

Heike Wex

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Education & Employment:

- Oct. 1988 – July 1996 Study of Physics at the University of Giessen
- Aug. 1992 – Aug. 1993 Exchange Student at Rice University, Houston, Texas, USA
(Fulbright-stipend)
- April 1994 – May 1996 Diploma Student at the Institute for applied Physics (IAP), Giessen
July 1995 – Sept. 1995 Research internship at the Bulgarian Academy of Sciences (ISSP),
Sofia, Bulgaria
- Dec. 1995 – Feb. 1996 Realization of a feasibility study on the use of semiconductor gas
sensors in the detection of petrol and diesel contamination in soil
- April 1996 Diploma Thesis: “Charakterisierung von Oxidations-Katalysatoren
für die selektive Gassensorik“
- Nov. 1996 – Jan. 2002 PhD Student at the Institute for Tropospheric Research (IfT),
Leipzig
- Aug. 2001 PhD Thesis “Closure and Sensitivity Studies on Physical
Parameters of Rural Continental Aerosols”
- since Jan. 2002 Scientist at the IfT, engaged in the development and buildup
of and in experiments at the Leipzig Aerosol Cloud
Interaction Simulator LACIS

Below, you can find the following information:

Peer Reviewed Publications
Projects & Field Campaigns
Contributions to Conferences - Oral
Contributions to Conferences - Posters
Colloquia
Non-Peer-Reviewed Article

Peer Reviewed Publications

2010

Duplissy, J., et al. (2010), Results from the CERN pilot CLOUD experiment, *Aerosol Chem. Phys.*, 10, 1635-1647.

Henning, S., H. Wex, T. Hennig, A. Kiselev, J. Snider, D. Rose, U. Dusek, G. Frank, U. Pöschl, A. Kristensson, M. Bilde, R. Tillmann, A. Kiendler-Scharr, T. F. Mentel, S. Walter, J. Schneider, C. Wennrich, and F. Stratmann (2010), Soluble mass, hygroscopic growth and droplet activation during LExNo, *J. Geophys. Res.*, 115, D11206, doi:10.1029/2009JD012626.

Kiselev, A., C. Wennrich, F. Stratmann, H. Wex, S. Henning, T. F. Mentel, A. Kiendler-Scharr, J. Schneider, S. Walter, and I. Lieberwirth (2010), Morphological characterization of soot aerosol during LExNo, *J. Geophys. Res.*, 115, D11204, doi:10.1029/2009JD012635.

Niedermeier, D., S. Hartmann, R. A. Shaw, D. Covert, T. F. Mentel, J. Schneider, L. Poulain, P. Reitz, C. Spindler, T. Clauss, A. Kiselev, E. Hallbauer, H. Wex, K. Mildenerger, and F. Stratmann (2009), Immersion freezing of coated and uncoated mineral dust particles - measurements and parameterization, *Atmos. Chem. Phys.*, 10, 3601-3614.

Poulain, L., Z. Wu, M. D. Petters, H. Wex, E. Hallbauer, B. Wehner, A. Massling, S. M. Kreidenweis, and F. Stratmann (2010), Towards closing the gap between hygroscopic growth and CCN activation for secondary organic aerosols Part 3: Influence of the chemical composition on the hygroscopic properties and volatile fractions of aerosols, *Aerosol Chem. Phys.*, 10, 3775-3785.

Snider, J. R., H. Wex, D. Rose, A. Kristensson, F. Stratmann, T. Hennig, S. Henning, A. Kiselev, M. Bilde, M. Burkhardt, U. Dusek, G. Frank, A. Kiendler-Scharr, T. F. Mentel, M. D. Petters, U. Pöschl, and R. Tillmann (2010), Intercomparison of CCN and hygroscopic fraction measurements from LExNo, *J. Geophys. Res.*, 115, D11205, doi:10.1029/2009JD012618.

Stratmann, F., M. Bilde, U. Dusek, G. Frank, T. Hennig, S. Henning, A. Kiendler-Scharr, A. Kiselev, A. Kristensson, I. Lieberwirth, T. F. Mentel, U. Pöschl, D. Rose, J. Schneider, J. Snider, R. Tillmann, S. Walter, and H. Wex (2010), Examination of laboratory-generated coated soot particles: An overview over the LExNo campaign, *J. Geophys. Res.*, 115, D11203, doi:10.1029/2009JD012628.

Sullivan, R. C., M. D. Petters, P. J. DeMott, S. M. Kreidenweis, H. Wex, D. Niedermeier, S. Hartmann, T. Clauss, F. Stratmann, P. Reitz, , and J. Schneider (2010), Irreversible loss of ice nucleation active sites in mineral dust particles caused by sulphuric acid condensation, *Aerosol Chem. Phys. Discuss*, 10.

Wex, H., G. McFiggans, S. Henning, and F. Stratmann (2009), The influence of the external mixing state of atmospheric aerosol on derived CCN number concentrations, *Geophys. Res. Lett.*, 37, L10805, doi:10.1029/2010GL043337.

Wex, H., E. Fuentes, G. Tsagkogeorgas, J. Voigtlander, T. Clauss, A. Kiselev, D. Green, H. Coe, G. McFiggans, and F. Stratmann (2010), The influence of algal exudate on the hygroscopicity of sea spray particles, *Advances in Meteorology*, vol. 2010, Article ID 365131, doi:10.1155/2010/365131 (special issue: Marine Aerosol-Cloud-Climate Interaction).

2009

Laj, P., et al. (2009), Measuring atmospheric composition change, *Atmos. Environ.*, 43, 5351-5414.

Petters, M. D., H. Wex, C. M. Carrico, E. Hallbauer, A. Massling, G. R. McMeeking, L. Poulain, Z. Wu, S. M. Kreidenweis, and F. Stratmann (2009), Towards closing the gap between hygroscopic growth and activation for secondary organic aerosol - Part 2: Theoretical approaches, *Aerosol Chem. Phys.*, 9, 3999-4009.

Stratmann, F., O. Möhler, R. A. Shaw, and H. Wex (2009), Laboratory cloud simulation: Capabilities and future directions, Ernst Strüngmann Forum reports, Frankfurt, Germany.

Tuch, T. M., A. Haudek, T. Müller, A. Nowak, H. Wex, and A. Wiedensohler (2009), Design and performance of an automatic regenerating adsorption aerosol dryer for continuous operation at monitoring sites, *Atmos. Meas. Tech.*, 2, 417422.

Wex, H., M. D. Petters, C. M. Carrico, E. Hallbauer, A. Massling, G. R. McMeeking, L. Poulain, Z. Wu, S. M. Kreidenweis, and F. Stratmann (2009), Towards closing the gap between hygroscopic growth and

activation for secondary organic aerosol: Part 1 - Evidence from measurements, *Aerosol Chem. Phys.*, *9*, 3987-3997.

2008

Niedermeier, D., F. Stratmann, H. Wex, E. Brüggemann, A. Kislev, and J. Heintzenberg (2008), LACIS-measurements and parameterization of sea-salt particle hygroscopic growth and activation, *Atmos. Chem. Phys.*, *8*, 579-590.

Wex, H., F. Stratmann, D. Topping, and G. McFiggans (2008), The Kelvin versus the Raoult term in the Köhler equation, *J. Atmos. Sci.*, *65*, 4004-4016, doi:10.1175/2008JAS2720.1.

Wex, H., F. Stratmann, T. Hennig, D. Niedermeier, E. Nilsson, R. Ocskay, D. Rose, I. Salma, and M. Ziese (2008), The role of surface tension in connecting hygroscopic growth to activation for different particle types, *Environ. Res. Lett.*, *3*, doi:10.1088/1748-9326/3/3/035004.

Ziese, Z., H. Wex, E. Nilsson, I. Salma, R. Ocskay, T. Hennig, A. Massling, and F. Stratmann (2008), Hygroscopic growth and activation of HULIS particles: Experimental data and a new iterative parameterization scheme for complex aerosol particles, *Atmos. Chem. Phys.*, *8*, 1855-1866.

2007

Voigtländer, J., F. Stratmann, D. Niedermeier, H. Wex, and A. Kiselev (2007), Mass accommodation coefficient of water: A combined computational fluid dynamics and experimental data analysis, *J. Geophys. Res.*, *112*, D20208, doi:10.1029/2007JD008604.

Wex, H., T. Hennig, I. Salma, R. Ocskay, A. Kiselev, S. Henning, A. Massling, A. Wiedensohler, and F. Stratmann (2007), Hygroscopic growth and measured and modeled critical super-saturations of an atmospheric HULIS sample, *Geophys. Res. Lett.*, *34*, L02818, doi:10.1029/2006GL028260.

Wex, H., M. Ziese, A. Kiselev, S. Henning, and F. Stratmann (2007), Deliquescence and hygroscopic growth of succinic acid particles measured with LACIS, *Geophys. Res. Lett.*, *34*, L17810, doi:10.1029/2007GL030185.

2006

Wex, H., A. Kiselev, M. Ziese, and F. Stratmann (2006), Calibration of LACIS as a CCN detector and its use in measuring activation and hygroscopic growth of atmospheric aerosol particles, *Atmos. Chem. Phys.*, *6*, 4519-4527.

2005

Kiselev, A., H. Wex, F. Stratmann, A. Nadeev, and D. Karpushenko (2005), White-light optical particle spectrometer for in situ measurement of condensational growth of aerosol particles, *Appl. Opt.*, *44*(22), 4693-4701.

Wex, H., A. Kiselev, F. Stratmann, J. Zoboki, and F. Brechtel (2005), Measured and modeled equilibrium sizes of NaCl and (NH₄)₂SO₄ particles at relative humidities up to 99.1%, *J. Geophys. Res.*, *110*, D21212, doi:10.1029/2004JD005507.

2004

Stratmann, F., A. Kiselev, S. Wurzler, M. Wendisch, J. Heintzenberg, R. J. Charlson, K. Diehl, H. Wex, and S. Schmidt (2004), Laboratory studies and numerical simulations of cloud droplet formation under realistic super-saturation conditions, *J. Atmos. Oceanic Technol.*, *21*, 876-887.

2003

Heintzenberg, J., T. Tuch, B. Wehner, A. Wiedensohler, H. Wex, A. Ansmann, I. Mattis, D. Müller, M. Wendisch, S. Eckhardt, and A. Stohl (2003), Arctic haze over central Europe, *Tellus*, *55 B*, 796-807.

2002

Bundke, U., G. Hänel, H. Horvath, W. Kaller, S. Seidl, H. Wex, A. Wiedensohler, M. Wiegner, and V. Freudenthaler (2002), Aerosol optical properties during the Lindenberg Aerosol Characterization

Experiment (LACE 98), *J. Geophys. Res.*, *107*(D21), 8123, doi:10.1029/2000JD000188.

Ebert, M., S. Weinbruch, A. Rausch, G. Gorzawski, G. Helas, P. Hoffmann, and H. Wex (2002), The complex refractive index of aerosols during LACE 98 as derived from the analysis of individual particles, *J. Geophys. Res.*, *107*(D21), 8121, doi:10.1029/2000JD000195.

Formenti, P., T. Reiner, D. Sprung, M. O. Andreae, M. Wendisch, H. Wex, D. Kindred, K. Dewey, J. Kent, M. Tzourtziou, A. Vasaras, and C. Zerefos (2002), Staaarte-med 1998 summer airborne measurements over the Aegean sea, 1, aerosol particles and trace gases, *J. Geophys. Res.*, *107*(D21), 4450, doi:10.1029/2001JD1337.

Formenti, P., O. Boucher, T. Reiner, D. Sprung, M. O. Andreae, M. Wendisch, H. Wex, D. Kindred, M. Tzourtziou, A. Vasaras, and C. Zerefos (2002), Staaarte-med 1998 summer airborne measurements over the Aegean sea, 2, aerosol scattering and absorption, and radiative calculations, *J. Geophys. Res.*, *107*(D21), 4451, doi:10.1029/2001JD001336.

Neusüß, C., H. Wex, W. Birmili, A. Wiedensohler, C. Koziar, B. Busch, E. Brüggemann, T. Gnauk, M. Ebert, and D. S. Covert (2002), Characterization and parameterization of atmospheric aerosol number, mass, and chemical size distributions in central Europe, *J. Geophys. Res.*, *107*(D21), 8127, doi:10.1029/2001JD000514.

Wex, H., C. Neusüß, M. Wendisch, F. Stratmann, C. Koziar, A. Keil, A. Wiedensohler, and M. Ebert (2002), Particle scattering, backscattering, and absorption coefficients: An in-situ closure and sensitivity study, *J. Geophys. Res.*, *107*(D21), 8122, doi:10.1029/2000JD000234.

2001

Formenti, P., M. O. Andreae, T. W. Andreae, E. Galani, A. Vasaras, C. Zerefos, V. Amiridis, L. Orlovsky, A. Karnieli, M. Wendisch, H. Wex, B. N. Holben, M. W., and J. Lelieveld (2001), Aerosol optical properties and large-scale transport of air masses: observations at a coastal and a semiarid site in the eastern mediterranean during summer 1998, *J. Geophys. Res.*, *106*(D9), 9807–9826, doi:10.1029/2000JD900609.

2000

Neusüß, C., D. Weise, W. Birmili, H. Wex, A. Wiedensohler, and D. Covert (2000), Size-segregated chemical, gravimetric and number distribution-derived mass closure of the aerosol in sagres, portugal during ACE -2, *Tellus*, *52B*, 169–184.

Projects & Field Campaigns:

- 1996 Realization of MINT (Melpitz INTensive), an IfT intern measurement campaign within the scope of the PhD thesis
- 1998 Participation in LACE 98 (Lindenberg Aerosol Characterization Experiment)
- 2005 Organization and participation in LExNo (LACIS Experiment in November)
- 2007 Organization and participation in a project with Colorado State University examining SOA (Secondary Organic Aerosol)
- 2008 Participation in FROST 1 (Activation and Freezing of coated and uncoated Dust Particles)
- 2008 Organization and participation of measurements in collaboration with the University of California, Santa Cruz, comparing optical particle detectors
- 2008 Member of the organizing committee of the IfT Klausurtagung - lead during the final discussion
- 2009 Organization and leading scientist for FROST 2
- 2009 Organization of the first IfT internal workshop - topic: SOA
- 2009 Organization and leading scientist for a cooperation with University of Manchester examining algae-exudates
- 2009 Organization and participation of the 'First IfT summer-school on atmospheric aerosol and clouds'

Contributions to Conferences:

Oral Presentations

Wex, H., C. Neusüß, D. S. Covert, and A. Wiedensohler, In-situ closure studies on scattering coefficients and mass in the polluted continental boundary layer, *5th International Aerosol Conference (IAC 1998)*, 12. - 18. September 1998 in Edinburgh, Scotland, UK, *J. Aerosol Sci.*, 29, S1, 1261–1262.

Wex, H., C. Koziar, C. Neusüß, and A. Wiedensohler, In-situ closure studies on scattering and backscattering coefficients and their sensitivity, *European Aerosol Conference (EAC 1999)*, 6. - 10. September 1999 in Prag, Czech Republic, *J. Aerosol Sci.*, 30, S1, 481–482.

Wex, H., M. Wendisch, A. Keil, and A. Wiedensohler, Closure studies of optical relevant aerosol properties using aircraft and ground-based measurements, *European Aerosol Conference (EAC 1999)*, 6. - 10. September 1999 in Prag, Czech Republic, *J. Aerosol Sci.*, 30, S1, 439–440.

Wex, H., C. Koziar, C. Neusüß, A. Wiedensohler, and J. Heintzenberg, Sensitivity studies for closure studies on scattering and absorption coefficients, *European Aerosol Conference (EAC 2000)*, 3. - 8. September 2000 in Dublin, Ireland, *J. Aerosol Sci.*, 31, S1, 981–982.

Wex, H., A. Kiselev, F. Stratmann, K. Diehl, S. Wurzler, M. Wendisch, and J. Heintzenberg, Activation and growth of aerosol particles at atmospheric super-saturations: results from the Leipzig Aerosol Cloud Interaction Simulator (LACIS), *European Aerosol Conference (EAC 2003)*, 31. Aug. - 5. Sept. 2003 in Madrid, Spain, proceedings, 75–76.

Wex, H., A. Kiselev, F. Stratmann, and J. Heintzenberg, The Leipzig Aerosol Cloud Interaction Simulator LACIS: Description and recent results, *14th International Conference on Clouds and Precipitation (ICCP 2004)*, 19 - 23 July 2004 in Bologna, Italy, proceedings, 257–260.

Wex, H., A. Kiselev, R. Rinke, J. Zoboki, F. Stratmann, and J. Heintzenberg, Growth of salt particles at relative humidities up to 99.1%: Comparing measurements with simulations using different approaches for the osmotic coefficient, *European Aerosol Conference (EAC 2004)*, 6. - 10. September 2004 in Budapest, Hungary, proceedings, 9–10.

H. Wex, A. Kiselev, M. Ziese, T. Hennig, I. Salma, and F. Stratmann, Measurements of the deliquescence relative humidity of succinic acid and a CCN closure study for HULIS with LACIS, *EGU General Assembly (EGU 2006)*, 3 - 7 April 2006, Vienna, Austria.

Wex, H., T. Hennig, I. Salma, R. Ocskay, A. Kiselev, S. Henning, A. Massling, A. Wiedensohler, and F. Stratmann, A CCN-closure-study for HULIS aerosol, *7th International Aerosol Conference (IAC 2006)*, 11. - 15. September 2006, St. Paul, Minnesota, USA, proceedings, 1341–1342.

Wex, H., M. Ziese, A. Kiselev, S. Henning, and F. Stratmann, Measurements of the deliquescence and efflorescence of succinic acid particles with LACIS, *7th International Aerosol Conference (IAC 2006)*, 11. - 15. September 2006, St. Paul, Minnesota, USA, proceedings, 1019.

Wex, H., T. Hennig, D. Niedermeier, E. Nilsson, R. Ocskay, D. Rose, I. Salma, M. Ziese, and F. Stratmann, Influence of surface tension on the connection between hygroscopic growth and activation, *17th International Conference on Nucleation & Atmospheric Aerosols (ICNAA 2007)*, 13. - 17. August 2007, Galway, Ireland, proceedings, 556-560.

H. Wex, T. Hennig, S. M. Kreidenweis, D. Niedermeier, E. Nilsson, R. Ocskay, M. D. Petters, D. Rose, I. Salma, M. Ziese, and F. Stratmann, Connecting hygroscopicity to activation: Hygroscopic growth at high relative humidities, slightly soluble substances, and other effects, *15th International Conference on Clouds and Precipitation (ICCP 2008)*, 7 - 11 July 2008, Cancun, Mexico.

H. Wex, J. Burkhardt, T. Clauss, D. Covert, E. Hallbauer, S. Hartmann, R. Hitzenberger, A. Kiselev, Th. F. Mentel, K. Mildenerger, D. Niedermeier, L. Poulain, P. Reitz, J. Schmale, J. Schneider, S. Borrmann, R. Shaw, C. Spindler, F. Stratmann, FROST-I: freezing of coated and uncoated dust particles, *EGU General Assembly (EGU 2009)*, 20 - 24 April 2009, Vienna, Austria.

H. Wex, D. Niedermeier, S. Hartmann, J. Burkhardt, T. Clauss, D. Covert, E. Hallbauer, R. Hitzenberger, A. Kiselev, Th. F. Mentel, K. Mildenerger, L. Poulain, P. Reitz, J. Schmale, J. Schneider, S. Borrmann, R. Shaw, C. Spindler, F. Stratmann, FROST - FReezing Of duST, *Goldschmidt 2009*, 21 - 26 June 2009, Davos, Switzerland.

Contributions to Conferences: Posters

Wex, H., A. Kiselev, F. Stratmann, and J. Heintzenberg, The Leipzig Aerosol Cloud Interaction Simulator LACIS: Description and recent results, *14th International Conference on Clouds and Precipitation (ICCP 2004)*, 19 - 23 July 2004, Bologna, Italy, proceedings, 257–260.

Wex, H., A. Kiselev, M. Ziese, and F. Stratmann, Measurements of hygroscopic growth and activation of atmospheric aerosol with LACIS, *EGU General Assembly (EGU 2005)*, 25 - 29 April 2005, Vienna, Austria, Geophys. Res. Abs., 7, SRef-ID: 1607-7962/gra/EGU05-A-06251.

Wex, H., A. Kiselev, M. Ziese, F. Stratmann, and J. Heintzenberg, Measurements of the hygroscopic growth of atmospheric aerosol particles with diameters of 150 and 300 nm at 98% and 99% relative humidity, *European Aerosol Conference (EAC 2005)*, 29. Aug. - 2. Sept. 2005, Ghent, Belgium.

Wex, H., F. Stratmann, M. Bilde, U. Dusek, G. Frank, T. Hennig, S. Henning, A. Kiendler-Scharr, A. Kiselev, A. Kristensson, T. Mentel, D. Rose, J. Schneider, J. Snider, R. Tillmann, S. Walter, and C. Wennrich, LExNo - Hygroscopic growth and activation of laboratory-generated aerosol particles imitating combustion aerosols, *EGU General Assembly (EGU 2006)*, 3 - 7 April 2006, Vienna, Austria, Geophys. Res. Abs., 8, SRef-ID: 1607-7962/gra/EGU06-A-04325.

Wex, H., F. Stratmann, M. Bilde, U. Dusek, G. Frank, T. Hennig, S. Henning, A. Kiendler-Scharr, A. Kiselev, A. Kristensson, T. Mentel, D. Rose, J. Schneider, J. Snider, R. Tillmann, S. Walter, and C. Wennrich, Characterization, hygroscopic growth, and activation of laboratory-generated aerosol particles mimicking biomass-burning aerosols: The LExNo-campaign, *7th International Aerosol Conference (IAC 2006)*, 11. - 15. September 2006, St. Paul, Minnesota, USA, proceedings, 1181–1182.

Wex, H., F. Stratmann, M. Bilde, U. Dusek, G. Frank, T. Hennig, S. Henning, A. Kiendler-Scharr, A. Kiselev, A. Kristensson, T. Mentel, U. Pöschel, D. Rose, J. Schneider, J. Snider, R. Tillmann, S. Walter, and C. Wennrich, LExNo Hygroscopic Growth and Activation of Laboratory-generated Aerosol Particles Imitating Combustion Aerosols, *2nd ACCENT Symposium*, 23. - 27. July 2007, Urbino, Italy.

Wex, H., M. D. Petters, S. M. Kreidenweis, E. Hallbauer, and F. Stratmann, Towards closing the gap between hygroscopic growth and activation for secondary organic aerosol (SOA), *15th International Conference on Clouds and Precipitation (ICCP 2008)*, 7 - 11 July 2008, Cancun, Mexico.

Wex, H., E. Fuentes, G. Tsagkogeorgas, J. Voigtländer, T. Clauss, A. Kiselev, D. Green, H. Coe, G. McFiggans, and F. Stratmann, Hygroscopic growth and activation of particles containing algal exudate, *EGU General Assembly (EGU 2010)*, 02 - 07 May 2010, Vienna, Austria, Vol. 12, EGU2010-5164.

Colloquia

Aerosole in der Klimaforschung - Messtechniken und Qualitätssicherung
(FU-Berlin, 20. Jan. 1999)

Leipzig Aerosol Cloud Interaction Simulator LACIS: Prinzip und erste Messungen
(AIDA, Karlsruhe, 4. Dez. 2003)

Leipzig Aerosol Cloud Interaction Simulator LACIS: Aufbau und Experimente
(IfT, Leipzig, 6. April 2004)

A Big Open Issue in Climate Research: The Influence of Clouds on Global Climate!
(GAP 2006, University of Leipzig, Leipzig, 25. Mai 2006)

WOLKEN: die grossen Unbekannten im Klimageschehen, und wie sie mit dem Leipzig Aerosol Cloud Interaction Simulator (LACIS) untersucht werden
(Fachschaft Physik im Cusanuswerk, Fachschaftstagung 2006: Physik des Wetters, Bonn, 13. Okt 2006)

Wolken und Klima
(Wissenschaftscafe Freiberg im Pi-Haus, Freiberg, 29. März 2008)

Non-Peer-Reviewed Article

Der Stoff, aus dem die Wolken sind, (2006), GEO kompakt Nr. 9, Wetter und Klima,
Autor: Andreas Weber, fachliche Beratung: Heike Wex