.

32. C. Stamm, T. Kachel, N. Pontius, R. Mitzner, T. Quast, K. Holldack, S. Khan, C. Lupulescu, E.F. Aziz, M. Wietstruk, H.A. Dürr, W. Eberhardt, *Femtosecond modification of electron localization and transfer of angular momentum in Ni*, Nature Materials, **6** (2007) 740.

31. C. Lupulescu, M. Abd El Rahim, R. Antoine, M. Barbaire, M. Broyer, X. Dagany, J. Maurelli, D. Rayane, and Ph. Dugourd, *Multi-sample Matrix-Assisted Laser Desorption Source for Molecular Beams of Neutral Peptides*, Rev. Sci. Instrum. **77** (2006), 125102.

30. A. Lindinger, S. M. Weber, C. Lupulescu, F. Vetter, M. Plewicky, A. Merli, L. Wöste, A. Bartelt, H. Rabitz, *Revealing Spectral Field Features and Mechanistic Insights by Control Pulse Cleaning*, Phys. Rev. A **71** (2005), 013419.

29. A. Lindinger, C. Lupulescu, F. Vetter, M. Plewicky, S. M. Weber, A. Merli and L. Wöste,

Learning from the Acquired Optimal Pulse Shapes About the Isotope Selective Ionization of Potassium Dimers, J. Chem. Phys. **122** (2005), 024312.

28. A. Lindinger, A. Bartelt, C. Lupulescu, M. Plewicki, and L. Wöste, *Learning About Clusters by Teaching Lasers to Control Them*, in Latest Advances in Atomic Cluster Collisions, Proceedings of the International Symposium on Atomic Cluster Collisions (ISACC) 2003, Saint Petersburg, Russia, ed. J. P. Connerade and A.V. Solov'yov, World Scientific, 2004, ISBN 1-86094-495-7.

27. A. Lindinger, C. Lupulescu, J. Le Roux, A. Bartelt, S. Vajda et L. Wöste, *Contrôle cohérent de la dynamique de fragmentation d'agrégats alcalins*, J. Phys. IV France **119** (2004) 57.

26. S. M. Weber, A. Lindinger, M. Plewicki, C. Lupulescu, F. Vetter, and L. Wöste, *Temporal and Spectral Optimization Course Analysis of Coherent Control Experiments*, Chem. Phys. **306** (2004), 287.

25. A. Lindinger, F. Vetter, C. Lupulescu, M. Plewicki, S. M. Weber, A. Merli, and L. Wöste, *Selective Ionization via Different Electronic Pathways by Optimal Control Demonstrated for $^{23}\text{Na}^{39}\text{K} / ^{23}\text{Na}^{41}\text{K}$* , Chem. Phys. Lett. **397** (2004), 123.

24. A. Lindinger, C. Lupulescu, M. Plewicki, F. Vetter, A. Merli, S. M. Weber, and L. Wöste, *Isotope Selective Ionization by Optimal Control Using Shaped fs-Laser Pulses*, Phys. Rev. Lett. **93** (2004), 033001.

23. A. Lindinger, M. Plewicki, S. M. Weber, C. Lupulescu, and L. Wöste, *Spectral Modification of White Light by Means of fs-Pulses Optimized in Closed Learning Loops*, Optica Applicata **34** (2004), 341.

22. C. Lupulescu, S. Vajda, A. Lindinger, A. Merli, and L. Wöste, *Femtosecond Investigations on the Ultrafast Photo-dissociation Dynamics of $\text{CpMn}(\text{CO})_3$ and its Fragment Ions*, Phys. Chem. Chem. Phys. **6** (2004), 3420.

21. B. Schäfer-Bung, R. Mitric, V. Bonacic-Koutecky, A. Bartelt, C. Lupulescu, A. Lindinger, S. Vajda, S. M. Weber, L. Wöste, *Optimal Control of Ionization Process in NaK: Comparison between Theory and Experiment*, J. Phys. Chem. A **108** (2004), 4175.

20. A. Lindinger, C. Lupulescu, M. Plewicki, F. Vetter, S. M. Weber, A. Merli, and L. Wöste, *Closed Loop Optimization of the Ionization Process in NaK: Learning from the Optimal Pulse Shapes*, in Femtochemistry and Femtobiology: Ultrafast Molecular Events in Molecular Science, ed. M. Martin and J. T. Hynes, Elsevier, Amsterdam, 2004, ISBN 0-444-51656-5, page 111.

19. C. Lupulescu, A. Lindinger, A. Merli, M. Plewicki, and L. Wöste, *Free Phase Optimization of $\text{CpMn}(\text{CO})_2^+$ as a Fragment of $\text{CpMn}(\text{CO})_3$ by Means of Shaped Femtosecond Laser Pulses*, in Femtochemistry and Femtobiology: Ultrafast Molecular Events in Molecular Science, ed. M. Martin and J. T. Hynes, Elsevier, Amsterdam, 2004, ISBN 0-444-51656-5, page 123.

18. A. Bartelt, A. Lindinger, C. Lupulescu, S. Vajda, L. Wöste, *Optimal Control of Multi-photon Dissociation and Ionization Processes in Small Na_nK_n Clusters*, Phys. Chem. Chem. Phys. **6** (2004), 1679.

17. A. Lindinger, A. Bartelt, C. Lupulescu, S. Vajda, and L. Wöste, *Optimal Control on Multi-photon Ionization Dynamics of Small Alkali Aggregates*, Proceedings of SPIE Vol. 5258 IV Workshop on Atomic and Molecular Physics, ed. Jozef Heldt, Bellingham, WA, 2003, page 25.

16. C. Lupulescu, A. Lindinger, M. Plewicki, S. M. Weber, and L. Wöste, *Frequency-dependent Optimization of the Ionization Process in NaK by Means of fs-Light Pulses*, Chem. Phys. **296** (2004), 63.

15. A. Bartelt, A. Lindinger, C. Lupulescu, S. Vajda, and L. Wöste, *One Parameter fs-Pulse Form Control on NaK and Na_2K* , Phys. Chem. Chem. Phys. **5** (2003), 3610.

14. A. Lindinger, C. Lupulescu, A. Bartelt, S. Vajda, and L. Wöste, *Coherent Control of Alkali Cluster Fragmentation Dynamics*, *Spectrochimica Acta Part B* **58** (2003), 1109 .
13. C. Daniel, J. Full, L. González, C. Lupulescu, J. Manz, A. Merli, S. Vajda, L. Wöste, *Deciphering the Reaction Dynamics Underlying Optimal Control Laser Fields*, *Science* **299** (2003), 536.
12. S. Vajda, A. Bartelt, C. Lupulescu, and L. Wöste, *Femtosecond Spectroscopy on Metal Clusters*, in *Progress in Experimental and Theoretical studies of Clusters (Advanced Series in Physical Chemistry)*, ed. T. Kondow and F. Mafune, World Scientific Publishing, Singapore, ISBN 981-02-3893-2, 2003.
11. C. Lupulescu, S. Vajda, A. Lindinger, A. Merli, and L. Wöste, *Femtosecond Pump&Probe Experiments on Non-Stoichiometric Sodium-Fluoride Clusters: I. First Direct Observation of Periodical Structural Changes in Na₂F*, *Eur. Phys. J. D* **24** (2003), 173.
10. S. Vajda, C. Lupulescu, A. Lindinger, A. Merli, and L. Wöste, *Control of Photoinduced Processes by Optimally Shaped Laser Pulses in MnCp(CO)₃: Recovering the Information Content Coded in the Optimal Pulse Form*, in *Ultrafast Phenomena XIII: Proceedings of the 13th International Conference, Vancouver, Bc, Canada, May 12-17, 2002*, ed. R.J.D. Miller, M.M. Murnane, N.F. Scherer, and A.M. Weiner, Springer Verlag, Chemical Physics Series 71, ISBN 3-540-00089-5, April 2003.
9. S. Vajda, C. Lupulescu, A. Merli, F. Budzyn, L. Wöste, M. Hartmann, J. Pittner, V. Bonacic-Koutecky, *Observation and Theoretical Description of Periodic Geometric Rearrangement in Electronically Excited Non-Stoichiometric Sodium-Fluoride Clusters*, *Phys. Rev. Lett.* **89** (2002), 213404.
8. S. Vajda, C. Lupulescu, A. Bartelt, F. Budzyn, P. Rosendo-Francisco and L. Wöste, *Controlling the Vibration and Dissociation Dynamics in Triatomic Alkaline Clusters*, in *Femtochemistry and Femtobiology - Ultrafast Dynamics in Molecular Science*, ed. A. Douhal and J. Santamaria, World Scientific Publishing, Singapore, 2002, ISBN 981-02-4866-0, page 472.
7. A. Bartelt, C. Lupulescu, S. Vajda, and L. Wöste, *Feedback Control of Alkali Dimers with Sinusoidal Phase Modulated fs-Pulses: Can We Learn From the Acquired Pulse Shapes?*, in *Femtochemistry and Femtobiology - Ultrafast Dynamics in Molecular Science*, ed. A. Douhal and J. Santamaria, World Scientific Publishing, Singapore, 2002, ISBN 981-02-4866-0, page 481.
6. C. Lupulescu, P. Rosendo-Francisco, S. Vajda and L. Wöste, *Analysis and Feedback-Control of Ultrafast Fragmentation Processes in CpMn(CO)₃*, in *Femtochemistry and Femtobiology - Ultrafast Dynamics in Molecular Science*, ed. A. Douhal and J. Santamaria, World Scientific Publishing, Singapore, 2002, ISBN 981-02-4866-0, page 390.
5. A. Bartelt, S. Minemoto, C. Lupulescu, S. Vajda, and L. Wöste, *Control of Wavepacket Dynamics in Mixed Alkali Clusters by Optimally Shaped fs Pulses*, *Eur. Phys. J. D* **16** (2001), 127.
4. S. Vajda, P. Rosendo-Francisco, C. Kaposta, M. Krenz, C. Lupulescu, and L. Wöste, *Analysis and Control of Ultrafast Photodissociation Processes in Organometallic Molecules*, *Eur. Phys. J. D* **16** (2001), 161.
3. C. Daniel, J. Full, L. González, C. Kaposta, M. Krenz, C. Lupulescu, J. Manz, S. Minemoto, M. Oppel, P. Rosendo-Francisco, S. Vajda and L. Wöste, *Analysis and Control of Laser Induced Fragmentation Processes in CpMn(CO)₃*, *Chem. Phys.* **267** (2001), 247.
2. S. Vajda, A. Bartelt, E.-C. Kaposta, T. Leisner, C. Lupulescu, S. Minemoto, P. Rosendo-Francisco and L. Wöste, *Feedback Optimization of Shaped Femtosecond Laser Pulses for*

Controlling the Wavepacket Dynamics and Reactivity of Mixed Alkaline Clusters, Chem. Phys. **267** (2001), 231.

1. P. Rosendo-Francisco, C. Lupulescu, B. Baptist and S. Vajda, *Ultrafast Fragmentation and Vibrational Dynamics of Triatomic Hetero- and Homonuclear Alkali Metal Clusters*, in UPS '99 Special Issue of J. of Chin. Chem. Soc. **47** (2000), 705.