

Curriculum vitae

Name

- Paul Martin Winkler

Education

- 6/1994 General qualification for university entrance at the Austrian St. George College Istanbul, Turkey
- 1995 – 2001 Study of meteorology at the University of Vienna, title of the master thesis: *The influence of ammonia on the heterogeneous nucleation of nanoparticles.*
- 8/2001 Graduation to Master of Sciences at the Faculty for Sciences and Mathematics of the University of Vienna.
- 2001 – 2004 Dissertation at the Institute for Experimental Physics, title of PhD thesis: *Experimental study of condensation processes in systems of water and organic vapors employing an expansion chamber.* Adviser: Prof. P. E. Wagner
- 6/2004 Graduation to PhD at the Faculty for Sciences and Mathematics of the University of Vienna. Opponent: Prof. M. Kulmala (University of Helsinki)

Professional appointments and scientific career

- 10/2001 – 7/2004 PhD student-researcher, employed by University of Helsinki.
- 8/2004 – 7/2007 Postdoc co-worker at project P16958-N02 sponsored by the Austrian Science Fund (FWF).
- 8/2007 – 8/2009 Postdoc co-worker at project P19546-N20 sponsored by the Austrian Science Fund (FWF).
- 9/2009 – 8/2012 Postdoctoral fellow at the National Center for Atmospheric Research (NCAR), Boulder, CO, USA.
- 9/2012 – 3/2013 Postdoctoral fellow at the University of Vienna.
- 3/2013 – 6/2014: Postdoc, employed by University of Vienna.
- 7/2014 – current: tenure track position at University of Vienna.
- 12/2014 Promotion to Assistant Professor

Current main areas of interest

- Heterogeneous nucleation processes
- Condensation processes
- Chemical characterization of nanoparticles
- Instrumentation development

International cooperations

- University of Helsinki: Cooperation with Prof. Markku Kulmala
- CERN/Geneva: Cosmics Leaving Outdoor Droplets CLOUD/CLOUD-ITN collaboration
- National Center for Atmospheric Research: Prof. James N. Smith
- University of Minnesota: Cooperation with Prof. Peter H. McMurry.
- Stockholm University: Cooperation with Prof. Ilona Riipinen

Top 5 Reviewing activities

- National Science Foundation
- Journal of Colloid and Interface Science
- Journal of Chemical Physics
- Geophysical Research Letters
- Proceedings of the National Academy of Sciences

Self-acquired Funding

- Postdoctoral Fellowship of the Advanced Study Program at the National Center for Atmospheric Research: Sum \$ 135.000,00, duration 24 months (September 2009 – August 2011)
- Erwin-Schrödinger-Fellowship of the Austrian Science Fund: Sum €79.760,00, duration 18 months (September 2011 – March 2013)
- European Research Council (ERC) Consolidator Grant: Sum €1.810.696,00, duration 5 years (March 2014 – March 2019)

Memberships in professional societies and committees

- Gesellschaft für Aerosolforschung (GAeF)
- American Association for Aerosol Research (AAAR)
- Chemisch-Physikalische Gesellschaft (CPG)
- Österreichische Meteorologische Gesellschaft (ÖMG)
- Member of the Committee on Nucleation and Atmospheric Aerosols (CNAA)

Awards

- Diploma thesis award sponsored by the NAWI-CLUB (Natural Sciences Club) of the University of Vienna (2002).
- Recognition award for Science sponsored by the State Government of Lower Austria (2010).
- Consolidator Grant awarded by the European Research Council (ERC) (2013).

Media appearance

- Der Standard, 6.4.2011, “Woher die Wolken kommen”
<http://derstandard.at/1301873936521/Geistesblitz-Woher-die-Wolken-kommen>
- Press release by the University of Vienna, 24.2.2012, „Die Entstehung von Nano-Tröpfchen“
<http://medienportal.univie.ac.at/presse/aktuelle-pressemeldungen/detailansicht/artikel/der-entstehung-von-nano-troepfchen-auf-der-spur/>
<http://science.orf.at/stories/1695048/>
<http://derstandard.at/1329870284312/Im-Labor-Die-Entstehung-von-Nano-Troepfchen>
<http://www.analytik-news.de/Presse/2012/126.html>
- Press release by the University of Vienna, 12.12.2013,
<http://medienportal.univie.ac.at/presse/aktuelle-pressemeldungen/detailansicht/artikel/erc-consolidator-grant-fuer-aerosolphysiker-paul-winkler/>
<http://www.uni-online.de/presse.php?id=566239>
<http://derstandard.at/1385170806860/Hoch-dotierter-EU-Foerderpreis-fuer-Wiener-Aerosolphysiker>

Other publications

- P. M. Winkler, “Planning career steps with a family”, NCAR Fellows News (February 2011)
http://www.asp.ucar.edu/asp_update/11/February-Newsletter.pdf

Vienna, 3rd December, 2014

List of Publications

A) Peer-reviewed Journals

- A1. L. Wind, L. Hofer, A. Nagy, P. Winkler, A. Vrtala, W.W. Szymanski, "Light scattering from droplets with inclusions and the impact on optical measurement of aerosols", *J. Aerosol Sci.*, **35**, 1173, (2004).
- A2. P. M. Winkler, A. Vrtala, P. E. Wagner, M. Kulmala, K. E. J. Lehtinen, T. Vesala, "Mass and Thermal Accommodation during Gas-Liquid Condensation of Water", *Phys. Rev. Lett.* **93**, 075701-1 (2004).
- A3. P. Davidovits, D. R. Worsnop, J. T. Jayne, C. E. Kolb, P. Winkler, A. Vrtala, P. E. Wagner, M. Kulmala, K. E. J. Lehtinen, T. Vesala, M. Mozurkewich, "Mass Accommodation Coefficient of Water Vapor on Liquid Water", *Geophys. Res. Lett.* **31**, L22111 (2004).
- A4. A. Laaksonen, T. Vesala, M. Kulmala, P. M. Winkler, P. E. Wagner, "Commentary on Cloud Modelling and the Mass Accommodation Coefficient of Water", *Atmos. Chem. Phys.* **5**, 461 (2005).
- A5. A. I. Gaman, I. Napari, P. M. Winkler, H. Vehkamäki, P. E. Wagner, R. Strey, Y. Viisanen, M. Kulmala, „Homogeneous Nucleation of n-Nonane and n-Propanol Mixtures. A Comparison of Classical Nucleation Theory and Experiments", *J. Chem. Phys.*, **123**, 244502 (2005).
- A6. P. M. Winkler, A. Vrtala, R. Rudolf, P. E. Wagner, I. Riipinen, T. Vesala, K. E. J. Lehtinen, Y. Viisanen, M. Kulmala, "Condensation of Water Vapor: Experimental Determination of Mass and Thermal Accommodation Coefficients", *J. Geophys. Res.* **111**, D19202, (2006).
- A7. A. I. Hienola, P. M. Winkler, P. E. Wagner, H. Vehkamäki, A. Lauri, I. Napari, M. Kulmala, „Estimation of Line Tension and Contact Angle from Heterogeneous Nucleation Experimental Data", *J. Chem. Phys.* **126**, 094705 (2007).
- A8. M. Kulmala, G. Mordas, T. Petäjä, T. Grönholm, P. P. Aalto, H. Vehkamäki, A. I. Hienola, E. Herrmann, M. Sipilä, I. Riipinen, H. E. Manninen, K. Hämeri, F. Stratmann, M. Bilde, P. M. Winkler, W. Birmili, P. E. Wagner, "The Condensation Particle Counter Battery (CPCB): A New Tool to Investigate the Activation Properties of Nanoparticles", *J. Aerosol Sci.*, **38**, 289-304 (2007).
- A9. H. Vehkamäki, A. Määttänen, A. Lauri, M. Kulmala, P. M. Winkler, A. Vrtala, P. E. Wagner, "Heterogeneous Multicomponent Nucleation Theorems for the Analysis of Nanoclusters", *J. Chem. Phys.*, **126**, 174707 (2007).
- A10. P. M. Winkler, G. Steiner, A. Vrtala, H. Vehkamäki, M. Noppel, K. E. J. Lehtinen, G. P. Reischl, P. E. Wagner, M. Kulmala, „Heterogeneous Nucleation Experiments Bridging the Scale from Molecular Ion Clusters to Nanoparticles", *Science*, **319**, 1374-1377 (2008).

- A11. P. M. Winkler, A. Vrtala, P. E. Wagner, “Condensation Particle Counting Below 2 nm Seed Particle Diameter and the Transition from Heterogeneous to Homogeneous Nucleation”, *Atmos. Res.*, **90**, 125-131 (2008).
- A12. P. M. Winkler, A. Hienola, G. Steiner, G. Hill, A. Vrtala, G. P. Reischl, M. Kulmala, P. E. Wagner, „Effects of Seed Particle Size and Composition on Heterogeneous Nucleation of n-Nonane”, *Atmos. Res.*, **90**, 187-194 (2008).
- A13. M. Kulmala, V.-M. Kerminen, A. Laaksonen, I. Riipinen, M. Sipilä, T. M. Ruuskanen, T. Kurtén, A. Lauri, L. Sogacheva, P. Hari, J. Bäck, H. Lihavainen, K. E. J. Lehtinen, H. Hakola, Y. Viisanen, M. Bilde, B. Svenningsson, M. Lazaridis, K. Torseth, K. E. Yttri, P. Tunved, E. D. Nilsson, S. Pryor, L.-L. Sørensen, S. Larsen, U. Hörrak, P. M. Winkler, P. E. Wagner, E. Swietlicki, M.-L. Riekkola, K. Hartonen, A. Ekman, R. Krejci, A. Grini, C. Hoyle, Ø. Hov, H.-C. Hansson, “Overview of the Biosphere-Aerosol-Cloud-Climate Interactions (BACCI) Studies”, *Tellus B*, **60**, 300-317 (2008).
- A14. J. Duplissy, M. B. Enghoff, K. L. Aplin, F. Arnold, H. Aufmhoff, M. Avngaard, U. Baltensperger, T. Bondo, R. Bingham, K. Carslaw, J. Curtius, A. David, B. Fastrup, S. Gagné, F. Hahn, R. G. Harrison, B. Kellelt, J. Kirkby, M. Kulmala, L. Laakso, A. Laaksonen, E. Lillestol, M. Lockwood, J. Mäkelä, V. Makhmutov, N. D. Marsh, T. Nieminen, A. Onnela, E. Pedersen, J. O. P. Pedersen, J. Polny, U. Reichl, J. H. Seinfeld, M. Sipilä, Y. Stozhkov, F. Stratmann, H. Svensmark, J. Svensmark, R. Veenhof, B. Verheggen, Y. Viisanen, P. E. Wagner, G. Wehrle, E. Weingartner, H. Wex, M. Wilhelmsson, and P. M. Winkler, „Results from the CERN pilot CLOUD experiment“, *Atmos. Chem. Phys.*, **10**, 1635-1647 (2010).
- A15. C. E. Kolb, R. A. Cox, J. P. D. Abbatt, M. Ammann, E. J. Davis, D. J. Donaldson, B. C. Garrett, C. George, P. T. Griffiths, D. R. Hanson, M. Kulmala, G. McFiggans, U. Poschl, I. Riipinen, M. J. Rossi, Y. Rudich, P. E. Wagner, P. M. Winkler, D. R. Worsnop, and C. D. O’Dowd, „An overview of current issues in the uptake of atmospheric trace gases by aerosols and clouds“, *Atmos. Chem. Phys.*, **10**, 10561-10605 (2010).
- A16. V.-M. Kerminen, T. Petäjä, H. E. Manninen, P. Paasonen, T. Nieminen, M. Sipilä, H. Junninen, M. Ehn, S. Gagné, L. Laakso, I. Riipinen, H. Vehkamäki, T. Kurten, I. K. Ortega, M. Dal Maso, D. Brus, A. Hyvärinen, H. Lihavainen, J. Leppä, K. E. J. Lehtinen, A. Mirme, S. Mirme, U. Hörrak, T. Berndt, F. Stratmann, W. Birmili, A. Wiedensohler, A. Metzger, J. Dommen, U. Baltensperger, A. Kiendler-Scharr, T. F. Mentel, J. Wildt, P. M. Winkler, P. E. Wagner, A. Petzold, A. Minikin, C. Plass-Dülmer, U. Pöschl, A. Laaksonen, and M. Kulmala. „Atmospheric nucleation: highlights of the EUCAARI project and future directions“, *Atmos. Chem. Phys.*, **10**, 10829-10848 (2010).

- A17. S. Schobesberger, P. M. Winkler, T. Pinterich, A. Vrtala, M. Kulmala, and P. E. Wagner, „Experiments on the temperature dependence of heterogeneous nucleation upon nm-sized NaCl and Ag particles.” *Chem. Phys. Chem.*, **11**, 3874-3882 (2010).
- A18. P. M. Winkler, G. Steiner, A. Vrtala, G. P. Reischl, M. Kulmala, and P. E. Wagner, Unary and binary heterogeneous nucleation of organic vapours on monodisperse WO_x seed particles with diameters down to 1.4 nm. *Aerosol Sci. Technol.*, **45**, 493-498 (2011).
- A19. T. Pinterich, P. M. Winkler, A. Vrtala, P. E. Wagner, „Experiments on the Contact Angle of n-Propanol on Differently Prepared Silver Substrates at Various Temperatures and Implications for the Properties of Silver Nanoparticles.“, *Atmos. Res.*, **101**, 510-518 (2011).
- A20. J. Kirkby, J. Curtius, J. Almeida, E. Dunne, J. Duplissy, S. Ehrhardt, A. Franchin, S. Gagné, L. Ickes, A. Kürten, A. Kupc, A. Metzger, F. Riccobono, L. Rondo, S. Schobesberger, G. Tsagkogeorgas, D. Wimmer, A. Amorim, F. Bianchi, M. Breitenlechner, A. David, J. Dommen, A. Downard, M. Ehn, R. C. Flagan, S. Haider, A. Hansel, D. Hauser, W. Jud, H. Junninen, F. Kreissl, A. Kvashin, A. Laaksonen, K. Lehtipalo, J. Lima, E. R. Lovejoy, V. Makhmutov, S. Mathot, J. Mikkilä, P. Minginette, S. Mogo, T. Nieminen, A. Onnela, P. Pereira, T. Petäjä, R. Schnitzhofer, J. H. Seinfeld, M. Sipilä, Y. Stozhkov, F. Stratmann, A. Tome, J. Vanhanen, Y. Viisanen, A. Vrtala, P. E. Wagner, H. Walther, E. Weingartner, H. Wex, P. M. Winkler, K. S. Carslaw, D. R. Worsnop, U. Baltensperger, M. Kulmala, „Role of sulfuric acid, ammonia and galactic cosmic rays in atmospheric aerosol nucleation.“, *Nature*, **476**, 429-433 (2011).
- A21. P. M. Winkler, A. Vrtala, G. Steiner, D. Wimmer, H. Vehkamäki, K. E. J. Lehtinen, G. P. Reischl, M. Kulmala, P. E. Wagner, „Quantitative characterization of critical nanoclusters nucleated on large single molecules”, *Phys. Rev. Lett.* **108**, 085701 (2012).
- A22. L. Cappellin, T. Karl, M. Probst, O. Ismailova, P. M. Winkler, C. Soukoulis, E. Aprea, T. D. Märk, F. Gasperi, F. Biasioli, “On Quantitative Determination of Volatile Organic Compound Concentrations Using Proton-transfer-reaction-time-of-flight-mass-spectrometry”, *Environ. Sci. Technol.* **46**, 2283-2290 (2012).
- A23. P. M. Winkler, J. Ortega, T. Karl, L. Cappellin, H. R. Friedli, K. Barsanti, P. H. McMurry, J. N. Smith, "Identification of the biogenic compounds responsible for size-dependent nanoparticle growth", *Geophys. Res. Lett.* **39**, L20815 (2012).
- A24. A. Kupc, P. M. Winkler, A. Vrtala, P. E. Wagner, “Unusual temperature dependence of heterogeneous nucleation of water vapor on Ag particles”, *Aerosol Sci. Technol.* **47**, i-iv (2013).
- A25. M. Noppel, H. Vehkamäki, P. M. Winkler, M. Kulmala, P. E. Wagner, “Heterogeneous nucleation in multi-component vapor on a partially wettable charged conducting seed particle. I. Formulation of general equations: Electrical surface and line excess quantities”, *J. Chem. Phys.* **139**, 134107 (2013).

- A26. M. Noppel, H. Vehkamäki, P. M. Winkler, M. Kulmala, P. E. Wagner, “Heterogeneous nucleation in multi-component vapor on a partially wettable charged conducting seed particle. II. The generalized Laplace, Gibbs-Kelvin, and Young equations and application to nucleation”, *J. Chem. Phys.* **139**, 134108 (2013).
- A27. E. J. T. Levin, A. J. Prenni, B. B. Palm, D. A. Day, P. Campuzano-Jost, P. M. Winkler, S. M. Kreidenweis, P. J. DeMott, J. L. Jimenez, J. N. Smith, “Size-resolved aerosol composition and its link to hygroscopicity at a forested site in Colorado”, *Atmos. Chem. Phys.* **14**, 2657-2667 (2014).
- A28. Y. Y. Cui, A. Hodzic, J. N. Smith, J. Ortega, J. Brioude, H. Matsui, E. J. T. Levin, A. Turnipseed, P. Winkler, B. de Foy, “Modeling ultrafine particle growth at a pine forest site influenced by anthropogenic pollution during BEACHON-RoMBAS-2011”, *Atmos. Chem. Phys.* **14**, 11011-11029 (2014).
- A29. 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, F. Riccobono, M. P. Rissanen, L. Rondo, S. Schobesberger, J. H. Seinfeld, G. Steiner, A. Tomée, J. Tröstl, P. M. Winkler, C. Williamson, D. Wimmer, P. Ye, U. Baltensperger, K. S. Carslaw, M. Kulmala, D. R. Worsnop, J. Curtius, “Neutral molecular cluster formation of sulfuric acid-dimethylamine observed in real time under atmospheric conditions”, *Proc. Natl. Acad. Sci.* **111**, 15019-15024 (2014).
- A30. J. L. Fry, D. C. Draper, K. C. Barsanti, J. N. Smith, J. Ortega, P. M. Winkler, M. J. Lawler, S. S. Brown, P. M. Edwards, R. C. Cohen, L. Lee, “Secondary organic aerosol formation and organic nitrate yield from NO₃ oxidation of biogenic hydrocarbons”, *Environ. Sci. Technol.* **48**, 11944-11953 (2014).
- A31. J. Julin, P. M. Winkler, N. M. Donahue, P. E. Wagner, I. Riipinen, “Near-unity mass accommodation coefficient of organic molecules of varying structure”, *Environ. Sci. Technol.* **48**, 12083-12089 (2014).
- A32. F. Bianchi, A. P. Praplan, N. Sarnela, J. Dommen, A. Kürten, I. K. Ortega, S. Schobesberger, H. Junninen, M. Simon, J. Tröstl, T. Jokinen, M. Sipilä, A. Adamov, A. Amorim, J. Almeida, M. Breitenlechner, J. Duplissy, S. Ehrhart, R. C. Flagan, A. Franchin, J. Hakala, A. Hansel, M. Heinritzi, J. Kangasluoma, H. Keskinen, J. Kim, J. Kirkby, A. Laaksonen, M. J. Lawler, K. Lehtipalo, M. Leiminger, V. Makhmutov, S. Mathot, A. Onnela, T. Petäjä, F. Riccobono, M. P. Rissanen, L. Rondo, A. Tomé, A. Virtanen, Y. Viisanen, C. Williamson, D. Wimmer, P. M. Winkler, P. Ye, J. Curtius, M. Kulmala, D. R. Worsnop, N. M. Donahue, U. Baltensperger, “Insight into acid-base nucleation experiments by comparison of the chemical composition of positive, negative and neutral clusters”, *Environ. Sci. Technol.* **48**, 13675-13684 (2014).

B) Conference Proceedings

- B1. P. Winkler, A. Vrtala, P. E. Wagner, "Measurement of Vapor Uptake Via Aerosol Droplet Growth Experiments", in *Proceedings of the Mass Accomodation Workshop* (ed. by P. Davidovits, C. Kolb, M. Kulmala, D. Worsnop) p. 4. Billerica/Boston (2002).
- B2. P. M. Winkler, P. E. Wagner, M. Kulmala, I. Napari, H. Kokkola, A. Laaksonen, "Nucleation and Growth Processes in Binary Water - Ammonia Vapor Mixtures", *Report Series Aerosol Sci.* **59**, 132 (2003).
- B3. P. M. Winkler, P. E. Wagner, "Experimental Study on the Influence of Ammonia on Heterogeneous Nucleation of Water Vapor on Nanoparticles", *Abstracts of the European Aerosol Conference 2003. J. Aerosol Sci.*, p. S1067 (2003).
- B4. P. M. Winkler, A. Vrtala, P. E. Wagner, "The Role of Nanoparticles in Heterogeneous Nucleation of Binary Water - Ammonia Vapor Mixtures", in *Nanostructured Materials and their Applications* (W. W. Szymanski, P. E. Wagner, M. Itoh, T. Ohachi, Eds.) p. 55. Facultas, Wien (2004).
- B5. P. M. Winkler, A. Vrtala, P. E. Wagner, M. Kulmala, K. E. J. Lehtinen, T. Vesala, "An Experimental Study on Thermal and Mass Accommodation Coefficients for the Condensation of Water Vapour", in *Nucleation and Atmospheric Aerosols 2004* (M. Kasahara, M. Kulmala, Eds.) p. 143. Kyoto University Press, Kyoto (2004).
- B6. P. M. Winkler, A. Vrtala, P. E. Wagner, M. Kulmala, K. E. J. Lehtinen, T. Vesala, "Time-Resolved Observation of the Kinetics of Nucleation and Condensation of Water Vapour using Constant-Angle Mie Scattering (CAMS)", in *Abstracts for 7th International Congress on Optical Particle Characterization* (ed. by Editorial Committee of OPC2004) p. 63. Doshisha University, Kyoto (2004).
- B7. P. M. Winkler, A. Vrtala, P. E. Wagner, M. Kulmala, K. E. J. Lehtinen, T. Vesala, "Independent Experimental Determination of Thermal and Mass Accommodation Coefficients for Water", *Abstracts of the European Aerosol Conference 2004, Vol. II. J. Aerosol Sci.*, p. S889 (2004).
- B8. I. Riipinen, P. M. Winkler, P. E. Wagner, A. Gaman, M. Kulmala, „A Method for Validating and Determining Thermodynamic Properties of Chemical Compounds: Mixture of n-Nonane and n-Propanol", *Report Series Aerosol Sci.* **73**, 261 (2005).
- B9. P. M. Winkler, A. Vrtala, P. E. Wagner, M. Kulmala, „Recent Experiments on Accommodation Coefficients and on Binary Heterogeneous Nucleation“, *Report Series in Aerosol Sci.* **73**, 331 (2005).
- B10. P. M. Winkler, A. Vrtala, P. E. Wagner, "Binary Heterogeneous Nucleation of Organic Vapor Mixtures", *Abstracts of the European Aerosol Conference 2005*, p. 35 (2005).

- B12. I. Riipinen, P. M. Winkler, A. Gaman, P. E. Wagner, M. Kulmala, „A Method for Evaluation of Thermodynamic Properties of Liquid Substances: Mixture of n-Nonane and n-Propanol”, *Abstracts of the European Aerosol Conference 2005*, p. 47 (2005).
- B13. A. I. Gaman, I. Napari, H. Vehkamäki, P. Winkler, P. E. Wagner, and M. Kulmala, “N-nonane – n-propanol binary nucleation. Experiment vs. theory”, *Abstracts of the European Aerosol Conference 2005*, p. 465 (2005).
- B14. A. E. Vrtala and P. M. Winkler, “Precision measurements of equilibrium vapor pressure from droplet growth measurements for n-nonane”, *Abstracts of the European Aerosol Conference 2005*, p. 576 (2005).
- B15. P. M. Winkler, A. Vrtala, P. E. Wagner, A. I. Gaman, H. Vehkamäki, and M. Kulmala, „Binary Heterogeneous Nucleation of Water – n-Nonane Vapor Mixtures on Ag-Nanoparticles” *Report Series in Aerosol Sci.* **81b**, 653-657 (2006).
- B16. P. M. Winkler, G. Steiner, G. P. Reischl, A. Vrtala, P. E. Wagner, A. I. Gaman, H. Vehkamäki, and M. Kulmala, „Observation of nucleation of organic vapours by nanoparticles already at particle sizes well below the Kelvin prediction“, *Abstracts of the IAC 2006*, p. 1615 (2006).
- B17. A. I. Gaman, P. M. Winkler, P. E. Wagner, H. Vehkamäki, I. Napari, and M. Kulmala, „Estimation of line tension and microscopic contact angle from heterogeneous nucleation experimental data“, *Abstracts of the IAC 2006*, p. 1626 (2006).
- B18. I. Riipinen, H. Hietala, V. Tilvis, A. I. Gaman, P. M. Winkler, P. E. Wagner, K. E. J. Lehtinen, T. Vesala, and M. Kulmala, „Investigating Aerosol Properties with Condensation Models“, *Abstracts of the IAC 2006*, p.727 (2006).
- B19. P. M. Winkler, G. Steiner, G. P. Reischl, A. Vrtala, P. E. Wagner, A. I. Gaman, H. Vehkamäki, and M. Kulmala, „Experimental study of heterogeneous nucleation on charged and uncharged nanoclusters“, *Abstract for Workshop on Formation and Growth of Atmospheric Aerosols* (2006).
- B20. P. M. Winkler, A. Vrtala, P. E. Wagner, “The Role of Ions in Condensation Particle Counting for Particle Diameters Below 2 nm”, in *Nucleation and Atmospheric Aerosols* (C. O’Dowd, P. E. Wagner, Eds.) p. 73, Springer (2007).
- B21. A. I. Hienola, H. Vehkamäki, A. Lauri, P. E. Wagner, P. M. Winkler, M. Kulmala, „The First Heterogeneous Nucleation Theorem Including Line Tension: Analysis of Experimental Data“, in *Nucleation and Atmospheric Aerosols* (C. O’Dowd, P. E. Wagner, Eds.) p. 230, Springer (2007).
- B22. H. Vehkamäki, A. Lauri, A. Määttänen, P. E. Wagner, P. M. Winkler, M. Kulmala Heterogeneous Nucleation Theorems for Multicomponent Systems”, in *Nucleation and Atmospheric Aerosols* (C. O’Dowd, P. E. Wagner, Eds.) p. 235, Springer (2007).

- B23. P. M. Winkler, G. W. Steiner, G. P. Reischl, A. Vrtala, P. E. Wagner, M. Kulmala, "The Effect of Seed Particle Charge on Heterogeneous Nucleation", in *Nucleation and Atmospheric Aerosols* (C. O'Dowd, P. E. Wagner, Eds.) p. 358, Springer (2007).
- B24. P. M. Winkler, G. W. Steiner, G. P. Reischl, A. Vrtala, P. E. Wagner, M. Kulmala, "Experimental Observation of Heterogeneous Nucleation Probabilities for Ion-induced Nucleation", in *Nucleation and Atmospheric Aerosols* (C. O'Dowd, P. E. Wagner, Eds.) p. 363, Springer (2007).
- B25. I. Riipinen, P. M. Winkler, P. E. Wagner, A. I. Hienola, K. E. J. Lehtinen, M. Kulmala, „Condensational Growth of n-Propanol and n-Nonane Droplets: Experiments and Model Calculations“, in *Nucleation and Atmospheric Aerosols* (C. O'Dowd, P. E. Wagner, Eds.) p. 1028, Springer (2007).
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- B49. J. N. Smith, P. Winkler, J. Zhao, and P. H. McMurry. *Exploring the role of organics in atmospheric new particle formation with chemical ionization mass spectrometry*, Fall Meeting of the American Chemical Society, Denver, CO, USA (2011).
- B50. P. M. Winkler, J. Ortega, J. Zhao, H. R. Friedli, and J. N. Smith. Organic aerosol chemical composition in the 10 nm size range, *Annual conference of the American Association for Aerosol Research*, Orlando, FL, USA (2011).
- B51. P. M. Winkler and P. E. Wagner. *Formation of molecular clusters and aerosol particles*, 8th Liquid Matter Conference, Vienna, Austria (2011).
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- B55. T. Pinterich, P. M. Winkler, P. E. Wagner, A. Vrtala, "The vSANC: a new expansion chamber CPC applicable to atmospheric measurements, European Aerosol Conference, Granada, Spain (2012).

- B56. P. E. Wagner, P. M. Winkler, „Nucleation of clusters bridging the scale from molecules to nanoparticles, Friedlander Lecture at the 31st annual AAAR conference, Minneapolis, MN, USA (2012).
- B57. T. Pinterich, P. M. Winkler, P. E. Wagner, A. Vrtala, „The vSANC – An instrument for basic nucleation studies and ambient measurements of nanoparticles”, 31st annual AAAR conference, Minneapolis, MN, USA (2012). Abstract: 3AN.1
- B58. P. M. Winkler, M. Lawler, J. N. Smith, “Size-resolved chemical characterization of biogenic nanoparticles by thermal desorption chemical ionization mass spectrometry”, 6th International PTR-MS Conference, Obergurgl, Austria (2013).
- B59. P.M. Winkler, J. Ortega, T. Karl, P.H. McMurry, J.N. Smith, "A fast-scanning DMA train for precision quantification of early nanoparticle growth", 19th ICNAA, Fort Collins, CO, U.S.A. (2013).
- B60. T. Pinterich, P.M. Winkler, P.E. Wagner, M. Kulmala, A. Vrtala, "The versatile size analyzing nuclei counter", 19th ICNAA, Fort Collins, CO, U.S.A. (2013).
- B61. A. Kupc, P.M. Winkler, A. Vrtala, P.E. Wagner, "Unusual Temperature Dependence Of Heterogeneous Nucleation Of Water Vapor on Ag Particles", 19th ICNAA, Fort Collins, CO, U.S.A. (2013).
- B62. P. E. Wagner, P. M. Winkler, „Nucleation of vapors: molecular content of critical clusters and activation of nanoparticles”,
- B63. T. Pinterich, P.M. Winkler, P.E. Wagner, M. Kulmala, A. Vrtala, "The versatile size analyzing nuclei counter (vSANC)", European Aerosol Conference 2013, Prague, Czech Republic (2013).
- B64. P.M. Winkler, J. Ortega, P.H. McMurry, J.N. Smith, "A fast-scanning DMA Train for the precision quantification of nanoparticle dynamics", European Aerosol Conference 2013, Prague, Czech Republic (2013).
- B65. J. N. Smith, M. Lawler, P. Winkler, J. Zhao, P. McMurry, P. “Biogenic new particle formation and its potential impacts on climate.” Goldschmidt conference, Florence, Italy, session 15d. (2013).
- B66. T. Pinterich, P.M. Winkler, P.E. Wagner, M. Kulmala, “A new expansion chamber CPC for efficient sub-2 nm particle detection”, International Aerosol Conference 2014, Busan, Korea.
- B67. K. Lehtipalo, T. Pinterich, J. Kangasluoma, J. Duplissy, R. Wagner, A. Franchin, D. Wimmer, H. Manninen, T. Petäjä, P. M. Winkler, P. E. Wagner, M. Kulmala, „Characterization of recently nucleated 1 – 3 nm clusters using a comprehensive set of nanoparticle instruments“, International Aerosol Conference 2014, Busan, Korea.
- B68. J. Blinzer, M. Grün, P. M. Winkler, „Effects of nucleation temperature on the response of a butanol condensation particle counter“, International Aerosol Conference 2014, Busan, Korea.

List of talks at international scientific conferences and meetings

1. *The Role of Nanoparticles in Heterogeneous Nucleation of Binary Water - Ammonia Vapor Mixtures*. Symposium on nanostructured materials – fundamentals and applications, Vienna, Austria (2002).
2. *Experimental Study on the Influence of Ammonia on Heterogeneous Nucleation of Water Vapor on Nanoparticles*. European Aerosol Conference (EAC) 2003, Madrid, Spain.
3. *An Experimental Study on Thermal and Mass Accommodation Coefficients for the Condensation of Water Vapour*. International Conference on Nucleation and Atmospheric Aerosols (ICNAA) 2004, Kyoto, Japan.
4. *Independent Experimental Determination of Thermal and Mass Accommodation Coefficients for Water*. European Aerosol Conference (EAC) 2004, Budapest, Hungary.
5. *Recent Experiments on Accommodation Coefficients and on Binary Heterogeneous Nucleation*. Annual meeting of the Finnish Centre of Excellence 2005, Pallas, Finland (**invited presentation**).
6. *Binary Heterogeneous Nucleation of Organic Vapor Mixtures*. European Aerosol Conference (EAC) 2005, Ghent, Belgium.
7. *Binary Heterogeneous Nucleation of Water – n-Nonane Vapor Mixtures*. Annual meeting of the Finnish Centre of Excellence 2006, Hyttiälä, Finland (**invited presentation**).
8. *Experimental Study of Heterogeneous Nucleation on Charged and Uncharged Nanoclusters*. Workshop on Formation and Growth of Atmospheric Aerosols 2006, Minnesota, USA (**invited presentation**).
9. *Observation of Nucleation of Organic Vapours by Nanoparticles Already at Particle Sizes Well Below the Kelvin Prediction*. International Aerosol Conference (IAC) 2006, St. Paul, Minnesota, USA.
10. *Independent Determination of Mass and Thermal Accommodation Coefficients from Water Droplet Growth Measurements*. Workshop on mass and thermal accommodation coefficients 2007, Gordon type conference, Galway, Ireland (**invited presentation**).
11. *The Effect of Seed Particle Charge on Heterogeneous Nucleation*. International Conference on Nucleation and Atmospheric Aerosols (ICNAA) 2007, Galway, Ireland.
12. *The Role of Ions in Condensation Particle Counting for Particle Diameters Below 2 nm*. International Conference on Nucleation and Atmospheric Aerosols (ICNAA) 2007, Galway, Ireland.
13. *Condensation Particle Counting for Particle Diameters Down to 1 nm*. European Aerosol Conference (EAC) 2007, Salzburg, Austria.
14. *Seed Diameter and Cluster Size in Heterogeneous Nucleation Processes*. European Aerosol Conference (EAC) 2008, Thessaloniki, Greece.
15. *Wolkenbildung und Aerosoldynamik im Labor: Detektion von Nanoteilchen*. Seminar at the Institut für Nephrologie und Dialyse at the Medical University of Vienna, 2008 (**invited presentation**).
16. *Heterogeneous Nucleation by Nanoparticles: Recent Experiments and Some Applications*. **Plenary talk** at the International Conference on Nucleation and Atmospheric Aerosols (ICNAA) August 2009, Prague, Czech Republic (invited presentation).
17. *New Insights to the Heterogeneous Nucleation by Nanoparticles*. Seminar talk at the Atmospheric Chemistry Division (ACD), National Center for Atmospheric Research (NCAR), Boulder, CO, 2nd November, 2009.
18. *Chemical composition of nanoparticles from electrosprayed ammonium sulphate -amine solutions*, Workshop on Formation and Growth of Atmospheric Aerosols 29. August 2010, Hyttiälä, Finland (**invited presentation**).
19. *Ammonia vs. amine competition during nanoparticle growth*. International Aerosol Conference (IAC), September 3rd, 2010, Helsinki, Finland.
20. *Chemical characterization of organic nanoparticles formed in a biogenic aerosol chamber*, Annual Conference of the American Association for Aerosol Research (AAAR), October 27th, 2010, Portland, OR, USA.

21. *Aerosol dynamics on the nanoscale*, May 17th 2011, Faculty of Physics, University of Vienna, Vienna, Austria (**invited presentation**).
22. *Hunting for molecular species in newly formed biogenic nanoparticles*, May 19th 2011, Meteorologisch-Geophysikalisches Kolloquium, University of Vienna, Vienna, Austria (**invited presentation**).
23. *TDCIMS-studies comparing chamber vs. flow tube aerosol*, Workshop on formation and Growth of Atmospheric Nanoparticles, August 30th 2011, Boulder, CO, USA.
24. *Size resolved nanoparticle composition from SOA formation events*, European Aerosol Conference, September 5th 2011, Manchester, UK.
25. *Organic aerosol chemical composition in the 10 nm size range*, Annual Conference of the American Association for Aerosol Research (AAAR), October 5th 2011, Orlando, FL, USA.
26. *Direct observations of the biogenic compounds responsible for atmospheric new particle growth*, 92nd Annual Meeting of the American Meteorological Society (AMS), January 23rd 2012, New Orleans, USA.
27. *Understanding the biogenic species responsible for atmospheric new particle growth*, ASR meeting of the Department of Energy, March 14th, 2012, Arlington, VA, USA (**invited presentation**).
28. *Size-resolved chemical characterization of biogenic nanoparticles by thermal desorption chemical ionization mass spectrometry*, 6th Int. PTR-MS conference, February 7th, 2013, Obergurgl, Austria (**invited presentation**).
29. *A fast-scanning DMA train for precision quantification of early nanoparticle growth*, 19th International Conference on Nucleation and Atmospheric Aerosols (ICNAA), June 25th, 2013, Fort Collins, CO, USA.
30. *A fast-scanning DMA Train for the precision quantification of nanoparticle dynamics*, European Aerosol Conference (EAC) 2013, Prague, Czech Republic.
31. *Effects of nucleation temperature on the response of a butanol condensation particle counter*, International Aerosol Conference (IAC), August 29th 2014, Busan, Korea.