
References

- Alfarra, M. R., H. Coe, J. D. Allan, K. N. Bower, H. Boudries, M. R. Canagaratna, J. L. Jimenez, J. T. Jayne, A. Garforth, S.-M. Li and D. R. Worsnop (2004). "Characterization of Urban and Rural Organic Particulate in the Lower Fraser Valley Using Two Aerodyne Aerosol Mass Spectrometers." *Atmospheric Environment* **38**(34): 5745-5758.
- Allan, J. D. (2004), PhD Thesis, *An Aerosol Mass Spectrometer: Instrument Development, Data Analysis Techniques and Quantitative Atmospheric Particulate Measurements*, Physics Department, UMIST, Manchester.
- Allan, J. D., M. R. Alfarra, K. N. Bower, P. I. Williams, M. W. Gallagher, J. L. Jimenez, A. G. McDonald, E. Nemitz, M. R. Canagaratna, J. T. Jayne, H. Coe and D. R. Worsnop (2003a). "Quantitative Sampling Using an Aerodyne Aerosol Mass Spectrometer - 2. Measurements of Fine Particulate Chemical Composition in Two U.K. Cities." *Journal of Geophysical Research-Atmospheres* **108**(D3): art. no.-4091.
- Allan, J. D., K. N. Bower, H. Coe, H. Boudries, J. T. Jayne and D. R. Worsnop (2004a). "Submicron Aerosol Composition at Trinidad Head, Ca, During Itct 2k2, Its Relationship with Gas Phase Volatile Organic Carbon and Assessment of Instrument Performance." *Journal of Geophysical Research-Atmospheres* **109**(D23): D23S24, doi, 10.1029/2003JD004208.
- Allan, J. D., A. E. Delia, H. Coe, K. N. Bower, M. R. Alfarra, J. L. Jimenez, A. M. Middlebrook, F. Drewnick, T. B. Onasch and M. R. Canagaratna (2004b). "A Generalised Method for the Extraction of Chemically Resolved Mass Spectra from Aerodyne Aerosol Mass Spectrometer Data." *Journal of Aerosol Science* **35**(7): 909-922.
- Allan, J. D., J. L. Jimenez, P. I. Williams, M. R. Alfarra, K. N. Bower, J. T. Jayne, H. Coe and D. R. Worsnop (2003b). "Quantitative Sampling Using an Aerodyne Aerosol Mass Spectrometer - 1. Techniques of Data Interpretation and Error Analysis." *Journal of Geophysical Research-Atmospheres* **108**(D3): art. no.-4090.
- Allen, J. and R. K. Gould (1981). "Mass-Spectrometric Analyser for Individual Aerosol-Particles." *Review of Scientific Instruments* **52**(6): 804-809.
- Allen, J. O., D. P. Fergenson, E. E. Gard, L. S. Hughes, B. D. Morrical, M. J. Kleeman, D. S. Gross, M. E. Galli, K. A. Prather and G. R. Cass (2000). "Particle Detection Efficiencies of Aerosol Time of Flight Mass Spectrometers under Ambient Sampling Conditions." *Environmental Science & Technology* **34**(1): 211-217.
- Almasi, G. S., J. Blair, R. E. Ogilvie and R. J. Schwartz (1965). "A Heat-Flow Problem in Electron-Beam Microprobe Analysis." *Journal of Applied Physics* **36**: 1848-1854.
- Andreae, M. O. (2001). "The Dark Side of Aerosols." *Nature* **409**: 671-672.
- Aschmann, S. M., R. Atkinson and J. Arey (2002). "Products of Reaction of OH Radicals with α -Pinene." *Journal of Geophysical Research* **107**(D14): 4191.
- Baltensperger, U., H. W. Gaggeler, D. T. Jost, M. Emenegger and W. Nageli (1991). "Continuous Background Aerosol Monitoring with the Epiphaniometer." *Atmospheric Environment* **25A**: 629-634.
- Baltensperger, U., H. W. Gaggeler, D. T. Jost, M. Lugauer, M. Schwikowski, Weingartner E. and P. Seibert (1997a). "Aerosol Climatology at the High-Alpine

- Site Jungfrauoch, Switzerland.*" Journal of Geophysical Research **102**: 19707-19715.
- Baltensperger, U., M. Lugauer, S. Nyeki, I. Colbeck, H. W. Gaggeler, D. T. Jost, F. Li, M. Schwikowski and W. E. (1997b). "*The Variability of Aerosol Parameters at the High Alpine Site Jungfrauoch, 3454 m asl.*" Journal of Aerosol Science **28**(Suppl.1): S405-S406.
- Baltensperger, U., M. Schwikowski, D. T. Jost, S. Nyeki, H. W. Gaggeler and O. Poulida (1998). "*Scavenging of Atmospheric Constituents in Mixed Phase Clouds at the High-Alpine Site Jungfrauoch Part I: Basic Concept and Aerosol Scavenging by Clouds.*" Atmospheric Environment **32**(23): 3975-3983.
- Balzers Instruments (2000). Quadrupole Mass Spectrometer: Partial Pressure Measurement in Vacuum Technology. FL9496 Balzers, Fürstentum Liechtenstein.
- Baumgardner, D., J. W. Strapp and J. E. Dye (1985). "*Evaluation of the Forward Scattering Spectrometer Probe. II: Corrections for Coincidence and Dead-Time Losses.*" Journal of Atmos. Ocean. Tech. **2**: 626-632.
- Beddows, D. C. S., R. J. Donovan, R. M. Harrison, M. R. Heal, R. P. Kinnersley, M. D. King, D. H. Nicholson and K. C. Thompson (2004). "*Correlations in the Chemical Composition of Rural Background Atmospheric Aerosol in the Uk Determined in Real Time Using Time-of-Flight Mass Spectrometry.*" Journal of Environmental Monitoring **6**(2): 124-133.
- Berner, A., C. Lurzer, F. Pohl, O. Preining and P. Wagner (1979). "*Size Distribution of the Urban Aerosol in Vienna.*" Science of the Total Environment **13**: 246-261.
- Bhave, P. V., D. P. Fergenson, K. A. Prather and G. R. Cass (2001). "*Source Apportionment of Fine Particulate Matter by Clustering Single-Particle Data: Tests of Receptor Model Accuracy.*" Environmental Science & Technology **35**(10): 2060-2072.
- Blando, J. D., R. J. Porcja, T. Li, -H., D. Bowman, P. J. Liroy and B. J. Turpin (1998). "*Secondary Formation and the Smoky Mountain Organic Aerosol: An Examination of Aerosol Polarity and Functional Group Composition During SEAVS.*" Environmental Science & Technology **32**: 604-613.
- Bley, W. G. (1988). "*Quantitative Measurements with Quadrupole Mass Spectrometers - Important Specifications for Reliable Measurements.*" Vacuum **38**(2): 103-109.
- Boudries, H., M. R. Canagaratna, J. T. Jayne, M. R. Alfarra, J. D. Allan, K. N. Bower, H. Coe, S. C. Pryor, J. L. Jimenez, J. R. Brook, S. Li and D. R. Worsnop (2004). "*Chemical and Physical Processes Controlling the Distribution of Aerosol in the Lower Fraser Valley, Canada, during the Pacific 2001 Field Campaign.*" Atmospheric Environment **38**(34): 5759-5774.
- Bower, K. N., T. W. Choularton, M. J. Flynn, E. Swietliki and B. Martinsson (2000a). "*Observations of the Interaction of an Urban Plume with Cloud.*" Journal of Aerosol Science **31**(Supplement 1): 66-67.
- Bower, K. N., T. W. Choularton, M. W. Gallagher, K. M. Beswick, M. J. Flynn, A. G. Allen, B. M. Davidson, J. D. James, L. Robertson, R. M. Harrison, C. N. Hewitt, J. N. Cape, G. G. McFadyen, C. Milford, M. A. Sutton, B. G. Martinsson, G. Frank, E. Swietlicki, J. Zhou, O. H. Berg, B. Menten, G. Papaspiropoulos, H. C. Hansson, C. Leck, M. Kulmala, P. Aalto, M. Väkevä, A. Berner, M. Bizjak, S. Fuzzi, P. Laj, M. C. Facchini, G. Orsi, L. Ricci, M. Nielsen, B. J. Allan, H. Coe, G. McFiggans, J. M. C. Plane, J. L. Collet Jr., K. F. Moore and D. E. Sherman (2000b). "*Ace-2*

- Hillcloud. An Overview of the ACE-2 Ground-Based Cloud Experiment.*" *Tellus Series B-Chemical and Physical Meteorology* **52**(2): 750-778.
- Bower, K. N., T. W. Choulaton, M. W. Gallagher, R. N. Colvile, K. M. Beswick, D. W. F. Inglis, C. Bradbury, B. G. Martinsson, E. Swietlicki, O. H. Berg, S. I. Cederfelt, G. Frank, J. Zhou, J. N. Cape, M. A. Sutton, G. G. McFadyen, C. Milford, W. Birmili, B. A. Yuskievich, A. Wiedensohler, F. Stratmann, M. Wendisch, A. Berner, P. Ctyroky, Z. Galambos, S. H. Mesfin, U. Dusek, C. J. Dore, D. S. Lee, S. A. Pepler, M. Bizjak and B. Divjak (1999). "*The Great Dun Fell Experiment 1995: An Overview.*" *Atmospheric Research* **50**(3-4): 151-184.
- Bowler, C. and P. Brimblecombe (1992). "*Archives and Air-Pollution History.*" *Journal of the Society of Archivists* **13**(2): 136-142.
- Brimblecombe, P. (1987). *The Big Smoke: A History of Air Pollution in London since Medieval Times.* London; New York, Methuen.
- Brook, R. D., J. R. Brook, B. Urch, R. Vincent, S. Rajagopalan and F. Silverman (2002). "*Inhalation of Fine Particulate Air Pollution and Ozone Causes Acute Arterial Vasoconstriction in Healthy Adults.*" *Circulation* **105**(11): 1534-1536.
- Cabalo, J., A. Zelenyuk, T. Baer and R. E. Miller (2000). "*Two-Color Laser Induced Evaporation Dynamics of Liquid Aerosols Probed by Time-of-Flight Mass Spectrometry.*" *Aerosol Science and Technology* **33**(1-2): 3-19.
- Canagaratna, M. R., J. T. Jayne, D. A. Ghertner, S. Herndon, Q. Shi, J. L. Jimenez, P. J. Silva, P. Williams, T. Lanni, F. Drewnick, K. L. Demerjian, C. E. Kolb and D. R. Worsnop (2004). "*Chase Studies of Particulate Emissions from in-Use New York City Vehicles.*" *Aerosol Science & Technology* **38**: 555-573.
- Carmichael, G. R., M.S. Hong, H. Ueda, L.L. Chen, K. Murano, J.K. Park, H.G. Lee, Y. Kim, C. Kang and S. Shim (1997). "*Aerosol Composition at Cheju Island, Korea.*" *Journal of Geophysical Research* **102 (D5)**: 6047-6061.
- Carmichael, G. R., Y. Zhang, L.-L. Chen, M.-S. Hong and H. Ueda (1996). "*Seasonal Variation on Aerosol Composition at Cheju Island, Korea.*" *Atmospheric Environment* **30**: 2407-2416.
- Carson, P. G., K. R. Neubauer, M. V. Johnston and A. S. Wexler (1995). "*Online Chemical-Analysis of Aerosols by Rapid Single-Particle Mass-Spectrometry.*" *Journal of Aerosol Science* **26**(4): 535-545.
- Castro, L. M., C. A. Pio, R. M. Harrison and D. J. T. Smith (1999). "*Carbonaceous Aerosol in Urban and Rural European Atmospheres: Estimation of Secondary Organic Carbon Concentrations.*" *Atmospheric Environment* **33**(17): 2771-2781.
- Charlson, R. J. and J. Heintzenberg (1995). *Aerosol Forcing of Climate.* Chichester, Wiley.
- Charlson, R. J., S. E. Schwartz, J. M. Hales, R. D. Cess, J. A. Coakley, J. E. Hansen and D. J. Hofmann (1992). "*Climate Forcing by Anthropogenic Aerosols.*" *Science* **255**(5043): 423-430.
- Chen, L.-L., G. R. Carmichael, M.-S. Hong, H. Ueda, S. Shim, C. H. Song, Y. P. Kim, R. Arimoto, J. Prospero, D. Savoie, K. Murano, J. K. Park, H.-G. Lee and C. Kang (1997). "*Influence of Continental Outflows on the Aerosol Composition at Cheju Island, South Korea.*" *Journal of Geophysical Research* **102 (D23)**: 28551-28574.
- Chen, Y. H., M. Gonin, K. Fuhrer, A. Dodonov, C. S. Su and H. Wollnik (1999). "*Orthogonal Electron Impact Source for a Time-of-Flight Mass Spectrometer with High Mass Resolving Power.*" *International Journal of Mass Spectrometry* **185-187**: 221-226.

- Cheng, M. T. and Y. I. Tsai (2000). "*Characterization of Visibility and Atmospheric Aerosols in Urban, Suburban, and Remote Areas.*" *The Science of the Total Environment* **263**: 101-114.
- Choularton, T. W. (1995). "*The Interaction of Aerosols with Clouds, the Aerosol Modification by Clouds and Its Implication for Climate Change.*" *Journal of Aerosol Science* **26**(4): 695.
- Choularton, T. W., R. N. Colvile, K. N. Bower, M. W. Gallagher, M. Wells, K. M. Beswick, B. G. Arends, J. J. Mols, G. P. A. Kos and S. Fuzzi (1997). "*The Great Dun Fell Cloud Experiment 1993: An Overview.*" *Atmospheric Environment* **31**(16): 2393-2405.
- Chow, J. C. (1995). "*Measurement Methods to Determine Compliance with Ambient Air-Quality Standards for Suspended Particles.*" *Journal of the Air & Waste Management Association* **45**(5): 320-382.
- Chow, J. C., J. G. Watson, L. C. Pritchett, W. R. Pierson, C. A. Frazier and R. G. Purcell (1993). "*The Dri Thermal/Optical Reflectance Carbon Analysis System: Description, Evaluation and Applications in US Air Quality Studies.*" *Atmospheric Environment* **27A**: 1185-1201.
- Cocker, D. R., B. T. Mader, M. Kalberer, R. C. Flagan and S. J. H. (2001). "*The Effect of Water on Gas-Particle Partitioning of Secondary Organic Aerosol: II. M-Xylene and 1,3,5-Trimethylbenzene Photooxidation Systems.*" *Atmospheric Environment* **35**: 6073-6085.
- Cubison, M. J., M. R. Alfarra, J. D. Allan, H. Coe, G. McFiggans, D. Topping and P. I. Williams (2004). "*An Investigation into Atmospheric Processing of Urban Aerosol Using a Hygroscopic Tandem Dma in Conjunction with an Aerosol Mass Spectrometer.*" *Geophysical Research Abstracts* **6**: 01080.
- Cubison, M. J., M. R. Alfarra, J. D. Allan, H. Coe, G. B. McFiggans and P. I. Williams (2003). "*Design, Construction and Use of a Hygroscopic Tandem Differential Mobility Analyser in Conjunction with an Aerosol Mass Spectrometer.*" *Journal of Aerosol Science* **34**(S2): S1199-S1200.
- Dall'Osto, M., D. C. S. Beddows, R. P. Kinnersley, R. M. Harrison, R. J. Donovan and M. R. Heal (2004). "*Characterization of Individual Airborne Particles by Using Aerosol Time-of-Flight Mass Spectrometry at Mace Head, Ireland.*" *Journal of Geophysical Research* (in press).
- Danilatos, G. D. (1988). "*Foundations of Environmental Scanning Electron Microscopy.*" *Advances in Electronics and Electron Physics* **71**: 109-250.
- Danilatos, G. D. and R. Postle (1982). "*The Environmental Scanning Electron Microscope and Its Applications.*" *Scanning Electron Microscopy I*: 1-16.
- Davis, W. D. (1973). "*Surface Ionization Mass Spectroscopy of Airborne Particulates.*" *Journal of Vacuum Science and Technology* **10**(1): 278.
- Decesari, S., M. C. Facchini, S. Fuzzi and E. Tagliavini (2000). "*Characterization of Water-Soluble Organic Compounds in Atmospheric Aerosol: A New Approach.*" *Journal of Geophysical Research-Atmospheres* **105**(D1): 1481-1489.
- Delia, A. (2004), PhD Thesis, Program in Atmospheric and Oceanic Science, University of Colorado, Boulder.
- Department of Health (1995). *Committee on the Medical Effects of Air Pollution. Non-Biological Particles and Health.* London.
- Dockery, D. W., C. A. Pope, X. P. Xu, J. D. Spengler, J. H. Ware, M. E. Fay, B. G. Ferris and F. E. Speizer (1993). "*An Association between Air-Pollution and*

- Mortality in 6 United States Cities.*" New England Journal of Medicine **329**(24): 1753-1759.
- Dockery, D. W., F. E. Speizer, D. O. Stram, J. H. Ware, J. D. Spengler and B. G. Ferris (1989). "*Effects of Inhalable Particles on Respiratory Health of Children.*" American Review of Respiratory Disease **139**: 587-594.
- Donaldson, K. and W. MacNee (1998). *The Mechanism of Lung Injury Caused by PM₁₀. Issues in Environmental Science and Technology.* R. E. Hester and R. M. Harrison, Royal Society of Chemistry. **10**: 21-32.
- Dorsey, J. R., E. Nemitz, M. W. Gallagher, D. Fowler, P. I. Williams, K. N. Bower and K. M. Beswick (2002). "*Direct Measurements and Parameterisation of Aerosol Flux, Concentration and Emission Velocity above a City.*" Atmospheric Environment **36**(5): 791-800.
- Drewnick, F., J. T. Jayne, M. R. Canagaratna, D. R. Worsnop and K. L. Demerjian (2004a). "*Measurement of Ambient Aerosol Composition During the PMTACS-NY 2001 Using an Aerosol Mass Spectrometer Part II: Chemically Speciated Mass Distributions.*" Aerosol Science & Technology **38** (S1): 104 - 117.
- Drewnick, F., J. J. Schwab, O. Hogrefe, S. Peters, L. Husain, D. Diamond, R. Weber and K. L. Demerjian (2003). "*Intercomparison and Evaluation of Four Semi-Continuous Pm-2.5 Sulfate Instruments.*" Atmospheric Environment **37**: 3335-3350.
- Drewnick, F., J. J. Schwab, J. T. Jayne, M. R. Canagaratna, D. R. Worsnop and K. L. Demerjian (2004b). "*Measurement of Ambient Aerosol Composition During the PMTACS-NY 2001 Using an Aerosol Mass Spectrometer. Part I: Mass Concentrations.*" Aerosol Science & Technology **38** (S1): 92 - 103.
- Eatough, D. J., H. Tang, W. Cui and J. Machir (1995). "*Determination of the Size Distribution and Chemical Composition of Fine Particulate Semi-Volatile Organic Material in Urban Environments Using Diffusion Denuder Technology.*" Inhalation Toxicology **7**: 691-710.
- EPA (1997). 40 Cfr Part 50. National Ambient Air Quality Standards for Particulate Matter; Final Rule. Federal Register (USA) 62:138.
- Facchini, M. C., S. Fuzzi, S. Zappoli, A. Andracchio, A. Gelencser, G. Kiss, Z. Krivacsy, E. Meszaros, H.-C. Hansson, T. Alsberg and Y. Zebuhr (1999a). "*Partitioning of the Organic Aerosol Component between Fog Droplets and Interstitial Air.*" Journal of Geophysical Research **104**: 26821-26832.
- Facchini, M. C., M. Mircea, S. Fuzzi and R. J. Charlson (1999b). "*Cloud Albedo Enhancement by Surface-Active Organic Solutes in Growing Droplets.*" Nature **401**(6750): 257-259.
- Fehsenfeld, F., J. Calvert, R. Fall, P. Goldan, A. B. Guenther, C. N. Hewitt, B. Lamb, S. Liu, M. Trainer, H. Westberg and P. Zimmerman (1992). "*Emissions of Volatile Organic Compounds from Vegetation and the Implications for Atmospheric Chemistry.*" Global Biogeochemical Cycles **6**: 389-430.
- Fenger, J. (1999). "*Urban Air Quality.*" Atmospheric Environment **33**(29): 4877-4900.
- Finlayson-Pitts, B. J. and J. N. Pitts (1997). "*Tropospheric Air Pollution: Ozone, Airborne Toxics, Polycyclic Aromatic Hydrocarbons, and Particles.*" Science **276**(5315): 1045-1052.
- Finlayson-Pitts, B. J. and J. N. Pitts (2000). *Chemistry of the Upper and Lower Atmosphere: Theory, Experiments and Applications.* San Diego, Calif.; London, Academic Press.

- Fisseha, R., J. Dommen, M. Sax, D. Paulsen, M. Kalberer, R. Maurer, F. Höfler and U. Baltensperger (2004). "*Identification of Organic Acids in Secondary Organic Aerosol from Chamber Experiments.*" submitted to Analytical Chemistry.
- Fitzgerald, J. W. (1973). "*Dependence of the Supersaturation Spectrum of Ccn on Aerosol Size Distribution and Composition.*" *Journal of Atmospheric Science* **30**: 628-634.
- Flagan, R. C. (1998). "*History of Electrical Aerosol Measurements.*" *Aerosol Science and Technology* **28**(4): 301-380.
- Flynn, M. J., K. N. Bower, T. W. Choularton, W. Wobrock, J. M. Makela, B. Martinsson, G. Frank, H. C. Hansson, H. Karlsson and P. Laj (2000). "*Modelling Cloud Processing of Aerosol During the ACE-2 Hillcloud Experiment.*" *Tellus Series B-Chemical and Physical Meteorology* **52**(2): 779-800.
- Forstner, H. J. L., R. C. Flagan and S. J. H. (1997). "*Secondary Organic Aerosol from the Photooxidation of Aromatic Hydrocarbons: Molecular Composition.*" *Environmental Science & Technology* **31**: 1345-1358.
- Gard, E., J. E. Mayer, B. D. Morrical, T. Dienes, D. P. Fergenson and K. A. Prather (1997). "*Real-Time Analysis of Individual Atmospheric Aerosol Particles: Design and Performance of a Portable ATOFMS.*" *Analytical Chemistry* **69**(20): 4083-4091.
- Gillani, N. V., S. E. Schwartz, W. R. Leitch, J. W. Strapp and G. A. Isaac (1995). "*Field Observations in Continental Stratiform Clouds: Partitioning of Cloud Particles between Droplets and Unactivated Aerosols.*" *Journal of Geophysical Research* **100**(18): 687-18, 706.
- Glasius, M., M. Lahaniati, A. Calogirou, D. D. Bella, N. R. Jensen, J. Hjorth, D. Kotzias and B. R. Larsen (2000). "*Carboxylic Acids in Secondary Aerosol from Oxidation of Cyclic Monoterpenes by Ozone.*" *Environmental Science & Technology* **34**: 1001-1010.
- Gray, H. A., G. R. Cass, J. J. Huntzicker, E. K. Heyerdahl and J. A. Rau (1986). "*Characteristics of Atmospheric Organic and Elemental Carbon Particle Concentrations in Los Angeles.*" *Environmental Science and Technology* **20**(580-582).
- Griffin, R. J., D. R. Cocker, R. C. Flagan and S. J. H. (1999). "*Organic Aerosol Formation from the Oxidation of Biogenic Hydrocarbons.*" *Journal of Geophysical Research* **104**(NO. D3): 3555-3567.
- Griffin, R. J., D. Dabdub and S. J. H. (2002). "*Secondary Organic Aerosol, 1. Atmospheric Chemical Mechanism for Production of Molecular Constituents.*" *Journal of Geophysical Research* **107**(NO. 0): 10.1029/2001JD000541.
- Grosjean, D. and S. K. Friedlander (1975). "*Gas-Particle Distribution Factors for Organics and Other Pollutants in the Los Angeles Atmosphere.*" *Journal of Air Pollution Control Association* **25**: 1038-1044.
- Grosjean, D., E. L. Williams II and E. Grosjean (1994). "*Evolved Gas Analysis of Secondary Organic Aerosols.*" *Aerosol Science & Technology* **21**: 306-324.
- Gross, D. S., M. E. Galli, P. J. Silva and K. A. Prather (2000). "*Relative Sensitivity Factors for Alkali Metal and Ammonium Cations in Single Particle Aerosol Time-of-Flight Mass Spectra.*" *Analytical Chemistry* **72**(2): 416-422.
- Guenther, A., C. N. Hewitt, D. Erickson, R. Fall, C. Geron, T. Graedel, P. Harley, L. Klinger, M. Lerdau, W. A. McKay, T. Pierce, B. Scholes, R. Steinbrecher, R. Tallamraju, J. Taylor and P. Zimmerman (1995). "*A Global Model of Natural*

- Volatile Organic Compound Emissions.*" Journal of Geophysical Research **100**: 8873-8892.
- GVRD (2002). "2000 Emission Inventory for the Lower Fraser Valley Airshed." Greater Vancouver Regional District, Policy & Planning Department 4330 Kingsway, Burnaby, B.C. V5H 4G8.
- Hansen, A. D. A., H. Rosen and T. Novakov (1984). "The Aethalometer - an Instrument for the Real-Time Measurement of Optical-Absorption by Aerosol-Particles." Science of the Total Environment **36**: 191-196.
- Harley, R. A. and G. R. Cass (1995). "Modeling the Atmospheric Concentrations of Individual Volatile Organic Compounds." Atmospheric Environment **29**(8): 905-922.
- Harrison, R. M. and J. X. Yin (2000). "Particulate Matter in the Atmosphere: Which Particle Properties Are Important for Its Effects on Health?" Science of the Total Environment **249**(1-3): 85-101.
- Havers, N., P. Burba, J. Lambert and D. Klockow (1998). "Spectroscopic Characterisation of Humic-Like Substances in Airborne Particulate Matter." Journal of Atmospheric Chemistry **29**: 45-54.
- Heintzenberg, J. and R. J. Charlson (1996). "Design and Applications of the Integrating Nephelometer: A Review." Journal of Atmospheric and Oceanic Technology **13**(5): 987-1000.
- Henning, S., E. Weingartner, S. Schmidt, M. Wendisch, H. W. Gaggeler and U. Baltensperger (2002). "Size-Dependent Aerosol Activation at the High-Alpine Site Jungfrauoch (3580 m asl)." Tellus Series B-Chemical and Physical Meteorology **54**(1): 82-95.
- Hildemann, L. M., W. F. Rogge, G. R. Cass, M. A. Mazurek and B. R. T. Simoneit (1996). "Contribution of Primary Aerosol Emissions from Vegetation-Derived Sources to Fine Particle Concentrations in Los Angeles." Journal of Geophysical Research **101**: 19541-19549.
- Hinds, W. C. (1999). *Aerosol Technology: Properties, Behavior, and Measurement of Airborne Particles, Second Edition*. New York; Chichester; Weinheim; Brisbane; Singapore; Toronto, Wiley-Interscience.
- Hinz, K. P., R. Kaufmann and B. Spengler (1994). "Laser-Induced Mass Analysis of Single Particles in the Airborne State." Analytical Chemistry **66**(13): 2071-2076.
- Hinz, K. P., R. Kaufmann and B. Spengler (1996). "Simultaneous Detection of Positive and Negative Ions from Single Airborne Particles by Real-Time Laser Mass Spectrometry." Aerosol Science and Technology **24**(4): 233-242.
- Hobbs, P. V. (1993). *Aerosol-Cloud-Climate Interactions*. San Diego, Academic Press.
- Hoffmann, T., R. Bandur, S. Hoffmann and B. Warscheid (2002). "On-Line Characterization of Gaseous and Particulate Organic Analytes Using Atmospheric Pressure Chemical Ionization Mass Spectrometry." Spectrochimica Acta Part B-Atomic Spectroscopy **57**(10): 1635-1647.
- Hoffmann, T., J. R. Odum, F. Bowman, D. Collins, D. Klowckow, R. C. Flagan and S. J. H. (1997). "Formation of Organic Aerosols from the Oxidation of Biogenic Hydrocarbons." Journal of Atmospheric Chemistry **26**: 189-222.
- Hogrefe, O., F. Drewnick, G. Lala, J. J. Schwab and K. L. Demerjian (2004). "Development, Operation and Applications of an Aerosol Generation, Calibration and Research Facility." Aerosol Science & Technology **38** (S1): 196 - 214.

- Horvath, H. (1995). "Estimation of the Average Visibility in Central Europe." *Atmospheric Environment* **29**: 241-246.
- Hough, A. M. and C. E. Johnson (1991). "Modelling the Role of Nitrogen Oxides, Hydrocarbons and Carbon Monoxide in the Global Formation of Tropospheric Oxidants." *Atmospheric Environment* **25A**: 1819-1835.
- Huebert, B. J., T. Bates, P.B. Russell, G.Y. Shi, Y.J. Kim, K. Kawamura, G. Carmichael and T. Nakajima (2003). "An Overview of ACE-Asia: Strategies for Quantifying the Relationships between Asian Aerosols and Their Climatic Impacts." *Journal of Geophysical Research* **108 (D23)**: 8633.
- Hunt, A. L. and G. A. Petrucci (2002). "Analysis of Ultrafine and Organic Particles by Aerosol Mass Spectrometry." *Trac-Trends in Analytical Chemistry* **21(2)**: 74-81.
- Huntzicker, J. J., R. S. Hoffman and C.-S. Ling (1978). "Continuous Measurement and Speciation of Sulphur-Containing Aerosols by Flame Photometry." *Atmospheric Environment* **12(1)**: 83-88.
- IPCC (2001). *Climate Change 2001: The Scientific Basis*. Cambridge, Cambridge University Press.
- Jacobson, M. Z. (2001). "Strong Radiative Heating Due to the Mixing State of Black Carbon in Atmospheric Aerosols." *Nature* **409**: 695-697.
- Jang, M. and R. M. Kamens (2001). "Characterization of Secondary Aerosol from the Photooxidation of Toluene in the Presence of NO_x and 1-Propene." *Environmental Science & Technology* **35**: 3626-3639.
- Jang, M. S., B. Carroll, B. Chandramouli and R. M. Kamens (2003). "Particle Growth by Acid-Catalyzed Heterogeneous Reactions of Organic Carbonyls on Preexisting Aerosols." *Environmental Science & Technology* **37(17)**: 3828-3837.
- Jaoui, M. and R. M. Kamens (2003). "Gaseous and Particulate Oxidation Products Analysis of a Mixture of α -Pinene + β -Pinene/O₃/Air in the Absence of Light and α -Pinene + β -Pinene/NO_x/Air in the Presence of Natural Sunlight." *Journal of Atmospheric Chemistry* **44**: 259-297.
- Jayne, J. T., D. C. Leard, X. F. Zhang, P. Davidovits, K. A. Smith, C. E. Kolb and D. R. Worsnop (2000). "Development of an Aerosol Mass Spectrometer for Size and Composition Analysis of Submicron Particles." *Aerosol Science and Technology* **33(1-2)**: 49-70.
- Jimenez, J. L., R. Bahreini, D. R. Cocker, H. Zhuang, V. Varutbangkul, R. C. Flagan, J. H. Seinfeld, C. D. O'Dowd and T. Hoffmann (2003a). "New Particle Formation from Photooxidation of Diiodomethane (CH₂I₂)." *Journal of Geophysical Research-Atmospheres* **108(D10)**: art. no.-4318.
- Jimenez, J. L., J. T. Jayne, Q. Shi, C. E. Kolb, D. R. Worsnop, I. Yourshaw, J. H. Seinfeld, R. C. Flagan, X. Zhang, K. A. Smith, J. W. Morris and P. Davidovits (2003b). "Ambient Aerosol Sampling Using the Aerodyne Aerosol Mass Spectrometer." *Journal of Geophysical Research-Atmospheres* **108(D7)**: art. no.-8425.
- Johnston, M. V. (2000). "Sampling and Analysis of Individual Particles by Aerosol Mass Spectrometry." *Journal of Mass Spectrometry* **35(5)**: 585-595.
- Joutsensaari, J., P. Vaattovaara, M. Vesterinen, K. Hameri and A. Laaksonen (2001). "A Novel Tandem Differential Mobility Analyser with Organic Vapour Treatment of Aerosol Particles." *Atmospheric Chemistry and Physics* **1**: 51-60.
- Junge, C. E. (1963). *Air Chemistry and Radioactivity*. New York, Academic Press.

- Junge, C. E. and E. McLaren (1971). "Relationship of Cloud Nuclei Spectra to Aerosol Size Distribution and Composition." *Journal of Atmospheric Science* **28**: 382-390.
- Kalberer, M., D. Paulsen, M. Sax, M. Steinbacher, J. Dommen, A. S. H. Prevot, R. Fisseha, E. Weingartner, V. Frankevich, R. Zenobi and U. Baltensperger (2004). "Identification of Polymers as Major Components of Atmospheric Organic Aerosols." *Science* **303**: 1659-1662.
- Kamens, R., M. Jang, C. Chien and K. Leach (1999). "Aerosol Formation from the Reaction of α -Pinene and Ozone Using a Gas-Phase Kinetics-Aerosol Partitioning Model." *Environmental Science & Technology* **33**: 1430-1438.
- Kamens, R. M. and M. Jaoui (2001). "Modeling Aerosol Formation from α -Pinene + NO_x in the Presence of Natural Sunlight Using Gas-Phase Kinetics and Gas-Particle Partitioning Theory." *Environmental Science & Technology* **35**: 1394-1405.
- Kane, D. B. and M. V. Johnston (2000). "Size and Composition Biases on the Detection of Individual Ultrafine Particles by Aerosol Mass Spectrometry." *Environmental Science & Technology* **34**(23): 4887-4893.
- Katz, M. and C. Chan (1980). "Comparative Distribution of Eight Polycyclic Aromatic Hydrocarbons in Airborne Particles Collected by Conventional High-Volume Sampling and by Size Fractionation." *Environmental Science & Technology* **14**(7): 838-842.
- Kittelson, D. B., R. McKenzie, M. Wermeersch, F. Dorman, D. Piu, M. Linne, B. Y. H. Liu and K. T. Whitby (1978). "Total Sulphur Aerosol Concentration with an Electrostatically Pulsed Flame Photometric Detector System." *Atmospheric Environment* **12**: 105-111.
- Kleindienst, T. E., T. S. Conner, C. D. McIver and E. O. Edney (2004). "Determination of Secondary Organic Aerosol Products from the Photooxidation of Toluene and Their Implications in Ambient $\text{PM}_{2.5}$." *Journal of Atmospheric Chemistry* **47**: 79-100.
- Kleindienst, T. E., D. F. Smith, W. Li, E. O. Edney, D. J. Driscoll, R. E. Speer and W. S. Weathers (1999). "Secondary Organic Aerosol Formation from the Oxidation of Aromatic Hydrocarbons in the Presence of Dry Submicron Ammonium Sulphate Aerosol." *Atmospheric Environment* **33**: 3669-3681.
- Knollenberg, R. G. (1981). *Techniques for Probing Cloud Microstructure. Clouds: Their Formation, Optical Properties, and Effects*. P. V. Hobbs and A. Deepak, Academic Press: 15-91.
- Knutson, E. O. and K. T. Whitby (1975). "Aerosol Classification by Electric Mobility: Apparatus, Theory, and Application." *Journal of Aerosol Science* **6**(6): 443-451.
- Koutrakis, P., C. Sioutas, S. T. Ferguson, J. M. Wolfson, J. D. Mulik and R. M. Burton (1993). "Development and Evaluation of a Glass Honeycomb Denuder Filter Pack System to Collect Atmospheric Gases and Particles." *Environmental Science & Technology* **27**(12): 2497-2501.
- Krivacsy, Z., A. Gelencser, G. Kiss, E. Meszaros, A. Molnar, A. Hoffer, T. Meszaros, Z. Sarvari, D. Temesi, B. Varga, U. Baltensperger, S. Nyeki and W. E. (2001a). "Study of the Chemical Character of Water Soluble Organic Compounds in Fine Atmospheric Aerosol at the Jungfrauoch." *Journal of Atmospheric Chemistry* **39**: 235-259.
- Krivacsy, Z., A. Hoffer, Z. Sarvari, D. Temesi, U. Baltensperger, S. Nyeki, E. Weingartner, S. Kleefeld and S. G. Jennings (2001b). "Role of Organic and Black

- Carbon in the Chemical Composition of Atmospheric Aerosol at European Background Sites.* Atmospheric Environment **35**(36): 6231-6244.
- Krivacsy, Z., G. Kiss, B. Varga, I. Galambos, Z. Sarvari, A. Gelencser, A. Molnar, S. Fuzzi, M. C. Facchini and S. Zappoli (2000). "Study of Humic-Like Substances in Fog and Interstitial Aerosol by Size-Exclusion Chromatography and Capillary Electrophoresis." Atmospheric Environment **34**(25): 4273-4281.
- Kuckelmann, U., B. Warscheid and T. Hoffmann (2000). "On-Line Characterisation of Organic Aerosols Formed from Biogenic Precursors Using Atmospheric Pressure Chemical Ionisation Mass Spectrometry." Analytical Chemistry **72**: 1905-1912.
- Kulmala, M., H. Vehkamaki, T. Petajda, M. Dal Maso, A. Lauri, V. M. Kerminen, W. Birmili and P. H. McMurry (2004). "Formation and Growth Rates of Ultrafine Atmospheric Particles: A Review of Observations." Journal of Aerosol Science **35**(2): 143-176.
- Lane, D. A. and L. Gundel (1996). "Gas and Particle Sampling of Airborne Polycyclic Aromatic Compounds." Polycyclic Aromatic Compounds **9**: 67-73.
- Larsen, B. R., D. D. Bella, M. Glasius, R. Winterhalter, N. R. Jensen and J. Hjorth (2001). "Gas-Phase OH Oxidation of Monoterpenes: Gaseous and Particulate Products." Journal of Atmospheric Chemistry **38**: 231-276.
- Lazar, A. C., P. T. A. Reilly, W. B. Whitten and J. M. Ramsey (2000). "Laser Desorption/in Situ Chemical Ionization Aerosol Mass Spectrometry for Monitoring Tributyl Phosphate on the Surface of Environmental Particles." Analytical Chemistry **72**(9): 2142-2147.
- Leaith, W. R., C. M. Banic, G. A. Isaac, M. D. Couture, P. S. K. Liu, I. Gultepe, S. M. Li, L. Kleinman, P. H. Daum and J. I. MacPherson (1996). "Physical and Chemical Observations in Marine Stratus During the 1993 North Atlantic Regional Experiment: Factors Controlling Cloud Droplet Number Concentrations." Journal of Geophysical Research **101**(29): 123-29, 135.
- Lee, S. H., D. M. Murphy, D. S. Thomson and A. M. Middlebrook (2002). "Chemical Components of Single Particles Measured with Particle Analysis by Laser Mass Spectrometry (PALMS) During the Atlanta Supersite Project: Focus on Organic/Sulfate, Lead, Soot, and Mineral Particles." Journal of Geophysical Research-Atmospheres **107**(D1-D2): 4003.
- Lee, S. H., D. M. Murphy, D. S. Thomson and A. M. Middlebrook (2003). "Nitrate and Oxidized Organic Ions in Single Particle Mass Spectra During the 1999 Atlanta Supersite Project." Journal of Geophysical Research-Atmospheres **108**(D7): 8417.
- Li, S.-M. (2004). "A Concerted Effort to Understand the Ambient Particulate Matter in the Lower Fraser Valley: The Pacific 2001 Air Quality Study." Atmospheric Environment **38**(34): 5719-5731.
- Li, S.-M., K. G. Anlauf, H. A. Wiebe, J. W. Bottenheim, P. B. Shepson and T. Biesenthal (1997). "Emission Ratios and Photochemical Production Efficiencies of Nitrogen Oxides, Ketones, and Aldehydes in the Lower Fraser Valley During the Summer Pacific 1993 Oxidant Study." Atmospheric Environment **31**(14): 2037-2048.
- Limbeck, A., M. Kulmala and H. Puxbaum (2003). "Secondary Organic Aerosol Formation in the Atmosphere Via Heterogeneous Reaction of Gaseous Isoprene on Acidic Particles." Geophysical Research Letters **30**(19): doi:10.1029/2003GL107738.

- Liu, B. Y. H. and D. Y. H. Pui (1974). "*Electrical Neutralization of Aerosols.*" *Journal of Aerosol Science* **5**(5): 465-472.
- Liu, D. Y., K. A. Prather and S. V. Hering (2000). "*Variations in the Size and Chemical Composition of Nitrate-Containing Particles in Riverside, Ca.*" *Aerosol Science and Technology* **33**(1-2): 71-86.
- Liu, P., P. J. Ziemann, D. B. Kittelson and P. H. McMurry (1995a). "*Generating Particle Beams of Controlled Dimensions and Divergence: I. Theory of Particle Motion in Aerodynamic Lenses and Nozzle Expansions.*" *Aerosol Science and Technology* **22**(3): 293-313.
- Liu, P., P. J. Ziemann, D. B. Kittelson and P. H. McMurry (1995b). "*Generating Particle Beams of Controlled Dimensions and Divergence: II. Experimental Evaluation of Particle Motion in Aerodynamic Lenses and Nozzle Expansions.*" *Aerosol Science and Technology* **22**(3): 314-324.
- Lugauer, M., U. Baltensperger, M. Furger, H. W. Gaggeler, D. T. Jost, M. Schwikowski and H. Wanner (1998). "*Aerosol Transport to the High Alpine Sites Jungfraujoch (3454 m asl) and Colle Gnifetti (4452 M Asl).*" *Tellus* **50B**: 76-92.
- Mallina, R. V., A. S. Wexler and M. V. Johnston (1999). "*High-Speed Particle Beam Generation: Simple Focusing Mechanisms.*" *Journal of Aerosol Science* **30**: 719-738.
- Martinsson, B. G., G. Frank, S. I. Cederfelt, E. Swietlicki, O. H. Berg, J. C. Zhou, K. N. Bower, C. Bradbury, W. Birmili, F. Stratmann, M. Wendisch, A. Wiedensohler and B. A. Yuskiewicz (1999). "*Droplet Nucleation and Growth in Orographic Clouds in Relation to the Aerosol Population.*" *Atmospheric Research* **50**: 289-315.
- May, K. R. (1973). "*The Collison Nebulizer: Description, Performance and Application.*" *Journal of Aerosol Science* **4**(3): 235-238.
- Mayer, H. (1999). "*Air Pollution in Cities.*" *Atmospheric Environment* **33**(24-25): 4029-4037.
- McKeown, P. J., M. V. Johnston and D. M. Murphy (1991). "*Online Single-Particle Analysis by Laser Desorption Mass-Spectrometry.*" *Analytical Chemistry* **63**(18): 2069-2073.
- McLafferty, F. W. and F. Turecek (1993). *Interpretation of Mass Spectra*, Fourth Edition, University Science Books.
- McMurry, P. H. (2000). "*A Review of Atmospheric Aerosol Measurements.*" *Atmospheric Environment* **34**(12-14): 1959-1999.
- McMurry, P. H., M. Litchy, P. F. Huang, X. P. Cai, B. J. Turpin, W. D. Dick and A. Hanson (1996). "*Elemental Composition and Morphology of Individual Particles Separated by Size and Hygroscopicity with the TDMA.*" *Atmospheric Environment* **30**(1): 101-108.
- Middlebrook, A. M., D. M. Murphy and D. S. Thomson (1998). "*Observations of Organic Material in Individual Marine Particles at Cape Grim During the First Aerosol Characterization Experiment (ACE 1).*" *Journal of Geophysical Research-Atmospheres* **103**(D13): 16475-16483.
- Molina, M. J. (1991). "*Heterogeneous Chemistry on Polar Stratospheric Clouds.*" *Atmospheric Environment* **25A**: 2535-2537.
- Morrison, B. D., D. P. Fergenson and K. A. Prather (1998). "*Coupling Two-Step Laser Desorption/Ionization with Aerosol Time-of-Flight Mass Spectrometry for the*

- Analysis of Individual Organic Particles.*" Journal of the American Society for Mass Spectrometry **9**(10): 1068-1073.
- Mukai, H. and Y. Ambe (1986). "*Characterisation of Humic Acid-Like Brown Substance in Airborne Particulate Matter and Tentative Identification of Its Origin.*" Atmospheric Environment **20**: 813-819.
- Muller, J. F. (1992). "*Geographical Distribution and Seasonal Variation of Surface Emissions and Deposition Velocities of Atmospheric Trace Gases.*" Journal of Geophysical Research **97**: 3787-3804.
- Murphy, D. M., A. M. Middlebrook and M. Warshawsky (2003). "*Cluster Analysis of Data from the Particle Analysis by Laser Mass Spectrometry (PALMS) Instrument.*" Aerosol Science and Technology **37**(4): 382-391.
- Murphy, D. M. and D. S. Thomson (1995). "*Laser Ionization Mass-Spectroscopy of Single Aerosol-Particles.*" Aerosol Science and Technology **22**(3): 237-249.
- Murphy, D. M., D. S. Thomson and T. M. J. Mahoney (1998). "*In Situ Measurements of Organics, Meteoritic Material, Mercury, and Other Elements in Aerosols at 5 to 19 Kilometers.*" Science **282**(5394): 1664-1669.
- Myers, R. L. and W. L. Fite (1975). "*Electrical Detection of Airborne Particulates Using Surface Ionization Techniques.*" Environmental Science & Technology **9**(4): 334-336.
- Noble, C. and K. Prather (1998). "*Air Pollution: The Role of Particles.*" Physics World **11**(1): 39-43.
- Noble, C. A. and K. A. Prather (2000). "*Real-Time Single Particle Mass Spectrometry: A Historical Review of a Quarter Century of the Chemical Analysis of Aerosols.*" Mass Spectrometry Reviews **19**(4): 248-274.
- Noziere, B. and I. Barnes (1998). "*Evidence for the Formation of a PAN Analogue of Pinonic Structure and Investigation of Its Thermal Stability.*" Journal of Geophysical Research **103**: 25587-25597.
- Nyeki, S., U. Baltensperger, D. T. Jost and I. Colbeck (1996a). "*The Measurement of Aerosol Parameters at a High-Alpine Site in Switzerland - an Assessment of Results since July 1995.*" Journal of Aerosol Science **27**(Suppl. 1): S121-S122.
- Nyeki, S., U. Baltensperger and M. Schwikowski (1996b). "*The Diurnal Variation of Aerosol Chemical Composition During the 1995 Summer Campaign at the Jungfrauoch High-Alpine Station (3454 m), Switzerland.*" Journal of Aerosol Science **27**(Suppl, 1): S105-S106.
- O'Dowd, C. D., J. L. Jimenez, R. Bahreini, R. C. Flagan, J. H. Seinfeld, K. Hameri, L. Pirjola, M. Kulmala, S. G. Jennings and T. Hoffmann (2002). "*Marine Aerosol Formation from Biogenic Iodine Emissions.*" Nature **417**(6889): 632-636.
- Odum, J. R., T. Hoffmann, F. Bowman, D. Collins, R. C. Flagan and J. H. Seinfeld (1996). "*Gas/Particle Partitioning and Secondary Organic Aerosol Yields.*" Environmental Science & Technology **30**: 2580-2585.
- Odum, J. R., T. P. W. Jungkamp, R. J. Griffin, R. C. Flagan and S. J. H. (1997). "*The Atmospheric Aerosol-Forming Potential of Whole Gasoline Vapor.*" Science **276**: 96-99.
- Orsini, D. A., Y. L. Ma, A. Sullivan, B. Sierau, K. Baumann and R. J. Weber (2003). "*Refinements to the Particle-into-Liquid Sampler (PILS) for Ground and Airborne Measurements of Water Soluble Aerosol Composition.*" Atmospheric Environment **37**(9-10): 1243-1259.

- Orsini, D. A., A. Wiedensohler, F. Stratmann and D. S. Covert (1999). "A New Volatility Tandem Differential Mobility Analyser to Measure the Volatile Sulphuric Acid Aerosol Fraction." *Journal of Atmospheric and Oceanic Technology* **16**(6): 760-772.
- Pandis, S. N., R. H. Harley, G. R. Cass and S. J. H. (1992). "Secondary Organic Aerosol Formation and Transport." *Atmospheric Environment* **26A**: 2269-2282.
- Pankow, J. F. (1994a). "An Absorption Model of the Gas/Aerosol Partitioning Involved in the Formation of Secondary Organic Aerosol." *Atmospheric Environment* **28**: 189-194.
- Pankow, J. F. (1994b). "An Absorption Model of the Gas/Aerosol Partitioning of Organic Compounds in the Atmosphere." *Atmospheric Environment* **28**: 185-188.
- Patashnick, H. and E. G. Rupprecht (1991). "Continuous PM₁₀ Measurements Using the Tapered Element Oscillating Microbalance." *Journal of the Air & Waste Management Association* **41**(8): 1079-1084.
- Paulsen, D., J. Dommen, M. Kalberer, A. S. H. Prévôt, R. Richter, M. Sax, M. Steinbacher, E. Weingartner and U. Baltensperger (2004). "Secondary Organic Aerosol Formation by Irradiation of 1,3,5 Trimethylbenzene-NO_x-H₂O in a New Reaction Chamber for Atmospheric Chemistry and Physics." submitted to *Environmental Science & Technology*.
- Penner, J. E., M. Andreae, H. Annegarn, L. Barrie, J. Feichter, D. Hegg, A. Jayaraman, R. Leitch, D. Murphy, J. Nganga and G. Pitari (2001). *Aerosols, Their Direct and Indirect Effects. Climate Change 2001: The Scientific Basis. Contribution of Working Group I to the Third Assessment Report of the Intergovernmental Panel on Climate Change*. C. A. Johnson. Cambridge; New York, Cambridge University Press: 289-348.
- Phalen, R. F. (1984). *Inhalation Studies: Foundations and Techniques*. Boca Raton, FL, CRC Press.
- Phares, D. J., K. P. Rhoads, A. S. Wexler, D. B. Kane and M. V. Johnston (2001). "Application of the ART-2a Algorithm to Laser Ablation Aerosol Mass Spectrometry of Particle Standards." *Analytical Chemistry* **73**(10): 2338-2344.
- Pope, C. A., R. T. Burnett, M. J. Thun, E. E. Calle, D. Krewski, K. Ito and G. D. Thurston (2002). "Lung Cancer, Cardiopulmonary Mortality, and Long-Term Exposure to Fine Particulate Air Pollution." *Journal of the American Medical Association* **287**(9): 1132-1141.
- Pope, C. A. and D. W. Dockery (1992). "Acute Health-Effects of PM₁₀ Pollution on Symptomatic and Asymptomatic Children." *American Review of Respiratory Disease* **145**(5): 1123-1128.
- Pope, C. A., D. W. Dockery, J. D. Spengler and M. E. Raizenne (1991). "Respiratory Health and PM₁₀ Pollution - a Daily Time-Series Analysis." *American Review of Respiratory Disease* **144**(3): 668-674.
- Pope, C. A., M. J. Thun, M. M. Namboodiri, D. W. Dockery, J. S. Evans, F. E. Speizer and C. W. Heath (1995). "Particulate Air Pollution as a Predictor of Mortality in a Prospective Study of U.S. Adults." *American Journal of Respiratory and Critical Care Medicine* **151**: 669-674.
- Possanzini, M., A. Febo and A. Liberti (1983). "New Design of a High-Performance Denuder for the Sampling of Atmospheric Pollutants." *Atmospheric Environment* **17**(12): 2605-2610.

- Prather, K. A., T. Nordmeyer and K. Salt (1994). "Real-Time Characterization of Individual Aerosol-Particles Using Time-of-Flight Mass-Spectrometry." *Analytical Chemistry* **66**(9): 1403-1407.
- Press, W. H. (1992). *Numerical Recipes in C: The Art of Scientific Computing*. Cambridge, Cambridge University Press.
- Pruppacher, H. R. and J. D. Klett (1980). *Microphysics of Clouds and Precipitation*. Dordrecht, Boston, London.
- Puxbaum, H., J. Rendl, R. Allabashi, L. Otter and M. Scholes (2000). "Mass Balance of the Atmospheric Aerosol in a South African Subtropical Savanna (Nylsvley May 1997)." *Journal of Geophysical Research* **105**(20): 697-20,706.
- Rader, D. J. and P. H. McMurry (1986). "Application of the Tandem Differential Mobility Analyzer to Studies of Droplet Growth or Evaporation." *Journal of Aerosol Science* **17**(5): 771-787.
- Ramanathan, V., P. J. Crutzen, J. T. Kiehl and D. Rosenfeld (2001). "Atmosphere - Aerosols, Climate, and the Hydrological Cycle." *Science* **294**(5549): 2119-2124.
- Ravishankara, A. R. (1997). "Heterogeneous and Multiphase Chemistry in the Troposphere." *Science* **276**(5315): 1058-1065.
- Reents, W. D., S. W. Downey, A. B. Emerson, A. M. Mujsce, A. J. Muller, D. J. Siconolfi, J. D. Sinclair and A. G. Swanson (1995). "Single-Particle Characterization by Time-of-Flight Mass-Spectrometry." *Aerosol Science and Technology* **23**(3): 263-270.
- Reents, W. D. and Z. Z. Ge (2000). "Simultaneous Elemental Composition and Size Distributions of Submicron Particles in Real Time Using Laser Atomization/Ionization Mass Spectrometry." *Aerosol Science and Technology* **33**(1-2): 122-134.
- Reents, W. D. and M. J. Schabel (2001). "Measurement of Individual Particle Atomic Composition by Aerosol Mass Spectrometry." *Analytical Chemistry* **73**(22): 5403-5414.
- Reilly, P. T. A., R. A. Gieray, M. Yang, W. B. Whitten and J. M. Ramsey (1997). "Tandem Mass Spectrometry of Individual Airborne Microparticles." *Analytical Chemistry* **69**(1): 36-39.
- Reilly, P. T. A., A. C. Lazar, R. A. Gieray, W. B. Whitten and J. M. Ramsey (2000). "The Elucidation of Charge-Transfer-Induced Matrix Effects in Environmental Aerosols Via Real-Time Aerosol Mass Spectral Analysis of Individual Airborne Particles." *Aerosol Science and Technology* **33**(1-2): 135-152.
- Rogge, W., M. Mazurek, L. Hildemann, G. Cass and B. R. T. Simoneit (1993). "Quantification of Urban Organic Aerosols at a Molecular Level: Identification, Abundance and Seasonal Variation." *Atmospheric Environment* **27A**: 1309-1330.
- Rose, M. E. and R. A. W. Johnstone (1982). *Mass Spectrometry for Chemists and Biochemists*. Cambridge, London, New York, New Rochelle, Melbourne, Sydney, Cambridge University Press.
- Rosenfeld, D. (1999). "TRMM Observed First Direct Evidence of Smoke from Forest Fires Inhibiting Rainfall." *Geophysical Research Letters* **26**: 3105-3108.
- Rosenfeld, D. (2000). "Suppression of Rain and Snow by Urban and Industrial Air Pollution." *Science* **287**: 1793-1796.
- Sakurai, H., H. J. Tobias, K. Park, D. Zarling, K. S. Docherty, D. B. Kittelson, P. H. McMurry and P. J. Ziemann (2003). "On-Line Measurements of Diesel

- Nanoparticle Composition and Volatility.* Atmospheric Environment **37**(9-10): 1199-1210.
- Salt, K., C. A. Noble and K. A. Prather (1996). "Aerodynamic Particle Sizing Versus Light Scattering Intensity Measurement as Methods for Real Time Particle Sizing Coupled with Time-of-Flight Mass Spectrometry." Analytical Chemistry **68**(1): 230-234.
- Satsumabayashi, H., H. Kurita, Y. Yokouchi and H. Ueda (1989). "Mono- and Di-Carboxylic Acids under Long-Range Transport of Air Pollution in Central Japan." Tellus **41B**(212-229).
- Satsumabayashi, H., H. Kurita, Y. Yokouchi and H. Ueda (1990). "Photochemical Formation of Particulate Dicarboxylic Acids under Long-Range Transport in Central Japan." Atmospheric Environment **24A**: 1443-1450.
- Saxena, P. and L. M. Hildemann (1996). "Water-Soluble Organics in Atmospheric Particles: A Critical Review of the Literature and Application of Thermodynamics to Identify Candidate Compounds." Journal of Atmospheric Chemistry **24**(1): 57-109.
- Schmid, O., B. Eimer, D. E. Hagen and P. D. Whitefield (2002). "Investigation of Volatility Method for Measuring Aqueous Sulphuric Acid on Mixed Aerosols." Aerosol Science & Technology **36**(8): 877-889.
- Schwartz, J. (1994). "Air-Pollution and Daily Mortality - a Review and Meta Analysis." Environmental Research **64**(1): 36-52.
- Schwartz, J. (2001). "Correcting for Measurement Error and Confounding in Hierarchical Models." Epidemiology **12**(4): 47.
- Schwartz, J. and D. W. Dockery (1992). "Increased Mortality in Philadelphia Associated with Daily Air Pollution Concentrations." American Review of Respiratory Disease **145**: 600-604.
- Schwartz, J., D. W. Dockery and L. M. Neas (1996). "Is Daily Mortality Associated Specifically with Fine Particles?" Journal of Air and Waste Management Association **46**: 927-939.
- Schwarzenboeck, A., J. Heintzenberg and S. Mertes (2000). "Incorporation of Aerosol Particles between 25 and 850 nm into Cloud Elements: Measurements with a New Complementary Sampling System." Atmospheric Research **52**: 241-260.
- Seaton, A., W. MacNee, K. Donaldson and D. Godden (1995). "Particulate Air Pollution and Acute Health Effects." Lancet **345**: 176-178.
- Seinfeld, J. H. and S. N. Pandis (1998). *Atmospheric Chemistry and Physics: From Air Pollution to Climate Change*. New York; Chichester, John Wiley & Sons.
- Shaw, R. W. J., R. K. Stevens, J. Bowermaster, J. W. Tesch and E. Tew (1982). "Measurements of Atmospheric Nitrate and Nitric Acid: The Denuder Difference Experiment." Atmospheric Environment **16**(4): 845-853.
- Shulman, M. L., M. C. Jacobson, R. J. Charlson, R. E. Synovec and T. E. Young (1996). "Dissolution Behavior and Surface Tension Effects of Organic Compounds in Nucleating Cloud Droplets." Geophysical Research Letters **23**: 277-280.
- Siegmann, K., L. Scherrer and H. C. Siegmann (1999). "Physical and Chemical Properties of Airborne Nanoscale Particles and How to Measure the Impact on Human Health." Journal of Molecular Structure (Theochem) **458**: 191-201.
- Silva, P. J. and K. A. Prather (1997). "On-Line Characterization of Individual Particles from Automobile Emissions." Environmental Science & Technology **31**(11): 3074-3080.

- Silva, P. J. and K. A. Prather (2000). "*Interpretation of Mass Spectra from Organic Compounds in Aerosol Time-of-Flight Mass Spectrometry.*" *Analytical Chemistry* **72**(15): 3553-3562.
- Sinha, M. P. (1984). "*Laser-Induced Volatilization and Ionization of Microparticles.*" *Review of Scientific Instruments* **55**(6): 886-891.
- Sinha, M. P. and S. K. Friedlander (1985). "*Real Time Measurements of Sodium Chloride in Individual Aerosol Particles by Mass Spectrometry.*" *Analytical Chemistry* **57**: 1880-1883.
- Sinha, M. P., C. E. Giffin, D. D. Norris, T. J. Estes, V. L. Vilker and S. K. Friedlander (1982). "*Particle Analysis by Mass-Spectrometry.*" *Journal of Colloid and Interface Science* **87**(1): 140-153.
- Sipin, M. F., S. A. Guazzotti and K. A. Prather (2003). "*Recent Advances and Some Remaining Challenges in Analytical Chemistry of the Atmosphere.*" *Analytical Chemistry* **75**(12): 2929-2940.
- Solomon, S., R. R. Garcia, F. S. Rowland and D. J. Wuebbles (1986). "*On the Depletion of Antarctic Ozone.*" *Nature* **321**: 755-758.
- Song, X. H., P. K. Hopke, D. P. Fergenson and K. A. Prather (1999). "*Classification of Single Particles Analyzed by ATOFMS Using an Artificial Neural Network, ART-2a.*" *Analytical Chemistry* **71**(4): 860-865.
- Spurny, K. R. (1999). *Analytical Chemistry of Aerosols*. Boca Raton; London; New York; Washington D.C., Lewis Publishers.
- Stein, S. W., B. J. Turpin, X. Cai, P. Huang and P. H. McMurry (1994). "*Measurement of Relative Humidity-Dependent Bounce and Density for Atmospheric Particles Using the DMA-Impactor Technique.*" *Atmospheric Environment* **28**: 1739-1746.
- Stolzenburg, M. R. and S. V. Hering (2000). "*Method for the Automated Measurement of Fine Particulate Nitrate in the Atmosphere.*" *Environmental Science & Technology* **34**(5): 907-914.
- Suess, D. T. and K. A. Prather (1999). "*Mass Spectrometry of Aerosols.*" *Chemical Reviews* **99**(10): 3007-3035.
- Svenningsson, B., H.-C. Hansson, B. Martinsson, A. Wiedensohler, E. Swietlicki, S.-I. Cederfelt, M. Wendisch, K. N. Bower, T. W. Choularton and R. N. Colvile (1997). "*Cloud Droplet Nucleation Scavenging in Relation to the Size and Hygroscopic Behaviour of Aerosol Particles.*" *Atmospheric Environment* **31**(16): 2463-2475.
- Sykes, D. C., E. Woods, G. D. Smith, T. Baer and R. E. Miller (2002). "*Thermal Vaporization-Vacuum Ultraviolet Laser Ionization Time-of-Flight Mass Spectrometry of Single Aerosol Particles.*" *Analytical Chemistry* **74**(9): 2048-2052.
- Thomson, D. S., M. E. Schein and D. M. Murphy (2000). "*Particle Analysis by Laser Mass Spectrometry WB-57F Instrument Overview.*" *Aerosol Science and Technology* **33**(1-2): 153-169.
- Tobias, H. J., D. E. Beving, P. J. Ziemann, H. Sakurai, M. Zuk, P. H. McMurry, D. Zarling, R. Waytulonis and D. B. Kittelson (2001). "*Chemical Analysis of Diesel Engine Nanoparticles Using a Nano- Dma/Thermal Desorption Particle Beam Mass Spectrometer.*" *Environmental Science & Technology* **35**(11): 2233-2243.
- Tobias, H. J., P. M. Kooiman, K. S. Docherty and P. J. Ziemann (2000). "*Real-Time Chemical Analysis of Organic Aerosols Using a Thermal Desorption Particle Beam Mass Spectrometer.*" *Aerosol Science and Technology* **33**(1-2): 170-190.

- Tobias, H. J. and P. J. Ziemann (1999). "*Compound Identification in Organic Aerosols Using Temperature- Programmed Thermal Desorption Particle Beam Mass Spectrometry.*" *Analytical Chemistry* **71**(16): 3428-3435.
- Tobias, H. J. and P. J. Ziemann (2000). "*Thermal Desorption Mass Spectrometric Analysis of Organic Aerosol Formed from Reactions of 1-Tetradecene and O₃ in the Presence of Alcohols and Carboxylic Acids.*" *Environmental Science & Technology* **34**(11): 2105-2115.
- Tolocka, M. P., M. Jang, J. M. Ginter, F. J. Cox, R. M. Kamens and M. V. Johnston (2004a). "*Formation of Oligomers in Secondary Organic Aerosol.*" *Environmental Science & Technology* **38**: 1428-1434.
- Tolocka, M. P., D. A. Lake, M. V. Johnston and A. S. Wexler (2004b). "*Number Concentrations of Fine and Ultrafine Particles Containing Metals.*" *Atmospheric Environment* **38**(20): 3263-3273.
- Tolocka, M. P., D. A. Lake, M. V. Johnston and A. S. Wexler (2004c). "*Ultrafine Nitrate Particle Events in Baltimore Observed by Real-Time Single Particle Mass Spectrometry.*" *Atmospheric Environment* **38**(20): 3215-3223.
- Topping, D., H. Coe, G. McFiggans, R. Burgess, J. Allan, M. R. Alfarra, K. Bower, T. W. Choularton, S. Decesari and M. C. Facchini (2004). "*Aerosol Chemical Characteristics from Sampling Conducted on the Island of Jeju, Korea During ACE Asia.*" *Atmospheric Environment* **38**(14): 2111-2123.
- Trimborn, A., K. P. Hinz and B. Spengler (2000). "*Online Analysis of Atmospheric Particles with a Transportable Laser Mass Spectrometer.*" *Aerosol Science and Technology* **33**(1-2): 191-201.
- Turpin, B. J. and J. J. Huntzicker (1991). "*Secondary Formation of Organic Aerosol in the Los-Angeles Basin - a Descriptive Analysis of Organic and Elemental Carbon Concentrations.*" *Atmospheric Environment Part a-General Topics* **25**(2): 207-215.
- Turpin, B. J. and J. J. Huntzicker (1995). "*Identification of Secondary Organic Aerosol Episodes and Quantitation of Primary and Secondary Organic Aerosol Concentrations During SCAQS.*" *Atmospheric Environment* **29**(23): 3527-3544.
- Turpin, B. J., J. J. Huntzicker and K. M. Adams (1990). "*Intercomparison of Photoacoustic and Thermal Optical Methods for the Measurement of Atmospheric Elemental Carbon.*" *Atmospheric Environment* **24A**(7): 1831-1836.
- Turpin, B. J., J. J. Huntzicker and S. V. Hering (1994). "*Investigation of Organic Aerosol Sampling Artifacts in the Los Angeles Basin.*" *Atmospheric Environment* **28**(19): 3061-3071.
- Turpin, B. J. and H. J. Lim (2001). "*Species Contributions to PM_{2.5} Mass Concentrations: Revisiting Common Assumptions for Estimating Organic Mass.*" *Aerosol Science & Technology* **35**(5): 889-908.
- Twomey, S. (1974). "*Pollution and the Planetary Albedo.*" *Atmospheric Environment* **8**: 1251-1256.
- Twomey, S. (1977). "*The Influence of Pollution on the Shortwave Albedo of Clouds.*" *Journal of Aerosol Science* **34**: 1149-1152.
- Wang, H. C. and W. John (1988). "*Characteristics of the Berner Impactor for Sampling Inorganic-Ions.*" *Aerosol Science and Technology* **8**(2): 157-172.
- Warscheid, B. and T. Hoffmann (2002). "*Direct Analysis of Highly Oxidised Organic Aerosol Constituents by on-Line Ion Trap Mass Spectrometry in the Negative-Ion Mode.*" *Rapid Communications in Mass Spectrometry* **16**(6): 496-504.

- Weber, R. J., D. Orsini, Y. Daun, Y. N. Lee, P. J. Klotz and F. Brechtel (2001). "*A Particle-into-Liquid Collector for Rapid Measurement of Aerosol Bulk Chemical Composition.*" *Aerosol Science and Technology* **35**(3): 718-727.
- Weingartner, E., H. Burtscher and U. Baltensperger (1997). "*Hygroscopic Properties of Carbon and Diesel Soot Particles.*" *Atmospheric Environment* **31**(15): 2311-2327.
- Weingartner, E., M. Gysel and U. Baltensperger (2002). "*Hygroscopicity of Aerosol Particles at Low Temperatures. 1. New Low-Temperature H-Tdma Instrument: Setup and First Applications.*" *Environmental Science & Technology* **36**: 55-62.
- Weingartner, E., S. Nyeki and U. Baltensperger (1999). "*Seasonal and Diurnal Variation of Aerosol Size Distributions ($10 < D < 750$ nm) at a High-Alpine Site (Jungfraujoch 3580 m asl).*" *Journal of Geophysical Research* **104**: 26809-26820.
- Went, F. W. (1960). "*Blue Haze in the Atmosphere.*" *Nature* **187**: 641-643.
- Williams, P. I. (1999), PhD Thesis, *Construction and Validation of a Dmps for Aerosol Characterization.*, Department of Physics, UMIST, Manchester.
- Williams, P. I., M. W. Gallagher, T. W. Choularton, H. Coe, K. N. Bower and G. McFiggans (2000). "*Aerosol Development and Interaction in an Urban Plume.*" *Aerosol Science and Technology* **32**(2): 120-126.
- Wilson, J. C. and B. Y. H. Liu (1980). "*Aerodynamic Particle Size Measurement by Laser-Doppler Velocimetry.*" *Journal of Aerosol Science* **11**(2): 139-150.
- Winklmayr, W., G. P. Reischl, A. O. Lindner and A. Berner (1991). "*A New Electromobility Spectrometer for the Measurement of Aerosol Size Distributions in the Size Range from 1 to 1000 nm.*" *Journal of Aerosol Science* **22**(3): 289-296.
- Woods, E., G. D. Smith, Y. Dessiaterik, T. Baer and R. E. Miller (2001). "*Quantitative Detection of Aromatic Compounds in Single Aerosol Particle Mass Spectrometry.*" *Analytical Chemistry* **73**(10): 2317-2322.
- Yang, M., P. T. A. Reilly, K. B. Boraas, W. B. Whitten and J. M. Ramsey (1996). "*Real-Time Chemical Analysis of Aerosol Particles Using an Ion Trap Mass Spectrometer.*" *Rapid Communications in Mass Spectrometry* **10**(3): 347-351.
- Zanobetti, A., J. Schwartz, E. Samoli, A. Gryparis and et al. (2002). "*The Temporal Pattern of Mortality Responses to Air Pollution: A Multicity Assessment of Mortality Displacement.*" *Epidemiology* **13**(1): 87-93.
- Zappoli, S., A. Andracchio, S. Fuzzi, M. C. Facchini, A. Gelencser, G. Kiss, Z. Krivacsy, A. Molnar, E. Meszaros and H.-C. Hansson (1999). "*Inorganic, Organic and Macromolecular Components of Fine Aerosol in Different Areas of Europe in Relation to Their Water Solubility.*" *Atmospheric Environment* **33**(17): 2733-2743.
- Zhang, X. F., K. A. Smith, D. R. Worsnop, J. Jimenez, J. T. Jayne and C. E. Kolb (2002). "*A Numerical Characterization of Particle Beam Collimation by an Aerodynamic Lens-Nozzle System: Part I. An Individual Lens or Nozzle.*" *Aerosol Science and Technology* **36**(5): 617-631.
- Ziemann, P. J. (1998). "*Particle Mass and Size Measurement Using Mass Spectrometry.*" *Trends in Analytical Chemistry* **17**(6): 322-328.
- Ziemann, P. J. (2002). "*Evidence for Low-Volatility Diacyl Peroxides as a Nucleating Agent and Major Component of Aerosol Formed from Reactions of O₃ with Cyclohexene and Homologous Compounds.*" *Journal of Physical Chemistry A* **106**(17): 4390-4402.