

List of Publications

Books

P. Wagner, G. Reischl, G. Steiner (2014) **Einführung in die Physik 3., erweiterte Auflage**. Facultas Universitätsverlag, Wien

P. Wagner, G. Reischl, G. Steiner (2012) **Einführung in die Physik 2., neu bearbeitete Auflage**. Facultas Universitätsverlag, Wien

P. Wagner, G. Reischl, G. Steiner (2010) **Einführung in die Physik**. Facultas Universitätsverlag, Wien

Theses

G. Steiner (2011) **High Resolution Mobility Spectrometry of Molecular Ions and their Effect on the Charging Probabilities of Airborne Particles under Bipolar Diffusion Charging Conditions**. *Doctoral thesis, Faculty of Physics, University of Vienna, June 2011*

G. Steiner (2006) **Generierung von Nanopartikeln - Über die Konstruktion eines Heizdraht-Wolframoxidgenerators**. *Diploma thesis, Faculty of Physics, University of Vienna, March 2006*

Papers in Peer-Reviewed Journals

2014

G. Steiner, T. Jokinen, H. Junninen, M. Sipilä, T. Petäjä, D.R. Worsnop, G.P. Reischl and M. Kulmala (2014) **High-Resolution Mobility and Mass Spectrometry of Negative Ions Produced in an ²⁴¹Am Aerosol Charger**. *Aerosol Science & Technology*, **48**, 3, 261-270

A. Kürten, T. Jokinen, M. Simon, M. Sipilä, N. Sarnela, H. Junninen, A. Adamov, J. Almeida, A. Amorim, F. Bianchi, M. Breitenlechner, J. Dommen, N. M. Donahue, J. Duplissy, S. Ehrhart, R. C. Flagan, A. Franchin, J. Hakala, A. Hansel, M. Heinritzi, M. Hutterli, J. Kangasluoma, J. Kirkby, A. Laaksonen, K. Lehtipalo, M. Leiminger, V. Makhmutov, S. Mathot, A. Onnela, T. Petäjä, A. P. Praplan, M. P. Rissanen, L. Rondo, S. Schobesberger, J. H. Seinfeld, G. Steiner, A. Tomé, J. Tröstl⁵, P. M. Winkler, C. Williamson, D. Wimmer, P. Ye, U. Baltensperger, K. S. Carslaw, M. Kulmala, D. R. Worsnop and J. Curtius (2014) **Neutral molecular cluster formation of sulfuric acid-dimethylamine observed in real time under atmospheric conditions**. *PNAS*, **111**, 42, 15019-15025.

2012

G. Steiner and G.P. Reischl (2012) **The effect of carrier gas contaminants on the charging probability of aerosols under bipolar charging conditions**. *Journal of Aerosol Science*, **54**, 21-31

P. Kallinger, G. Steiner, W. W. Szymanski (2012) **Characterisation of four different bipolar charging devices for nanoparticle charge conditioning.** *Journal of Nanoparticle Research*, Vol. 14, 16.

P.M. Winkler, A.Vrtala, G. Steiner, D. Wimmer, H. Vehkamäki, K.E.J. Lehtinen, G.P. Reischl, M. Kulmala and P. E. Wagner (2012) **Quantitative characterization of critical nanoclusters nucleated on large single molecules,** *Physical Review Letters*, Vol.108, No.8

T. Borsós, D. Imná ová, V. Ždímal, J. Smolík, Z. Wágner, T. Weidinger, J. Burkart, G. Steiner, G. Reischl, R. Hitztenberger, J. Schwarz, I. Salma (2012) **Comparison of particulate number concentrations in three Central European capital cities.** *Science of the total Environment*. Vol. 433, 418-426.

2011

P.M. Winkler, G. Steiner, A. Vrtala, G.P. Reischl, M. Kulmala and P.E.Wagner (2011) **Unary and Binary Heterogeneous Nucleation of Organic Vapors on Monodisperse WO_x Seed Particles with Diameters Down to 1.4nm,** *Aerosol Science & Technology*, **45**, 4, 493-498

J. Burkart, G. Steiner, G. Reischl, R. Hitztenberger (2011) **Long-term study of cloud condensation nuclei (CCN) activation of the atmospheric aerosol in Vienna,** *Atmospheric Environment* **45**, 5751-5759

2010

G. Steiner, M. Attoui, D. Wimmer, G.P. Reischl (2010) **A Medium Flow, High Resolution Vienna DMA running in Recirculating Mode.** *Aerosol Science & Technology*, **44**, 4, 308-315

J. Burkart, G. Steiner, G.P. Reischl, H. Moshhammer, M. Neuberger, R. Hitztenberger (2010) **Characterizing the performance of two optical particle counters (GRIMM OPC1.108 and OPC1.109) under urban aerosol conditions,** *Journal of Aerosol Science* 2010, **41**, 953-962

2008

P.M. Winkler, G. Steiner, A. Vrtala, H. Vehkamäki, M. Noppel, K.E.J. Lehtinen, G.P. Reischl, P.E. Wagner, M. Kulmala (2008) **Heterogeneous nucleation experiments bridging the scale from molecular ion clusters to nanoparticles.** *Science*, **319**, 1374-1377

P.M. Winkler, A. Hienola, G. Steiner, G. Hill, A. Vrtala, G.P. Reischl, M. Kulmala, P.E. Wagner (2008) **Effects of seed particle size and composition on heterogeneous nucleation of nonane.** *Atmospheric Research*, **90**, 2-4

Conference Contributions

2014

G. Steiner, M. Attoui, M. Rissanen, J. Kangasluoma, T. Petäjä and M. Kulmala (2014) **Generation of calibration clusters.** *International Aerosol Conference 2014, BEXCO, Busan, Korea; 28.08.-02.09.2014*

C.Frege, F. Bianchi, J. Dommen, U. Molteni, H. Junninen, C. Yan, R. Wagner, J. Tröstl, G. Steiner, M. Simon, M. Gysel, U. Baltensperger and the CLOUD collaboration (2014) **Molecular Ion Composition of Highly Oxidized Organics at the CERN CLOUD chamber.** *International Aerosol Conference 2014, BEXCO, Busan, Korea; 28.08.-02.09.2014*

A. Wonaschütz, J. Burkart, A. Dematio, C. Dameto de Espana, R. Wagner, G. Reischl, G. Steiner, R. Hitzenger (2014) **On the importance of new particle formation events as a source for cloud condensation nuclei in an urban environment.** *AAAR 33rd Annual Conference (Oct. 20-24), Rosen Shingle Creek Resort, Orlando, Florida, USA*

A. Wonaschütz, J. Burkart, R. Wagner, G. Reischl, G. Steiner, and R. Hitzenger (2014) **New Particle Formation as a Source for Cloud Condensation Nuclei – an exploratory study,** *Geophysical Research Abstracts Vol. 16, EGU2014 15184, EGU General Assembly 2014, 27 Apr - 02 May, Vienna, Austria.*

2013

G. Steiner, J. Kangasluoma, M. Breitenlechner, E. Canaval, M. Sipilä, A. Hansel, M. Kulmala (2013) **Generation of negative ion mobility standards using tetra-alkyl ammonium halide salts.** *European Aerosol Conference 2013, Prague, Czech Republic; 01.09.-06.09.2013*

N. Zíková, T. Borsós, D. Timnáková, J. Smolík, Z. Wagner, T. Weidinger, J. Burkart, G. Steiner, G. Reischl, R. Hitzenger, J. Schwarz, I. Salma and V. Ždímal (2013) **Comparison of particle number size distributions in three Central European capital cities.** *European Aerosol Conference 2013, Prague, Czech Republic; 01.09.-06.09.2013*

A. Wonaschütz, J. Burkart, R. Haindl, J. Palmethofer, G. Reischl, G. Steiner, R. Wagner, R. Hitzenger (2013). **New particle formation in an urban atmosphere: seasonal dependence and influence of air mass origin.** *AAAR 32nd Annual Conference (Sept. 30 - Oct. 4), Oregon Convention Center, Portland, OR, USA.*

J. Burkart, G. Reischl, G. Steiner, H. Bauer, K. Leder, M. Kistler, H. Puxbaum, R. Hitzenger (2013) **CCN Activation of Ambient and Synthetic Ambient Urban Aerosol.** *19th International Conference on Nucleation and Atmospheric Aerosols, June 24-28, 2013, Fort Collins, CO, USA*

2012

P. Kallinger, G. Steiner, W. W. Szymanski (2012) **Comparison of the ion mobility spectra of four different bipolar chargers,** *AAAR 31st Annual Conference October 8-12, 2012, Hyatt Regency Minneapolis, Minneapolis, MN USA*

2011

G. Steiner, T. Jokinen, H. Junninen, M. Sipilä, G.P. Reischl, D.R. Worsnop and M. Kulmala (2011) **Simultaneous Mobility and Mass Determination of Ionic Molecular Clusters produced in a bipolar ^{241}Am Charger**, *European Aerosol Conference 2011, Manchester, UK; 04.09.-09.09.2011*

J. Burkart, R. Hitzemberger, G. Reischl, G. Steiner (2011) **Activation of "synthetic atmospheric aerosols" - relation to chemical composition of particles <100nm** *European Aerosol Conference 2011, Manchester, UK; 04.09.-09.09.2011*

P. Kallinger, G. Steiner, W. W. Szymanski (2011) **Investigation of charge conditioning of aerosols by means of soft x-ray and AC corona discharge devices.** *European Aerosol Conference 2011, Manchester, UK; 04.09.-09.09.2011*

2010

G. Steiner, G.P. Reischl (2010) **Growth of ionic molecular clusters produced by ionizing radiation in an ^{241}Am neutralizer during controlled humidification of the carrier gas**, *International Aerosol Conference IAC 2010, Helsinki, Finland 29.08.-03.09.2010*

P. Kallinger, G. Steiner, W.W. Szymanski (2010) **Humidity driven particle formation in a soft X-ray charger** *International Aerosol Conference IAC 2010, Helsinki, Finland 29.08.-03.09.2010*

A. Vrtala, P.M. Winkler, H. Vehkamäki, K.E.J. Lehtinen, G. Steiner, G.P. Reischl, M. Kulmala, P.E. Wagner (2010) **Experimental determination of critical cluster sizes from heterogeneous nucleation measurements using strictly monodisperse seed ion molecules**, *International Aerosol Conference IAC 2010, Helsinki, Finland 01.09.2010*

J. Burkart, R. Hitzemberger, G. Reischl, G. Steiner, H. Bauer, K. Leder, M. Rzaca, H. Puxbaum (2010) **Characteristics of CCN activation at an urban location Comparison between ambient and laboratory measurements**, *International Aerosol Conference IAC 2010, Helsinki, Finland 29.08.-03.09.2010*

J. Burkart, H. Moshhammer, M. Neuberger, G. Steiner, G. Reischl, R. Hitzemberger (2010) **Characterizing the performance of two optical particle counters (Grimm OPC1.108 and OPC1.109) at an urban aerosol measurement station**, *International Aerosol Conference IAC 2010, Helsinki, Finland 29.08.-03.09.2010*

2009

G. Steiner, D. Wimmer, G. Reischl (2009) **Formation of ionic molecular clusters in the presence of spurious gases in a bipolar charger.** *Proceedings of the 18th International Conference on Nucleation and Atmospheric Aerosols, Prague, Czech Republic 10.-14.08.2009* (J. Smolik and C. O'Dowd, Eds.), pp. 456-459, 2009

G. Steiner, D. Wimmer, G. Reischl (2009) **Formation of ionic molecular clusters in the presence of spurious gases in a bipolar charger.** *European Aerosol Conference 2009, Karlsruhe, Germany; 06.09.-11.09.2009, abstract T011A07*

G. Steiner, D. Wimmer, G.P. Reischl, E. Peteln, M. Vojta (2009) **Evaluation Of the Overall Particle Emission Reduction Efficiencies Of Commercially Available Laser Printer Filters** *European Aerosol Conference 2009, Karlsruhe, Germany; 06.09.-11.09.2009, abstract T108A05*

G. Steiner (2009) **High resolution ion mobility measurements and their application** *Air Ion and EUCAARI WP 1.1 Workshop, Helsinki, Finland 30.03.-03.04.2009*

D. Wimmer, G. Steiner, G.P. Reischl (2009) **Neutralization of Tetraalkylammonium Halide Clusters.** *European Aerosol Conference 2009, Karlsruhe, Germany; 06.09.-11.09.2009; abstract T063A03*

J. Burkart, G. Steiner, G. Reischl, R. Hitzenberger (2009) **A Long-Term Study of the Cloud Condensation Nuclei (CCN) Activation of the Atmospheric Aerosol in Vienna.** Proceedings of the 18th International Conference on Nucleation and Atmospheric Aerosols, *Prague, Czech Republic 10.-14.08.2009* (J. Smolik and C. O'Dowd, Eds.), pp. 824-827, 2009

J. Burkart, G. Steiner, G. Reischl, R. Hitzenberger (2009) **Cloud Condensation Nuclei (CCN) at an urban location.** *European Aerosol Conference 2009, Karlsruhe, Germany; 06.09.-11.09.2009, abstract T044A10*

J. Burkart, H. Moshhammer, M. Neuberger, G. Steiner, G. Reischl, R. Hitzenberger (2009) **Intercomparison of two types of portable optical particle counters (Grimm model 1.109 and 1.108) at an urban aerosol measurement station.** *European Aerosol Conference 2009, Karlsruhe, Germany; 06.09.-11.09.2009, abstract T094A02*

H Junninen, M. Ehn, K. Lehtipalo, G. Steiner, M. Sipilä, M. Attoui, D. Worsnop, M. Kulmala (2009) **Characterization of Charger Ions Using High Resolution DMA and Atmospheric Pressure Interface Time of Flight Mass Spectrometer (API-TOF-MS),** *28th Annual Conference of the American Association of Aerosol Research, Minneapolis, Minnesota, 26.-30.10.2009, abstract 1182*

2008

G. Steiner, G.P. Reischl, D. Wimmer and M. Attoui (2008) **A medium flow, high resolution DMA, running in closed loop**, *European Aerosol Conference, Thessaloniki, Greece, August 2008*, abstract: T04A009O

G. Steiner, M. Attoui, G.P. Reischl, D. Wimmer, M. Sipilä and M. Kulmala (2008) **High resolution mobility measurement of ionic molecular clusters**, *European Aerosol Conference, Thessaloniki, Greece, August 2008*, abstract: T03A050O

G. Steiner, M. Attoui, M. Sipilä, G.P. Reischl, D. Wimmer and M. Kulmala (2008) **Performance evaluation of the Grimm 7.860 W0x generator**, *European Aerosol Conference, Thessaloniki, Greece, August 2008*, abstract: T04A074P

D. Wimmer, G. Steiner, M. Attoui and G.P. Reischl (2008) **Generation of molecular clusters of pure solvents using an electro spray source**, *European Aerosol Conference, Thessaloniki, Greece, August 2008*, abstract: T07A023P

D. Wimmer, M. Attoui, G. Steiner, M. Sipilä and G.P. Reischl (2008) **Performance of different Faraday cup electrometers with high resolution electro mobility spectrometers** *European Aerosol Conference, Thessaloniki, Greece, August 2008*, abstract: T04A072P

M. Attoui, M. Sipilä, K. Lehtipalo, K. Neitola, G. Steiner and M. Kulmala (2008) **Generation of monodisperse and multicharged sub 10 nm PEGs particles**, *European Aerosol Conference, Thessaloniki, Greece, August 2008*, abstract: T01A009O

M. Attoui, H.E. Manninen, M. Sipilä, G. Steiner and M. Kulmala (2008) **Characterization of three commercialised λ -equivalent CPCs in the sub 10 nm range**, *European Aerosol Conference, Thessaloniki, Greece, August 2008*, abstract: T04A037P

M. Sipilä, M. Attoui, K. Lehtipalo, K. Neitola, G. Steiner and M. Kulmala (2008) **Effect of charge (up to +8e) on activation probabilities of sub-10 nm aerosol particles**, *European Aerosol Conference, Thessaloniki, Greece, August 2008*, abstract: T03A042P

J. Burkart, G. Steiner, G.P. Reischl and R. Hitzemberger (2008) **CCN measurements at an urban location – concentrations and activation diameters**, *European Aerosol Conference, Thessaloniki, Greece, August 2008*, abstract: T06A023P

2007

G. Steiner and G.P. Reischl (2007) **A stable nano-generator based on the sublimation of tungsten oxide**, *European Aerosol Conference, Salzburg, Austria, September 2007*, abstract: T09A015

G. Steiner, G.P. Reischl, D. Wimmer (2007) **Number Size Distribution of Ionic Clusters built by Ionizing Radiation in different Carrier Gases and Air/Vapour Mixtures**, *9th Finnish-Estonian Air Ions and Aerosol Workshop, Pühajärve, Estonia, 24.9-26.9.2007*

P.M. Winkler, G. Steiner, G.P. Reischl, A. Vrtala, and M. Kulmala (2007) **Condensation particle counting for particle diameters down to 1nm**, *European Aerosol Conference, Salzburg, Austria, September 2007*, abstract: T02A017

P.M. Winkler, G. Steiner, G.P. Reischl, A. Vrtala, P.E. Wagner, M. Kulmala (2007) **Experimental Observation of Heterogeneous Nucleation Probabilities for Ion-induced Nucleation**, *International Conference on Nucleation and Atmospheric Aerosols, Galway, Ireland, August 2007, Nucleation and Atmospheric Aerosols (C. O'Dowd, P.E. Wagner, Eds.; Springer), pp. 363-367, 2007*

P.M. Winkler, G. Steiner, G.P. Reischl, A. Vrtala, P.E. Wagner, M. Kulmala (2007) **The Effect of Seed Particle Charge on Heterogeneous Nucleation**, *International Conference on Nucleation and Atmospheric Aerosols, Galway, Ireland, August 2007, Nucleation and Atmospheric Aerosols (C. O'Dowd, P.E. Wagner, Eds.; Springer), pp. 358-362, 2007*

2006

P. M. Winkler, G. Steiner, G. P. Reischl, A. Vrtala, P. E. Wagner, A. Hienola, H. Vehkamäki, M. Kulmala (2006) **Experimental Study of Heterogeneous Nucleation on Charged and Uncharged Nanoclusters**, *Abstracts of the Second International Workshop 2006: Formation and Growth of Atmospheric Aerosols (P. McMurry, M. Kulmala, Eds.) Minneapolis, 2006.*

P. M. Winkler, G. Steiner, G. P. Reischl, A. Vrtala, P. E. Wagner, A. I. Gaman, H. Vehkamäki, M. Kulmala (2006) **Observation of Nucleation of Organic Vapours by Nanoparticles Already at Particle Sizes Well Below the Kelvin Prediction**, *Proceedings of the Seventh International Aerosol Conference (P. Biswas, D.-R. Chen, S. Hering, Eds.) p. 1615. St. Paul, 2006.*