

Department of Chemistry and Molecular Biology
Atmospheric Science
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Current Position(s)

February 2018 – present, University Lecturer, University of Gothenburg
Permanent faculty position with research focused on experimental and theoretical studies of the physical chemistry and phase transition behavior of atmospheric particles. Responsibilities include teaching, supervision, and full participation in the departmental, faculty, and university communities.

March 2016 – present, Coordinator Gothenburg Air and Climate Centre (GAC)
GAC is a collaborative research centre uniting researchers and stakeholders interested in issues related to air and climate in Gothenburg and the surrounding region. gac.gu.se

Education

Yale University, New Haven, CT, USA

2010 Ph.D. Department of Geology and Geophysics

Dissertation title: “An Optical Study of Ice Grain Boundaries”

Supervisor: Professor John S. Wettlaufer

2008 - 2010 Helmholtz Alliance ‘Planetary Evolution and Life’ - Graduate Fellow

2005 M.Phil. Department of Geology and Geophysics

University of Cambridge, Cambridge, England

2004 Geophysical and Environmental Fluid Dynamics Summer School (GEFD),

Department of Applied Mathematics and Theoretical Physics

Omsk State Pedagogical University, Omsk, Russia

2001-2002 IREX Fellowship year, School of Psychology and Pedagogy

Bates College, Lewiston, ME, USA

1999 B.S. Department of Physics and Astronomy *Magna Cum Laude with Honors*

Secondary Concentration in Russian Language

Language Proficiencies: English – *native*; Russian – *fluent*; Swedish – *intermediate*

Previous Experience

● *April 2014 – February 2018*, Assistant Professor for Research, University of Gothenburg
Research focusing on experimental and theoretical studies of the physical chemistry and phase transition behavior of atmospheric particles. Responsibilities also include teaching, supervision, and full participation in the departmental, faculty, and university communities.

- *January 2012 – March 2014*, CRAICC Postdoctoral Fellow
University of Gothenburg, Lund University, University of Copenhagen
Postdoctoral fellowship with a research focus on ice nucleation and in particular the physical and chemical effects of aerosol particles on ice nucleation processes. Experimental and field-based techniques include ice nuclei counters, depolarization detection, and aerosol flow chambers. The fellowship was sponsored by a three-university collaboration as part of a larger Nordic cryosphere-atmosphere interaction (CRAICC) top-level research initiative.
- *October – November, 2012*, Visiting Researcher, Paul Scherrer Institute, WSL-SLF Davos
Visiting scholar in the PSI – Surface Chemistry and WSL Institute for Snow and Avalanche Research SLF – Snow Physics research groups with funding from an ESF exchange grant.
- *October 2010 – December 2011*, Postdoctoral Scholar, University of Gothenburg
Research position focusing on experimental and theoretical studies of the physical chemistry of atmospheric particles, including ice, aerosols, and black carbon. Experimental techniques include ultra-high vacuum molecular beam methods, quadrupole mass spectrometry, electrodynamic particle levitation, and light scattering.

External Support

- Swedish Research Council Formas, Future Research Leaders Project Grant, “Human influence on Nordic and Arctic Climate and Air: shipping, mixed-phase clouds, and particles,” 2018-2021. (3.0 MSEK, \approx \$360,000)
- ClimBEco–Climate Biodiversity and Ecosystem Services in a changing world – 3rd cycle course funding, “Chemistry and Climate Change,” 2017. (60 kSEK, \approx \$6,700)
- Gothenburg Centre for Advanced Studies in Science and Technology – Workshop Funding, “Interdisciplinary Workshop on Biophysical Atmospheric Processes,” 2017. (50 kSEK, \approx \$5,500)
- *Participating Researcher* – The Swedish Foundation for International Cooperation in Research and Higher Education – Initiation Grant, “Sea Salt Particles Acting as Cloud Seeds: Deliquescence, Ice Nucleation and Ice Sublimation,” 2017. (150 kSEK, \approx \$17,000)
- *Participating Researcher* – Swedish Research Councils, Project Research Grant, “Towards a molecular-level understanding of interface processes in the atmosphere,” 2016-2019. (3.265 MSEK, \approx 15% acceptance rate, \approx \$400,000)
- *Partner Representative* – European FP7 BACCHUS project, “Impact of Biogenic versus Anthropogenic emissions on Clouds and Climate: towards a Holistic UnderStanding.” 2013-2017. (\approx 8.8 M€, Grant Agreement 603445)
- Swedish Research Councils, Young Researcher Project Research Grant, “Ice nucleation in changing Nordic and Arctic environments,” 2014-2018. (4.3 MSEK, \approx 8% acceptance rate, \$650,000)
- European Science Foundation Exchange Grant, for work within the framework of the ESF activity, ‘Micro-Dynamics of Ice’, 2012. (2900€)

Teaching and Supervising

Primary Supervisor – University of Gothenburg, Department of Chemistry and Mol. Bio.

- Dimitri Castarède, Erasmus Project, 2015. Masters of Science, 2016. Ph.D student *ongoing*.
- Olivia Boström, Bachelor's Thesis, *ongoing*.
- Johanna Olsson, Masters of Science, *ongoing*.
- Imke Okkerman, Masters of Science, 2017.
- Willem Corstjens, Masters of Science, 2016.
- Jenni Tuomi, Masters of Science, 2014.
- Björn Lundberg, Bachelor's thesis, 2016.
- Sepideh Moghadam, Bachelor's thesis, 2013.

Assistant Supervisor – University of Gothenburg, Department of Chemistry and Mol. Bio.

- Sofia Johansson, Ph.D student, *ongoing*.
- Xiangrui Kong, Ph.D, 2014 “*Molecular Investigations of Atmospherically Relevant Interface Processes: Ice Formation and Water Accommodation on Ice and Organic Surfaces*”

Course Leader – University of Gothenburg, Department of Chemistry and Mol. Bio.

- 2016, 2017 KEM490 Environmental Chemistry (15 hp)
- 2017 Advanced Atmospheric Chemistry: *Chemistry and Climate Change* (graduate, 5 hp)
- 2013 Advanced Atmospheric Chemistry (graduate level, 7.5 hp)

Course Leader – University of Gothenburg, Earth Systems Science

- 2016, 2018 ES2417 Energy and Environment (15 hp)
- 2015 Lasers and Mass Spectrometry (graduate level, 7.5 hp)
- 2014 Climate Change: The Physical Science Basis (graduate level, 7.5 hp)

Lecturer – University of Gothenburg, Department of Chemistry and Mol. Bio.

- 2017, 2018 KEM131 Colloid and Surface Chemistry (graduate level, 15 hp)
- 2017, 2018 NBAK00 Base year chemistry (pre-undergraduate, 15 hp)
- 2017 LGKE41 Chemistry for School Teachers (15 hp)
- 2015 – 2017 KEM170 Atmospheric Chemistry (undergraduate, 15 hp)
- 2011, 2013, 2015, 2017 KEM720 Aerosols (advanced undergraduate, 15 hp)
- 2012 Global Change (introductory undergraduate, 7.5 hp)

Teaching Exchange – Erasmus⁺ International Mobility for Teaching

University of the West Indies, Mona, Kingston, Jamaica. January 17 - February 2, 2018
Contributed lectures and tutorials to *Atmospheric Chemistry and Biogeochemical Cycles* (CHEM 3612).

Pedagogical Development and Interactive Learning – University of Gothenburg

- Teaching and Learning in Higher Education 1: Basic Course (HPE101)
- Teaching and Learning in Higher Education 2: Subject Field Pedagogy (HPE102)
- Supervision in Postgraduate Programmes (HPE201)

Teaching Fellow – Yale University, Department of Geology and Geophysics, 2003-2007

- Statistical Thermodynamics for Astrophysics and Geophysics (G&G 666; ASTR 666)
- The Atmosphere, Ocean, and Environmental Change (G&G 140,141; EVST 201, 202)

Program Assistant – Bates College Study Abroad, St. Petersburg, Russia. Designed and facilitated cultural programming and assimilation for student participants in a study abroad program.

Physics Tutor, Bates College 1998-1999.

Professional Service and Affiliations

2017 – *ongoing* Division Representative – Atmospheric Science, Department of Chemistry and Molecular Biology Strategic Board, University of Gothenburg.

2017 – *ongoing* Board member of the ClimBEco graduate research school. Two-year PhD research school associated with the Swedish strategic research areas BECC and MERGE, focused on promoting interdisciplinary research on climate and earth systems.

<http://www.cec.lu.se/climbeco-graduate-research-school>

2018 Session Chair, “Marine INP.” INUIT Final Conference and the 2nd Atmospheric Ice Nucleation Conference, February 26 – March 1, Grasellenbach, DE.

2017 Convener and Lead Organizer: Interdisciplinary Workshop on Biophysical Atmospheric Processes. Nov. 1-3, Sven Lovén Marine Center, Kristineberg, SE.

2017– *ongoing* Organizer: Steering group and departmental contacts for the establishment of a Future Faculty group within the University of Gothenburg Faculty of Science.

2016 Lead Organizer: Gothenburg Atmospheric Science Center Biennial meeting. 70+ international participants. April 26-27, Gothenburg, SE.

2015 – *ongoing* Organizer: Department of Chemistry and Molecular Biology young faculty group.

Evaluator: Swiss National Science Foundation, ETH-Zurich Research Commission, Icelandic Research Council

Reviewer: Atmospheric Chemistry and Physics, Journal of Physical Chemistry, Journal of Chemical Physics, Meteorological Monographs, Nanoscale, Atmospheric Measurement Techniques, Canadian Journal of Physics, Journal of Physics Condensed Matter, Journal of Microscopy, Langmuir, Modelling and Simulation in Materials Science and Engineering, Physics and Chemistry of Ice, and Paleoceanography

2011 June Chemistry Calendar <http://www.youtube.com/watch?v=mmSlbXjnym0>

2004 – 2007 Yale Geology and Geophysics Departmental Colloquium Committee

American Physical Society (2003 -), American Geophysical Union (2006 -), European Geosciences Union (2012 -), Nordic Society for Aerosol Research (2013 -)

Other Outreach

- 2010 Bates College National Day of Service – Volunteer Leader
- 2007 – 2009 Yale-New Haven Science Fair Judge

Honors and Awards

2017 selected for an ERC Starting Grant interview. Panel PE10, Earth System Science.

2017 selected as a University of Gothenburg Research Leader Initiative participant (nominated by the Department of Chemistry and Molecular Biology).

2014 & 2016 NSF-Rains workshop Young Scientist, *Microbes and the Interface of Land-Atmosphere Feedbacks*.

2006 Elais Loomis Prize, Yale University, Department of Geology and Geophysics

2004 – 2008 Leonard X. Bosack and Bette M. Kruger Fellow

2003 Bateman Prize, Yale University, Department of Geology and Geophysics

2001-2002 IREX Russia - US Young Leadership Fellow for Public Service, Omsk, Russia

1999 Inducted Phi Beta Kappa, Bates College, Lewiston, Maine

1999 Goodspeed Award, Bates College, Lewiston, Maine

Field Experience

August 2015 – September 2015 Mt. Kenya Global Atmospheric Watch Station
Characterization of atmospheric aerosol particles with a focus on ice nuclei. Specially installed sampling units included high volume sampler, dichotomous sampler (PM_{2.5} & PM₁₀), GRIMM dust monitor, a meteorological station and PEAC7 ice nuclei electrostatic precipitation unit.

September 2014 – November 2014 Big Glenn, Risholmen, Göteborg, Sweden
Coordination of atmospheric measurements of shipping emissions with chemical characterization. Instrumentation included CIMS, SP-AMS, Alkali AMS, SID, MAAP, PAM chamber for aerosol aging, PASS-3, EEPS, CPC, GRIMM dust monitor, gas analyzers (CO₂, NO_x, SO₂), a meteorological station and measurements of ice nuclei.

September 2013 – November 2013 Big Glenn, Risholmen, Göteborg, Sweden
Coordination of atmospheric measurements of shipping emissions. Instrumentation included a PAM chamber, PASS-3, EEPS, CPC, GRIMM dust monitor, gas analyzers, a meteorological station and measurements of ice nuclei.

March 2013 – September 2013 Vavihill Field Station, Skåne, Sweden
Atmospheric ice nuclei sampling using an electrostatic deposition filter technique (FRIDGE-PEAC7 collector).

July 2005 Thule, Greenland
High Arctic biocomplexity research, specifically focusing on the unique carbon and water cycling of the polar environment. <http://depts.washington.edu/icylands/>

Peer Reviewed Publications (*indicates supervised student as co-author, † indicates corresponding author)

Kong X, Wolf M, Roesch M, **Thomson E S**, Bartels-Rausch T, Alpert P, Ammann M, Prisle N, & Cziczo D. A Continuous Flow Diffusion Chamber Study of Sea Salt Particles Acting as Cloud Nuclei: Deliquescence and Ice Nucleation. *in press Tellus B*.

Thomson E S[†], *Weber D, Bingemer H G, *Tuomi J, Ebert M, & Pettersson J B C. Intensification of ice nucleation observed in ocean ship emissions. *Scientific Reports*, 8(1):1111, 2018.

*Johansson S, Kong X, **Thomson E S**, Hallquist M, & Pettersson J B C. The Dynamics and Kinetics of Water Interactions with a Condensed Nopinone Surface. *The Journal of Physical Chemistry A*, 121 (35), 6614-6619, 2017.

*Johansson S, Kong X, Papagiannakopoulos P, **Thomson E S**, & Pettersson J B C. A novel gas-vacuum interface for environmental molecular beam studies. *Review of Scientific Instruments*,

88(3):035112, 2017.

Schrod J, Danielczok A, *Weber D, Ebert M, **Thomson E S[†]**, & Bingemer H G. Re-evaluating the Frankfurt isothermal static diffusion chamber for ice nucleation, *Atmospheric Measurement Techniques*, 9, 1313-1324, 2016.

Thomson E S[†], *Kong X, Papagiannakopoulos P, & Pettersson J B C. Deposition–mode ice nucleation reexamined at temperatures below 200 K. *Atmospheric Chemistry and Physics*, 15, 1621-1632, 2015

Romero Lejonthun L, Andersson P, Hallquist M, **Thomson E S**, & Pettersson J B C. Interactions of N₂O₅ and Related Nitrogen Oxides with Ice Surfaces: Desorption Kinetics and Collision Dynamics. *The Journal of Physical Chemistry B*, 118 (47) 13427-13434, 2014.

*Kong Xiangrui, **Thomson E S**, Papagiannakopoulos P, *Johansson S, & Pettersson J B C. Water Accommodation on Ice and Organic Surfaces: Insights from Environmental Molecular Beam Experiments. *The Journal of Physical Chemistry B*, 118 (47) 13378-13386, 2014.

Papagiannakopoulos P, *Kong Xiangrui, **Thomson E S**, & Pettersson J B C. Water Interactions with Acetic Acid Layers on Ice and Graphite *The Journal of Physical Chemistry B*, 118 (47) 13333-13340, 2014.

*Kong Xiangrui, Papagiannakopoulos P, **Thomson E S**, & Pettersson J B C. Water Accommodation and Desorption Kinetics on Ice. *The Journal of Physical Chemistry A*, 118 (22) 3973-3979, 2014.

Bartels-Rausch T, Jacobi H-W, Kahan T, Thomas J L, **Thomson E S**, Abbatt J P D, Ammann M, Blackford J R, Bluhm H, Boxe C, Domine F, Frey M M, Gladich I, Guzmán M I, Heger D, Huthwelker T, Klán P, Kuhs W F, Kuo M H, Maus S, Moussa S G, McNeill V F, Newberg J T, Pettersson J B C, Roeselová M, & Sodeau J R. A review of air–ice chemical and physical interactions (AICI): liquids, quasi-liquids, and solids in snow. *Atmospheric Chemistry and Physics*, 14, 1587-1633, 2014.

Hansen-Goos H, **Thomson E S**, & Wettlaufer J S. On the edge of habitability and the extremes of liquidity. *Planetary and Space Science*, 98, 169-181, 2014.

Papagiannakopoulos P, *Kong Xiangrui, **Thomson E S**, Marković N, & Pettersson J B C. Surface transformations and water uptake on liquid and solid butanol near the melting temperature. *The Journal of Physical Chemistry C*, 117 (13) 6678-6685, 2013.

Thomson E S[†], Hansen-Goos H, Wettlaufer J S, & Wilen L A. Grain boundary melting in ice. *The Journal of Chemical Physics*, 138, 124707, 2013.

Thomson E S[†], *Kong Xiangrui, Marković N, Papagiannakopoulos P, & Pettersson J B C. Collision dynamics and uptake of water on alcohol-covered ice. *Atmospheric Chemistry and Physics*, 13, 2223-2233, 2013.

Bartels-Rausch T, Bergeron V, Cartwright J H E, Escribano R, Finney J L, Grothe H, Gutiérrez P J, Haapala J, Kuhs W F, Pettersson J B C, Price S D, Sainz-Diaz C I, Stokes D, Strazzulla G, **Thomson E S**, Trinks H, & Uras-Aytemiz N. Ice structures, patterns, and processes: A view across icefields. *Reviews of Modern Physics*, 84, 885-944, 2012.

*Kong Xiangrui, Andersson P U, **Thomson E S**, & Pettersson J B C. Ice formation via deposition mode nucleation on bare and alcohol-covered graphite surfaces. *The Journal of Physical Chemistry C*, 116 (16) 8964-8974, 2012.

Thomson E S[†], *Kong Xiangrui, Andersson P U, Marković N, & Pettersson J B C. Collision dynamics and Solvation of Water Molecules in a Liquid Methanol Film. *Journal of Physical Chemistry Letters*, 2 (17) 2174-2178, 2011.

Thomson E S[†], Benatov L, & Wettlaufer J S. Erratum: Abrupt grain boundary melting in ice [Phys. Rev. E 70, 061606 (2004)]. *Physical Review E*, 82(3):039907, 2010.

Thomson E S[†], Wettlaufer J S, & Wilen L A. A direct optical method for the study of grain boundary melting. *Review of Scientific Instruments*, 80(10):103903, 2009.

Thomson E S[†], Wilen L A, & Wettlaufer J S. Light scattering from an isotropic layer between uniaxial crystals. *Journal of Physics: Condensed Matter*, 21:195407, 2009.

Pertaya N, Marshall C B, DiPrinzio C L, Wilen L A, **Thomson E S**, Wettlaufer J S, Davies P L, & Braslavsky I. Fluorescence microscopy evidence for quasi-permanent attachment of antifreeze proteins to ice surfaces. *Biophysical Journal*, 92:3663-3673, 2007.

Dissertation: Thomson E S An Optical Study of Ice Grain Boundaries. PhD Thesis, Yale University, New Haven, CT, USA. 2010.

Presentations and Proceedings: *Invited*

Thomson E S. Deliquescence and Ice Nucleation: Building a Deeper Understanding of Cloud Particles. *Department of Chemistry Colloquium*, University of the West Indies, Mona, Kingston, Jamaica, February 1, 2018.

Thomson E S. Moving beyond classical nucleation theory, building a deeper understanding of cloud particles. *Institute of Meteorology and Climate Research Colloquium*, Karlsruhe Institute of Technology, DE, November 28, 2017.

Turning up the heat, the atmosphere as Earth's thermostat. *Inspirational Lecture for Senior High School Students interested in Climate Change*. Faculty of Science, University of Gothenburg. November, 1, 2016.

Thomson E S. Measuring ice nuclei in the atmosphere: results of inter-equipment comparisons. NSF-Rains Workshop, Microbes at the Interface of Land-Atmosphere Feedbacks: 2nd Session "Consolidating partnerships for impact." Bolzano, IT, March 17-20, 2016.

Thomson E S. Nucleation in the Atmosphere, the limits of classical interpretations. Séminaire CaPPA, University of Lille, FR, February 9, 2016.

Thomson E S. Nucleation in the Atmosphere, the limits of classical interpretations. Surface Chemistry Group, Paul Scherrer Institute, Villigen, CH, January 25, 2016.

Thomson E S. Ice Nucleation in the Atmosphere. Department of Nuclear Science and Technology, University of Nairobi, Nairobi, Kenya, August 19, 2015.

Thomson E S. Ice Nucleation in the Atmosphere. *Nordic Physics Days*. Norwegian University of Science and Technology, Trondheim, Norway, June 10, 2015.

Thomson E S. Results from the Big Glenn Ship Emission Campaign. *Workshop on Exhaust Gas Emissions from Shipping*. Chalmers University of Technology, Gothenburg, Sweden, February 27, 2015.

Thomson E S. Organic coatings, ice nucleation, and water uptake. Aarhus University, Aarhus, Denmark, March 19, 2013.

Thomson E S. Grain boundary wetting and other premelting phenomena - why we don't need to nucleate melt. CRAICC Ice Nucleation Workshop, Copenhagen, Denmark, April 15, 2011.

Thomson E S. From Faraday's Snowball to the Climate Record: Unfrozen Ice. Skidmore College, Saratoga Springs, New York, February 15, 2011.

Presentations and Proceedings:

*70+ Contributed to international scientific conferences, with those from last 5 years presented. Award winning student presentations indicated with *.*

Meier Y, Gaita S M, Schneider L, Thomson E S, Pettersson J B C, Gaita S M, Ebert M, Steinbacher M, Gatari M, Schrod J, Weber D, Curtius J, Bingemer H. Ice nucleating particles at the Mt. Kenya GAW Station. Geophysical Research Abstracts Vol. 20, EGU2018-3443, EGU General Assembly 2018.

Schrod J, Weber D, Thomson E S, Saturno J, Pöhlker C, Artoto P, Clouard V, Saurel J-M, Hansson H-C, Curtius J, Bingemer H. A globally operating network for INP sampling. Geophysical Research Abstracts Vol. 20, EGU2018-1730, EGU General Assembly 2018.

Meier Y, Gaita S M, Schneider L, Thomson E S, Schrod J, Ebert M, Curtius J, Bingemer H. Abundance and composition of ice nuclei in the equatorial free troposphere. INUIT Final Conference and the Second Atmospheric Ice Nucleation Conference, Grasellenbach DE, February 26 - March 1, 2018.

Schrod J, Weber D, Thomson E S, Saturno J, Pöhlker C, Artoto P, Clouard V, Saurel J-M, Hansson H-C, Curtius J, Bingemer H. Long-term observations from a small globally operating INP network. INUIT Final Conference and the Second Atmospheric Ice Nucleation Conference,

Grasellenbach DE, February 26 - March 1, 2018.

Thomson, E S, Castarède D, Cziczo D, Kong X and Wolf M. Deliquescence and Ice Nucleation at near- and sub- Eutectic Temperatures. INUIT Final Conference and the Second Atmospheric Ice Nucleation Conference, Grasellenbach DE, February 26 - March 1, 2018.

Thomson, E S, Castarède D, Cziczo D, Kong X and Wolf M. Deliquescence and Ice Nucleation at near- and sub- Eutectic Temperatures. Physics and Chemistry of Ice (PCI), Zurich CH, January 8-12, 2018.

Thomson, E S. Cloud Particle Formation: fundamentals and fun! Interdisciplinary Workshop on Biophysical Atmospheric Processes. Nov. 1-3, Sven Lovn Marine Center, Kristineberg, SE.

Gaita S M, Thomson E S, Pettersson J B C, Boman J, Gatari M J, Andersson, A. Particle number and elemental concentrations at Mount Kenya Global Atmospheric Watch Station in Kenya. EAC, Zurich CH, Aug. 27-Sep. 1, 2017.

Johansson S M, Kong X, Thomson E S, Pettersson J B C. Environmental Molecular Beam studies of water interactions with condensed nopinone surface. EAC, Zurich CH, Aug. 27-Sep. 1, 2017.

*Casterede D, Bilde M, Thomson E S. A thermodynamic description for the hygroscopic growth of atmospheric aerosol particles. ICNAA, Helsinki FI, June 25-30, 2017.

Gaita S M, Maier Y, Boman J, Gatari M J, Bingemer H, Pettersson J B C, Thomson E S. Observations of a diurnal cycle of ice nucleating particle concentration on the shoulders of Mt. Kenya. ICNAA, Helsinki FI, June 25-30, 2017.

*Johansson S M, Kong X, Thomson E S, Pettersson J B C. Environmental Molecular Beam studies of molecular level interactions between water and a condensed nopinone surface. ICAC, Lille FR, March 21-23, 2017.

Schrod J, Weber D, Thomson E S, Pöhlker C, Saturno J, Artaxo P, Curtius J, and Bingemer H. Ice nucleating particles from a large-scale sampling network: insight into geographic and temporal variability. Geophysical Research Abstracts Vol. 19, EGU2017-13773, EGU General Assembly 2017.

Psichoudaki M, Faxon C, Kuuluvainen H, Le Breton M, Salberg H, Hallquist Å, Thomson E, and Hallquist M. Aged ship emissions before and after the decrease of the sulphur fuel content. European Aerosol Conference, Tours, FR, Sept. 4-9, 2016.

Johansson S M, Kong X, Papagiannakopoulos P, Thomson E S, Pettersson J B C. Water interactions with organic surfaces studied with the environmental molecular beam method. European Aerosol Conference, Tours, FR, Sept. 4-9, 2016.

Thomson E S and Pettersson J B C. Fundamental process studies in the context of changing

Arctic climate. 4th Nordic Conference on Climate Change Adaptation, Bergen, NO, August 29-31, 2016.

Johansson S M, Kong X, Thomson E S, Papagiannakopoulos P, Pettersson J B C, Lovrić J, and Toubin C. Water interactions with condensed organic phases: a combined experimental and theoretical study of molecular-level processes. Geophysical Research Abstracts Vol. 18, EGU2016-10890, EGU General Assembly 2016.

Weber D, Schrod J, Curtius J, Haunold W, Thomson E S and Bingemer H. Ice nucleating particles measured during the laboratory and field intercomparisons FIN-2 and FIN-3 by the diffusion chamber FRIDGE. Geophysical Research Abstracts Vol. 18, EGU2016-15704, EGU General Assembly 2016.

Ausmeell S, Kristensson A, Psichoudaki M, Faxon C, Kuuluvainen H, Thomson E S, Eriksson A, Mellqvist J, Pettersson J B C, Hallquist Å, Svenningsson B and Hallquist M. Black carbon emission factors from shipping. NOSA symposium, Aarhus, DK, April 4-6, 2016.

Duplissy J, Nguyen Q, Thomson, E S, Ahonen L, Kulmala M, Petäjä T, Sipila M, Bide M and Swietlicki E. Ice Nucleation Chambers for CRAICC. NOSA symposium, Aarhus, DK, April 4-6, 2016.

Thomson E S. A thermodynamic description for the pre-deliqescence of atmospheric aerosol particles. CRAICC Final Annual Meeting, Hyytiälä, FI, May 9-12 2016.

Castarede D and Thomson E S. A thermodynamic description for the pre-deliqescence of atmospheric aerosol particles. 7th GAC Conference, Gothenburg, SE, April 26-27, 2016.

Corstjens W, Thomson E S, Watne Å K, Hallquist M, Hallquist Å, Pettersson J B C. Sulfur in Shipping Plumes measured in the Port of Gothenburg. 7th GAC Conference, Gothenburg, SE, April 26-27, 2016.

Faxon C, Psichoudaki M, Kuuluvainen H, Thomson E S, Eriksson A, Kristensson A, Svenningsson B, Mellqvist J, Hallquist Å, Salo K, Hallquist M and Pettersson J B C. Measurements of Particulates and Gas Phase Precursor Emissions from Fresh Ship Plumes during the Big Glenn 2014 Campaign. 7th GAC Conference, Gothenburg, SE, April 26-27, 2016.

Gaita S M, Qvick F, Gall D, Pettersson J B C, Thomson E S and Boman, J. Source apportionment of particulate matter sampled during ships emission measurement campaign in city of Gothenburg, Sweden. 7th GAC Conference, Gothenburg, SE, April 26-27, 2016.

Johansson S M, Kong X, Thomson E S, Papagiannakopoulos P, Pettersson J B C, Lovrić J, and Toubin C. Water interactions with condensed organic phases: a combined experimental and theoretical study of molecular-level processes 7th GAC Conference, Gothenburg, SE, April 26-27, 2016.

Thomson E S, Weber D, Tuomi, Pettersson J B C, Bingemer H G. Ice Nucleation from Ship

Emissions. In *Atmospheric Ice Formation Process and Impacts*, AGU, San Francisco, CA, December 2015.

Castarede D, and Thomson E S. A thermodynamic description for the pre-deliqescence of atmospheric aerosol particles. Presented at the December 2015 Graduate Virtual Poster Showcase, AGU Showcase, Washington, DC, 2015.

Duplissy J, Nguyen Q, Thomson E S, Hemmilä V, Kulmala M, Petäjä T, Sipilä, Bilde M, Swietlicki E. Ice Nucleation Chambers for CRAICC. NOSA-FAAR, Kuopio, Finland, March 11-13, 2015.

Nguyen Q T, Thomson E S, Duplissy J, Ahonen, LR, Kulmala M, Petäjä T, Sipilä, M, Swietlicki E, Kanji Z A, Sierau B, Stratmann F and Bilde M. Development of a Portable Ice Nucleation Chamber (PINCii) for field measurements. 12th Informal Conference on Atmospheric and Molecular Science, June 2015, Aarhus, Denmark.

Duplissy J, Nguyen Q, Thomson E S, Hemmilä V, Kulmala M, Petäjä T, Sipilä, Bilde M, Swietlicki E. Ice Nucleation Properties of Particles from Northern Eurasia. PEEEX Science Conference, Helsinki, Finland, February 10-13, 2015.

Kong X, Papagiannakopoulos P, Thomson E S, Johansson S, & Pettersson J B C. Development of a new generation of environmental molecular beam method. Workshop on Chemical Atmosphere-Snow-Sea Ice Interactions, Cambridge, England, October 2014.

Hallquist Å, Hallquist M, Pathak R K, Xiangyu Pei, Pettersson J B C, Thomson E S, Tuomi J & Watne Å. An overview of the Big Glenn 2013 ship emission study. 2nd Swedish SOLAS Workshop, Gothenburg, Sweden, August 27-28, 2014.

Tuomi J, Weber D, Haunold W, Bingemer H, Pettersson J B C & Thomson E S. The Effects of Ship Plumes on Ice Nuclei. 2nd Swedish SOLAS Workshop, Gothenburg, Sweden, August 27-28, 2014.

Thomson E S, Kong X, Papagiannakopoulos P, Marković N, & Pettersson J B C. Critical ice supersaturations for deposition nucleation below 200 K and implications for higher temperatures. 13th International Conference on the Physics and Chemistry of Ice, Hanover, NH, USA, March 2014.

Kong X, Papagiannakopoulos P, Thomson E S, & Pettersson J B C. Water accommodation on bare and coated ice surfaces. 13th International Conference on the Physics and Chemistry of Ice, Hanover, NH, USA, March 2014.

Papagiannakopoulos P, Kong X, Thomson E S, & Pettersson J B C. Water interaction with acetic acid layers on ice and graphite. 13th International Conference on the Physics and Chemistry of Ice, Hanover, NH, USA, March 2014.

Thomson E S, Bartels-Rausch T, Riche F, Schneebeli M & Ammann M. Measuring the in-

fluence of microstructure on trace gas-ice interactions. Davos Atmosphere and Cryosphere Assembly, Davos CH, July 2013.

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