

## SPYROS N. PANDIS

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### EDUCATION

<b>Ph.D.</b> , Chemical Engineering <i>California Institute of Technology</i>	June 1991
<b>M.S.</b> , Chemical Engineering <i>California Institute of Technology</i>	June 1988
<b>Dipl. Ing.</b> , Chemical Engineering <i>University of Patras, Greece</i>	June 1986

### PROFESSIONAL EXPERIENCE

<b>Professor</b> Department of Chemical Engineering, <i>U. Patras, Greece</i>	2/04-
<b>Research Professor</b> Departments of Chemical Engineering and Engineering and Public Policy, <i>CMU</i>	2/04-
<b>Deputy Director</b> Institute of Chemical Engineering, <i>FORTH, Greece</i>	1/08-8/13
<b>Professor</b> Departments of Chemical Engineering and Engineering and Public Policy, <i>CMU</i>	6/01-1/04
<b>Associate Professor</b> Departments of Chemical Engineering and Engineering and Public Policy, <i>CMU</i>	6/98-5/01
<b>Assistant Professor</b> Departments of Chemical Engineering and Engineering and Public Policy, <i>CMU</i>	9/93-5/98

### SELECTED COMMITTEE MEMBERSHIPS

American Association for Aerosol Research, President, 2009.  
Aerosol Science and Technology, Editor, 2008-present.  
Atmospheric Chemistry and Physics, Co-Editor, 2008-present.  
Hellenic Association for Aerosol Research, President, 2007.  
Journal of Air Quality and Atmospheric Chemistry, Editorial Board, 2005-present.  
American Association for Aerosol Research, Conference Chair, 2005.  
National Research Council Committee on Application of Environmental Models, 2004-2007.  
Editorial Board Journal of Aerosol Science 2003-2008.  
National Research Council Committee Reviewing US Air Quality Management, 2001-2004.  
American Association for Aerosol Research, Board of Directors, 2001-2003.  
NARSTO Particulate Matter Science Assessment Team, 2000-2003.  
National Research Council Committee Reviewing DOE Particulate Matter Program, 1999.  
Atmospheric Science Panel, Environment Canada, 1996-97.  
World Climate Research Program, Aerosol Modeling Group Member, 1995-present.

### AWARDS

Thomson Reuters Highly Cited Researcher, 2014.  
Fellow, American Association for Aerosol Research, 2012.  
European Research Council, Advanced Investigator IDEAS Award, 2011.  
Environmental Science and Technology journal, Best Environmental Policy Paper, 2007.  
Book of the Year, American Meteorological Society, 2006.  
Kun Li Award for Excellence in Chemical Engineering Education, CMU, 2004.  
Vaughn Lectureship, Caltech, 2004.  
Ken Whitby Award, American Association for Aerosol Research, 2000.  
Benjamin Teare Award for Excellence in Engineering Education, 1999.  
G. Elias Professorship, 1999.  
National Science Foundation, CAREER award, 1996.  
George Tallman Ladd Outstanding Young Faculty Award, CMU, 1995.

## PUBLICATIONS

### (I) Books

- Seinfeld J. H. and Pandis S. N. (2006) *Atmospheric Chemistry and Physics: From Air Pollution to Climate Change*, 2<sup>nd</sup> edition, J. Wiley, New York.
- Seinfeld J. H. and Pandis S. N. (1998) *Atmospheric Chemistry and Physics: From Air Pollution to Climate Change*, 1<sup>st</sup> edition, J. Wiley, New York.

### (II) Book Chapters

- Pandis S. N. and Pilinis C. (1995) In Situ-Particle Formation/Reaction Mechanisms in *The Handbook of Environmental Chemistry*, ed. O. Huntzinger, Springer Verlag, Heidelberg 35-68.
- Pilinis C. and Pandis S. N. (1995) Physical, Chemical and Optical Properties of Aerosols in *The Handbook of Environmental Chemistry* ed. O. Huntzinger, Springer Verlag, Heidelberg, 99-124.
- Pandis S. N. and C. Davidson (1998) Developing exposure estimates, in *Exposure to Contaminants in Drinking Water: Estimating Uptake through the Skin and by Inhalation*, ed. S. S. Olin, CRC Press, Baton Rouge, Florida.
- Pandis S. N. (2000) Controlling Urban Smog, in *Engineering and the Environment*, ed. E. Rubin and C. Davidson, McGraw Hill.
- Pandis S. N. (2004) Atmospheric aerosol properties, in *Particulate Matter Science for Policy Makers*, ed. P. H. McMurry, Cambridge University Press, Cambridge.
- Pandis S. N. (2006) *Air Quality Engineering*, University of Patras Press, Patra (in Greek).

### (III) Journal Papers (11500 citations, *h*-factor=60)

1. Pandis S.N. and Seinfeld J. H. (1989) Sensitivity Analysis of a Chemical Mechanism for Aqueous-Phase Atmospheric Chemistry, *Journal of Geophysical Research*, **94**, 1105-1126.
2. Pandis S.N. and Seinfeld J. H. (1989) Mathematical Modeling of Acid Deposition due to Radiation Fog, *Journal of Geophysical Research*, **94**, 12911-12923.
3. Pandis S.N., Seinfeld J. H. and Pilinis C. (1990) Chemical Composition Differences in Fog and Cloud Droplets of Different Sizes, *Atmospheric Environment*, **24A**, 1957-1969.
4. Pandis S. N. and Seinfeld J. H. (1990) On the Interaction between Equilibration Processes and Wet or Dry Deposition, *Atmospheric Environment*, **24A** 2313-2327.
5. Pandis S. N., Pilinis C. and Seinfeld J. H. (1990) The Smog-Fog-Smog Cycle and Acid Deposition, *Journal of Geophysical Research*, **95**, 18489-18500.
6. Paulson S. E., Pandis S. N., Baltensperger U., Seinfeld J. H., Flagan R. C., Palen E. J., Allen D. T., Schaffner C., Giger W. and Portmann A. (1990) Characterization of Photochemical Aerosols from Biogenic Hydrocarbons, *J. Aerosol Sci.*, **21**, S245-S248.
7. Pandis S. N., Paulson S. E., Flagan R. and Seinfeld, J. H. (1991) Aerosol Formation in the Photooxidation of Isoprene and  $\beta$ -pinene, *Atmospheric Environment*, **25A**, 997-1008
8. Pandis S. N., Baltensperger U., Wolfenbarger K. J. and Seinfeld J. H. (1991) Inversion of Aerosol Data from the Epiphaniometer, *J. Aerosol Sci.*, **22**, 417-428.
9. Pandis S. N. and Seinfeld J. H. (1991) Should Bulk Cloudwater or Fogwater Samples Obey Henry's Law? *Journal of Geophysical Research*, **96**, 10,791-10,798.
10. Palen E. J., Allen D. T., Pandis S. N., Paulson S. E., Seinfeld J. H. and Flagan R. C. (1992) FTIR Analysis of Aerosol Formed in the Photooxidation of Isoprene and  $\beta$ -pinene, *Atmospheric Environment*, **26A**, 1239-1251.
11. Pandis S. N. and Seinfeld J. H. (1992) One More Reason for the Deviation of Bulk Cloudwater or Fogwater Samples from Henry's Law Equilibrium. *J. Geophys. Res.*, **97**, 6079-6081.
12. Pandis S. N., Seinfeld J. H. and Pilinis C. (1992) Heterogeneous Sulfate Production in an Urban Fog, *Atmospheric Environment*, **26**, 2509-2522.
13. Pandis S. N., Harley R. A., Cass G. R. and Seinfeld J. H. (1992) Secondary Organic Aerosol Formation and Transport, *Atmospheric Environment*, **26**, 2266-2282.
14. Sievering H., Boatman J., Gorman E., Kim Y., Anderson L., Ennis G., Luria M. and Pandis S. N. (1992) Removal of sulfur from the marine boundary layer by ozone oxidation in sea-salt aerosols, *Nature*, **360**, 571-573.
15. Palen E. J., Allen D. T., Pandis S. N., Paulson S. E., Seinfeld J. H. and Flagan R. C. (1993) FTIR Analysis of Aerosol Formed in the Photooxidation of 1-Octene, *Atmospheric Environment*, **27A**, 1471-1477.

16. Pandis S. N., Wexler A. and Seinfeld J. H. (1993) Secondary Organic Aerosol Formation and Transport. II. Predicting the Ambient Secondary Aerosol Size Distribution, *Atmospheric Environment*, **27A**, 2403-2416.
17. Pandis S. N., Russell L. M. and Seinfeld J. H. (1994) The Relationship Between the DMS Flux and the CCN Concentration in Remote Marine Regions, *J. Geophys. Res.*, **99**, 16945-16957.
18. Russell L. M., Pandis S. N. and Seinfeld J. H. (1994) Aerosol Production and Growth in the Marine Boundary Layer, *J. Geophys. Res.*, **99**, 20989-21004.
19. Seinfeld J. H., J. M. Andino, F. M. Bowman, H. J. L. Foster and S. N. Pandis (1994) Tropospheric Chemistry, *Adv. Chem. Engng.*, **19**, 325-407.
20. Pandis S. N., Wexler A. S. and Seinfeld J. H. (1995) Dynamics of tropospheric aerosol, *J. Phys. Chem.*, **99**, 9646-9659.
21. Pilinis C., J. H. Seinfeld, and S. N. Pandis (1995) On the Sensitivity of Direct Climate Forcing by Atmospheric Aerosols, *J. Geophys. Res.*, **100**, 18,739-18,754.
22. Bergin M. H., J. L. Jaffrezo, C. I. Davidson, J. E. Dibb, S. N. Pandis, R. Hillamo, W. Maenhaut, H. D. Kuhns and T. Makela (1995) The Contribution of Snow, Fog and Dry Deposition to the Summer Flux of Anions and Cations at Summit, Greenland, *J. Geophys. Res.*, **100**, 16,275-16,288.
23. Bergin M. H., C. I. Davidson, J. E. Dibb, J. L. Jaffrezo, H. D. Kuhns, and S. N. Pandis (1995) A simple model to estimate atmospheric concentrations of aerosol chemical species based on snow core chemistry at Summit, Greenland, *Geophys. Res. Lett.*, **22**, 3517-3520.
24. Bergin M. H., S. N. Pandis, C. I. Davidson, J. L. Jaffrezo, J. E. Dibb, A. G. Russell, and H. D. Kuhns (1996) Mathematical Modeling of Fog Processing of Trace Species at Summit, Greenland, *J. Geophys. Res.*, **101**, 14,465-14,478.
25. Gurciullo C. S. and S. N. Pandis (1997) The effect of composition variations in cloud droplet populations on Aqueous-Phase Chemistry, *J. Geophys. Res.*, **102**, 9375-9386.
26. Cruz C. N. and S. N. Pandis (1997) A study of the ability of secondary organic aerosol to act as cloud condensation nuclei, *Atmos. Environ.*, **31**, 2205-2214.
27. Lurmann F. W., A. S. Wexler, S. N. Pandis, S. Musarra, N. Kumar, and J. H. Seinfeld (1997) Modeling urban and regional aerosols: II. Application, *Atmos. Environ.*, **31**, 2695-2715.
28. Bowman F., J. Odum, S. N. Pandis, and J. H. Seinfeld (1997) A new adsorption/absorption model for the formation of secondary atmospheric aerosol, *Atmos. Environ.*, **31**, 3921-3931.
29. Capaldo K. and S. N. Pandis (1997) Evaluation of sulfur chemistry mechanisms for the remote marine atmosphere, *J. Geophys. Res.*, **102**, 23251-23267.
30. Pandis S. N. (1997) Formation and Properties of Secondary Atmospheric Aerosol: From the Laboratory to the Super-computer, *J. Aerosol Sci.*, **28**, S367-370.
31. Nenes T., C. Pilinis, and S. N. Pandis (1998) ISORROPIA: A new thermodynamic equilibrium model for multiphase multicomponent inorganic aerosol, *Aqua. Geochem.*, **4**, 123-152.
32. West J., C. Pilinis, A. Nenes, and S. N. Pandis (1998) The marginal direct radiative forcing of atmospheric aerosols, *Atmos. Environ.*, **32**, 2531-2542.
33. Weber R. J., M. R. Stolzenburg, S. N. Pandis, and P. H. McMurry (1998) Inversion of ultrafine condensation nucleus counter pulse height distributions to obtain nano-particle (3 to 10 nm) size distributions, *J. Aerosol Sci.*, **29**, 601-615.
34. Cruz C. N. and S. N. Pandis (1998) Activation of multicomponent organic and inorganic aerosols in ambient clouds, *J. Geophys. Res.*, **103**, 13111-13123.
35. Ansari A. and S. N. Pandis (1998) Response of inorganic particulate matter concentrations to precursor concentrations, *Environ. Sci. Technol.*, **32**, 2706-2714.
36. Ansari A. and S. N. Pandis (1999) Prediction of multicomponent inorganic atmospheric aerosol behavior, *Atmos. Environ.*, **31**, 745-757.
37. Ansari A. and S. N. Pandis (1999) An analysis of four models predicting the partitioning of semivolatile inorganic aerosol components, *Aerosol Sci. Tech.*, **31**, 129-153.
38. Gurciullo C. S., H. Sievering, and S. N. Pandis (1999) Heterogeneous sulfate production in the remote marine environment, *J. Geophys. Res.*, **104**, 21,719-21,731.
39. Capaldo K., P. Kashibhatla, and S. N. Pandis (1999) Is aerosol production within the remote marine boundary layer sufficient to maintain observed concentrations?, *J. Geophys. Res.*, **104**, 3483-3500.
40. Nenes T., C. Pilinis, and S. N. Pandis (1999) Continued development and testing of a new thermodynamic aerosol module for urban and regional air quality models, *Atmos. Environ.*, **33**, 1553-1560.
41. Corbett J., P. S. Fishbeck, and S. N. Pandis (1999) Global nitrogen and sulfur emission inventories for oceangoing ships, *J. Geophys. Res.*, **104**, 3457-3470.

42. Dassios K. and S. N. Pandis (1999) The mass accommodation coefficient of ammonium nitrate aerosol, *Atmos. Environ.*, **33**, 2993-3003.
43. Capaldo K., J. J. Corbett, P. Kasibhatla, P. Fischbeck, and S. N. Pandis (1999) Effects of ship emissions on sulphur cycling and radiative climate forcing over the ocean, *Nature*, **400**, 743-746.
44. Cruz C. and Spyros N. Pandis (1999) Condensation of organic vapors on an externally mixed aerosol population, *Aerosol Sci. Technol.*, **31**, 392-407.
45. West J., A. Ansari, and S. N. Pandis (1999) Marginal PM<sub>2.5</sub> - Nonlinear aerosol mass response to sulfate reductions, *J. Air Waste Man. Assoc.*, **49**, 1415-1424.
46. Hoag K. J., Collett J. Jr., and S. N. Pandis (1999) The influence of drop size-dependent fog chemistry on aerosol processing by San Joaquin Valley fogs, *Atmos. Environ.*, **33**, 4817-4832.
47. Collett J. Jr., K. J. Hoag, X. Rao, and S. N. Pandis (1999) Internal acid buffering in San Joaquin Valley fog drops and its influence on aerosol processing, *Atmos. Environ.*, **33**, 4833-4847.
48. Lillis D., C. Cruz, J. Collett Jr., L. W. Richards, and S. N. Pandis (1999) Production and removal of aerosol in a polluted fog layer. Model evaluation and fog effect on PM, *Atmos. Environ.*, **33**, 4797-4816.
49. Strader R., F. Lurmann and S. N. Pandis (1999) Evaluation of secondary organic aerosol formation in winter, *Atmos. Environ.*, **33**, 4849-4863.
50. Ansari A. S. and S. N. Pandis (2000) Water absorption by secondary organic aerosol and its effect on inorganic aerosol behavior, *Environ. Sci. Technol.*, **34**, 71-77.
51. Ansari A. and S. N. Pandis (2000) The effect of metastable equilibrium states on the partitioning of nitrate between the gas and aerosol phases, *Atmos. Environ.*, **34**, 157-168.
52. Pilinis C., K. Capaldo, A. Nenes, and S. N. Pandis (2000) MADM- A new multicomponent atmospheric aerosol dynamics model, *Aerosol Sci. Tech.*, **32**, 482-502.
53. Capaldo K., C. Pilinis, and S. N. Pandis (2000) A computationally efficient hybrid approach for the simulation of dynamic gas/aerosol transfer in air quality models, *Atmos. Environ.*, **34**, 3617-3627.
54. Cruz C. N., K. G. Dassios, and S. N. Pandis (2000) The effect of dioctyl phthalate films on ammonium nitrate aerosol evaporation rate, *Atmos. Environ.*, **34**, 3897-3905.
55. Kasibhatla P., H. Levy II, W. J. Moxim, S. N. Pandis, J. J. Corbett, M. C. Peterson, R. E. Horvath, and D. D. Parish (2000) Do emissions from ships have a significant impact on concentrations of nitrogen oxides in the marine boundary layer?, *Geophys. Res. Lett.*, **27**, 2229-2232.
56. Cruz C. N. and S. N. Pandis (2000) Deliquescence and hygroscopic growth of mixed inorganic-organic atmospheric aerosol, *Environ. Sci. Technol.*, **34**, 4313-4319.
57. Moya M., A. S. Ansari, and S. N. Pandis (2001) Partitioning of nitrate and ammonium between the gas and aerosol phases during the 1997 IMADA-AVER study in Mexico City, *Atmos. Environ.*, **35**, 1791-1804.
58. Fahey K. M. and S. N. Pandis (2001) Optimizing model performance: Variable size resolution in cloud chemistry modeling, *Atmos. Environ.*, **35**, 4471-4478.
59. Bilde M. and S. N. Pandis (2001) Evaporation rates and vapor pressures of individual aerosol species formed in the atmospheric oxidation of  $\alpha$ -pinene and  $\beta$ -pinene, *Environ. Sci. Technol.*, **35**, 3344-3349.
60. Moya M., S. N. Pandis, M. Jacobson (2002) Is the size distribution of urban aerosol determined by thermodynamic equilibrium? An application to Southern California, *Atmos. Environ.*, **36**, 2349-2365.
61. Cabada J. C., S. N. Pandis, and A. L. Robinson (2002) Sources of atmospheric particulate matter in Pittsburgh, Pennsylvania, *J. Air Waste Man. Assoc.*, **52**, 732-741.
62. Lipsky E., C. O. Stanier, S. N. Pandis, and A. L. Robinson (2002) Effects of sampling conditions on the size distribution of fine particulate matter emitted from a pilot-scale pulverized-coal combustor, *Energy & Fuels*, **16**, 302-310.
63. Raymond T. and S. N. Pandis (2002) Cloud activation of single-component organic aerosol particles, *J. Geophys. Res.*, **107**, no. 4787.
64. Metzger, S. M., F. J. Dentener, J. Lelieveld, and S. N. Pandis (2002) Gas-Aerosol Partitioning I: A computationally efficient model, *J. Geophys. Res.*, **107**, no. 4312.
65. Koo B., T. M. Gaydos, and S. N. Pandis (2003) Evaluation of the equilibrium, dynamic, and hybrid aerosol modeling approaches, *Aerosol Sci. Technol.*, **37**, 53-64.
66. Koo B. Y., A. S. Ansari, and S. N. Pandis (2003) Integrated approaches to modeling the organic and inorganic atmospheric aerosol components, *Atmos. Environ.*, **37**, 4757-4768.
67. Fahey K. M. and S. N. Pandis (2003) Size-resolved aqueous-phase chemistry in a three-dimensional chemical transport model, *J. Geophys. Res.*, **108**, No. 4690.
68. Raymond T. M. and S. N. Pandis (2003) Formation of cloud droplets by multicomponent organic particles, *J. Geophys. Res.*, **108**, No. 4469.

69. Pun B., S. Y. Wu, S. Seigneur, J. H. Seinfeld, R. J. Griffin, and S. N. Pandis (2003) Uncertainties in modeling secondary organic aerosols: Three dimensional modeling studies in Nashville/Western Tennessee, *Environ. Sci. Technol.*, **37**, 3647-3661.
70. Gaydos T. M., B. Koo, S. N. Pandis and D. P. Chock (2003) Development and application of an efficient moving sectional approach for the solution of the atmospheric aerosol condensation/evaporation equation, *Atmos. Environ.*, **37**, 3303-3316.
71. Zhang Y., B. Pun, K. Vijayaraghavan, S. Y. Wu, C. Seigneur, S. N. Pandis, M. Jacobson, A. Nenes, and J. H. Seinfeld (2004) Development and application of the Model for Aerosol Dynamics, Reaction, Ionization, and Dissolution (MADRID), *J. Geophys. Res.*, **109**, No. D01202.
72. Stanier C. O., A. Y. Khlystov, and S. N. Pandis (2004) Nucleation events during the Pittsburgh Air Quality Study: Description and relation to key meteorological, gas phase, and aerosol parameters, *Aerosol Sci. Technol.*, **38S**, 253-264.
73. Cabada J. C., S. N. Pandis, R. Subramanian, A. L. Robinson, A. Polidori, and B. Turpin (2004) Estimating the secondary organic aerosol contribution to PM<sub>2.5</sub> using the EC tracer method, *Aerosol Sci. Technol.*, **38S**, 140-155.
74. Stanier C. O., A. Y. Khlystov, W. R. Chan, M. Mandiro, and S. N. Pandis (2004) A method for the in-situ measurement of aerosol water content of ambient aerosols: The Dry Ambient Aerosol Size Spectrometer (DAASS), *Aerosol Sci. Technol.*, **38S**, 215-228.
75. Khlystov A., C. O. Stanier, and S. N. Pandis (2004) An algorithm for combining electrical mobility and aerodynamic size distributions when measuring ambient aerosol, *Aerosol Sci. Technol.*, **38S**, 215-228.
76. Zhou L., E. Kim, P. K. Hopke, C. O. Stanier, and S. N. Pandis (2004) Advanced Factor Analysis on Pittsburgh particle size distribution data, *Aerosol Sci. Technol.*, **38S**, 118-132.
77. Rees S. L., A. L. Robinson, A. Khlystov, C. O. Stanier, and S. N. Pandis (2004) Mass balance closure and the PM<sub>2.5</sub> Federal Reference Method in Pittsburgh, Pennsylvania, *Atmos. Environ.*, **38**, 3305-3318.
78. Wittig A. E., S. Takahama, A. Y. Khlystov, S. N. Pandis, S. Hering, B. Kirby, and C. Davidson (2004) Semi-continuous PM<sub>2.5</sub> inorganic composition measurements during the Pittsburgh Air Quality Study, *Atmos. Environ.*, **38**, 3201-3213.
79. Wittig A. E., N. Anderson, A. Y. Khlystov, S. N. Pandis, C. Davidson and A. L. Robinson (2004) Pittsburgh Air Quality Study overview, *Atmos. Environ.*, **38**, 3107-3125.
80. Stanier C. O., A. Y. Khlystov, and S. N. Pandis (2004) Ambient aerosol size distributions and number concentrations measured during the Pittsburgh Air Quality Study, *Atmos. Environ.*, **38**, 3275-3284.
81. Cabada J. C., S. Rees, S. Takahama, A. Y. Khlystov, S. N. Pandis, C. I. Davidson, and A. L. Robinson (2004) Mass size distributions and size resolved chemical composition of fine particulate matter at the Pittsburgh Supersite, *Atmos. Environ.*, **38**, 3127-3141.
82. Takahama S., D. Vayenas, S. N. Pandis, and C. Davidson (2004) Modeling the diurnal variation of nitrate during the Pittsburgh air quality study, *J. Geophys. Res.*, **109**, D16S06.
83. Cabada J. C., A. Khlystov, B. Wittig, C. Pilinis, and S. N. Pandis (2004) Light scattering by fine particles during PAQS: Measurements and modeling, *J. Geophys. Res.*, **109**, D16S03.
84. Tang W., T. Raymond, B. Wittig, C. Davidson, S. N. Pandis, A. Robinson, and K. Crist (2004) Spatial variations of PM<sub>2.5</sub> during the Pittsburgh Air Quality Study, *Aerosol Sci. Technol.*, **38**, 80-90.
85. Zhang Q., Stanier, C., Canagaratna, M., Jayne, J., Worsnop, D., Pandis, S. and Jimenez, J. (2004) Insights into Nucleation Burst and Particle Growth in Pittsburgh Based on Aerosol Mass Spectrometry. *Environmental Science & Technology*, **38**, 4797-4809.
86. Khlystov A. Y., C. O. Stanier, and S. N. Pandis (2005) Water content of ambient aerosol during the Pittsburgh Air Quality Study, *J. Geophys. Res.*, **110**, D07S10.
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88. Gaydos T. M., C. O. Stanier, and S. N. Pandis (2005) Modeling of in situ ultrafine atmospheric particle formation in the eastern United States, *J. Geophys. Res.*, **110**, D07S12.
89. Fahey K. M., S. N. Pandis, J. L. Collett, and P. Herckes (2005) The influence of size-dependent droplet composition on pollutant processing by San Joaquin Valley fogs, *Atmos. Environ.*, **39**, 4561-4574.
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91. Kanakidou M., J. H. Seinfeld, S. N. Pandis, et al. (2005) Organic aerosol and global climate modelling: A review, *Atmos. Chem. Phys.*, **5**, 1053-1123.

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93. Zhou L. M., P. K. Hopke, C. O. Stanier, S. N. Pandis, J. M. Ondov, and J. P. Pancras (2005) Investigation of the relationship between chemical composition and size distribution of airborne particles by partial least squares and positive matrix factorization, *J. Geophys. Res.*, **110**, D07S18.
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214. Hildebrandt, L., A. L. Paciga, K. M. Cerully, A. Nenes, N. M. Donahue, and S. N. Pandis (2015) Formation and aging of secondary organic aerosol from toluene: changes in chemical composition, volatility, and hygroscopicity, *Atmos. Chem. Phys.*, **15**, 8301-8313.
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- Haddad, A. Megaritis, Q. J. Zhang, V. Michoud, J. G. Slowik, S. Moukhtar, P. Kolmonen, A. Stohl, S. Eckhardt, A. Borbon, V. Gros, N. Marchand, J. L. Jaffrezo, A. Schwarzenboeck, A. Colomb, A. Wiedensohler, S. Borrmann, M. Lawrence, A. Baklanov, and U. Baltensperger (2015) In situ, satellite measurement and model evidence on the dominant regional contribution to fine particulate matter levels in the Paris megacity, *Atmos. Chem. Phys.*, **15**, 9577-9591.
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### PhD STUDENTS

Christopher Gurciullo (1998, Exxon/Mobil), Kevin Capaldo (1999, General Electric), Celia Cruz (1999, Merck), Asif Ansari (2000, Bayer), Jason West (2000, Professor, U. North Carolina), Timothy Raymond (2001, Professor, Bucknell U.), Bonyoung Koo (2003, ENVIRON), Juan Cabada (2004, Professor, ITESM, Mexico), Mireya Moya (2005, Professor, UNAM, Mexico), Kathleen Fahey (2005, California Air Resources Board), Charles Stanier (2006, Professor, U. Iowa), Timothy Gaydos (2006, Sparta Corp.), Satoshi Takahama (2007, Professor, EPFL), John Dawson (2008, US Environmental Protection Agency), Timothy Lane (2008, Bechtel Inc.), Jaegun Jung (2008, ENVIRON), Kristina Wagstrom (2009, Professor U. Connecticut), Alexandra Tsimpidi (2009, Georgia Tech.), Vlasis Karydis (2009, Georgia Tech.), Byong Lee (2010, CMU), Gabriella Engelhard (2010, Conoco/Philips), Evangelia Kostenidou (2010, USC), Lea Hildebrandt (2011, U. Texas, Austin), Benjamin Murphy (2012, U. Stockholm), Michalis Pikridas (2012, BNL), Andrea Paciga (2013, Conoco/Philips), Magdalini Psychoudaki (2014, U. Gothenborg), Athanasios Megaritis (2014, Greek Army), Melissa Day (2014, CMU), Laura Posner (CMU), Christos Kaltsounoudis (U. Patras) [31]

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### MS STUDENTS

Frederica Turner (1996, General Mills), Constantinos Dassios (2000, FORTH), Dara Lillis (2000, Kiodex), Sarah Rees (2003, CMU), Shaun Ferchack (2007, CMU), An WooJin (2007, U. Washington), Jae JungHo (2008, U. Massachusetts), Salvatore Farina (CMU), Dhurata Koraj (U. Tirana), Longwei Lee (CMU), Junping Tang (CMU) Nivedita Kumar (PSI), Georgios Gkatzelis (Julich), Maria Tsiflikiotou (U. Patras), Nicholas Skarzynski (CMU), Erion Hasa (U. Patras), Anna Siampani (U. Patras), Sreejith Sasidharan (CMU) [19]

Current MS Students: Epameinondas Tsiligiannis (U. Patras), [1]

### POST-DOCTORAL RESEARCHERS

Merete Bilde (2001, Professor, U. Copenhagen), Andrey Khlystov (2004, Professor, Duke U.), Beth Wittig (2004, Professor, SUNY), Kara Huff. (2006, Professor, Southern Illinois U.), Ravi Prathak (2008, U. Hong Kong), Asa-Awuku, Akua (2009, Professor UC Riverside), Ilona Riipinen (Prof., U. Stockholm) [7]

Current Postdocs: Evangelia Kostenidou (FORTH), Christos Fountoukis (FORTH), Dimitrios Papanastasiou (FORTH), Katerina Karadima (FORTH). [4]

### CURRENT RESEARCH SUPPORT

- (1) **US EPA** (2011-14) “*Black Carbon, Air Quality and Climate: From the Local to the Global Scale*” (PI, 950 k\$)
- (2) **US NSF** (2013-14) “*Chemical Aging of Organic Aerosol*” (PI, 250 k\$)
- (3) **US EPA** (2013-15) “*Sensitivity of Organic Aerosol Concentrations and Forcing to Anthropogenic Emissions*” (PI, 450 k\$)
- (4) **PEGASOS** (EU FP7 2010-2014) “*Pan-European Gas-Aerosols-Climate Interaction Study*” (PI, 8 M€)

(5) **ATMOPACS** (ERC, IDEAS 2011-2015) “Atmospheric Organic Aerosol: Air Quality and Climate” (PI, 3.5 M€)

#### PAST RESEARCH SUPPORT

- "Physical and Chemical Properties of Atmospheric Organic Aerosols," *NSF-Career*, \$199,971, September 1995-August 1998, Principal Investigator.
- "Formation of Secondary Atmospheric Organic Aerosol," *American Chemical Society-PRF*, \$23,000, September 1995- August 1996, Principal Investigator.
- "Atmospheric Transport and Deposition of Chemical Constituents at Summit, Greenland: Interpretation of the GISP-2 Ice Core," \$151,202, *NSF*, June 1995-May 1996, Co-Principal Investigator.
- "Investigating the Dynamics and Chemistry of Fog Formation and Dissipation," *California Air Resources Board*, \$209,977, February 1995-June 1996, Co-Principal Investigator.
- "Chemical Constituents in Air and Snow at Summit, Greenland: Interpretation of the GISP-2 Ice Core," *NSF*, \$101,427, July 1994-June 1995, Co-Principal Investigator.
- "Development of an Acid Deposition Model for the South Coast Air Basin of California," *California Air Resources Board-Caltech*, \$383,000, September 1993-March 1995, Co-Principal Investigator.
- "Study of the Physical and Chemical Properties of Atmospheric Organic Aerosol," *EPA*, \$365,123, September 1995-August 1998, Principal Investigator.
- "Development and Testing of a State-of-the-Art PM<sub>x</sub> Particulate Matter Module for Regional and Urban Photochemical Models", *EPA*, \$412,041, September 1995-August 1998, Principal Investigator.
- "Atmospheric Transport and Deposition of Chemical Constituents at Summit, Greenland: Interpretation of the GISP-2 Ice Core," *NSF*, \$151,202, June 1995-May 1996, Co-Principal Investigator.
- "Advanced Atmospheric Chemistry Modeling", Principal Investigator, *Exxon Educational Fund*, \$15,000, December 1995-November 1996, Principal Investigator.
- "Additional Analysis of the IMS-95 Data - Fog Dynamics and Fog/Aerosol Interactions", *State of California Air Resources Board*, \$105,598, May 1997- April 1998, Co-Principal Investigator.
- "California Regional PM<sub>10</sub> Air Quality Study Data Analysis," *State of California Air Resources Board*, \$78,206, May 1997- April 1998, Co-Principal Investigator.
- "Development of an Improved Aerosol Module for Urban and Regional Air Pollution Studies", *Coordinating Research Council*, \$126,671, June 1997-May 1999, Co-Principal Investigator.
- "Research Consortium on Ozone and Fine Particle Formation in California and in the Northeastern United States", *EPA*, \$3,244,068, April 1998-March 2001, Co-Principal Investigator.
- "Growth and Activation of Multicomponent Atmospheric Particles: The Role of Organics", *NSF*, \$280,000, April 1999-March 2002, Principal Investigator.
- "Sampling, Analysis, and Properties of Primary PM<sub>2.5</sub>: Application to Coal-Fired Utility Boilers", *Department of Energy*, \$199,948, 1999-2000, Co-Principal Investigator.
- "The Pittsburgh Atmospheric Particulate Matter Supersite", *US Environmental Protection Agency*, \$3,500,000, 1999-2004, Principal Investigator.
- "Atmospheric Aerosol Source-Receptor Relationships: The Role of Coal Fired Power Plants", *Department of Energy*, \$3,400,000, 2000-2004, Co-Principal Investigator.
- "Major Research Instrumentation: Acquisition of Instrumentation for Measurement of Airborne Organics and Fine Particulate Matter", US National Science Foundation, \$360,000, 2004-2005, *Co-Principal Investigator*.
- "Impacts of Climate Change and Global Emissions on US Air Quality: Development of an Integrated Modeling Framework and Sensitivity Assessment", US Environmental Protection Agency, \$900,000, 2003-2006, Co-Principal Investigator.
- "Atmospheric Processing of Organic Particulate Matter: Formation, Properties, Long Range Transport and Removal", US Environmental Protection Agency, \$450,000, 2003-2006, Co-Principal Investigator.
- "Multicomponent Atmospheric Aerosol-Water Interactions", National Science Foundation, \$480,000, 2003-2007, Principal Investigator.
- "European Integrated Project on Aerosol Cloud Climate Air Quality Interactions", EUCAARI (EU FP6 2007-2011, 210 k€, partner).
- "Megacities: Emissions, Urban Regional and Global Atmospheric Pollution and Climate Effects", MEGAPOLI (EU FP7 2008-2011), 200 k€, Co-Coordinator.
- "Major Research Instrumentation: Acquisition of a Chemical Ionization Mass Spectrometer and a High-Resolution Time of Flight Aerosol Mass Spectrometer for Organic Aerosol Oxidation Studies", US National Science Foundation, 2009-10, 490 k\$, co-PI.

“Changes in Climate, Pollutant Emissions and US Air Quality: An Integrated Modelling Assessment”, US Environmental Protection Agency, 2007-11, 950 k\$, co-PI  
“Laboratory, Field, and Theoretical Studies of the Water Uptake of Fresh and Aged Atmospheric Particles”, US National Science Foundation, 2007-11, 550 K\$ PI.  
“Evaluation and Continued Development of the Volatility Basis Set in Regional Chemical Transport Models”, EPRI, 2010-11, 180 k\$, PI.  
“SOA Volatility Evolution: Formation and Oxidation over the Lifecycle of  $PM_{2.5}$ ”, US EPA 2008-12 (PI, 600k\$).

## INVITED PRESENTATIONS

**Seminars in Universities and Research Institutes (40):** Princeton U./US (1993), U. Houston/US (1993), Carnegie Mellon University/US (1993), U. California Santa Barbara/US (1993), MIT/US (1993), US Environmental Protection Agency (1994), Health Effects Institute/US (1996), U. California Irvine/US (1996), Lehigh U./US (1996), MIT/US (1997), Harvard/US (1998), SUNY/US (1999), U. Texas Austin/US (1999), U. Minnesota/US (2000), Penn State/US (2000), U. Maryland/US (2000), U. Colorado at Boulder/US (2001), UCLA/US (2001), Georgia Tech./US (2001), Imperial Col./UK (2001), U. Copenhagen (2002), NASA-GSFC/US (2002), U. of Oslo/Norway (2002), U. Helsinki/Finland (2002), U. of Ioannina/Greece (2002), ETH/Switzerland (2004), Caltech/US (2004), Demokritos/Greece (2004), ENPC/France (2004), U. of Oslo/Norway (2004), MCE/US (2006), U. of Ioannina/Greece (2008), U. Karlsruhe/Germany (2009), U. Wisconsin/US (2009), U. Crete/Greece (2009), U. Illinois at Urbana (2010), Cyprus Institute (2010), Imperial/UK (2010), U. Riverside (2011), U. Texas Austin (2013), PNNL (2013).

**Invited Conference Presentations (18):** International Aerosol Conference (1998), International Atmospheric Aerosol Modeling Workshop (1998), Air-Quality II (2000), Symposium on Chemistry-Climate Interactions (2000), Chairmen of the European Research Councils Chemistry Committee (2002), EPA Organic Aerosols (2002), NATO ARW Meeting on Transboundary Transport of Pollution (2002), Mid-Atlantic States Air Quality Directors Meeting (2002), American Geophysical Union (2002), ACCENT (2006), MILAGRO Conference (2007), INTROP (2007), Aerosols and Health (2010), IGAC (2010), European Geophysical Union Annual Meeting (2011), MedCLIVAR (2011), ACCENT+ (2011), IGAC (2012), Faraday Discussions (2013), Goldschmidt Conference (2013), ACCENT+ (2013).

### **Plenary Lectures and Keynote Addresses (22):**

"Aerosol Modeling for Regulatory Purposes", in *Modeling Science Issues for High Performance Computing*, Environmental Protection Agency, Research Triangle Park, March 1995.  
"Gas-to-Particle Conversion", in *Particulate Matter: Health and Regulatory Issues*, Air & Waste Management Association Meeting, Pittsburgh, April 1995.  
“Modeling Atmospheric Aerosol Dynamics,” World Climate Research Program, Cambridge, England, August 1995.  
“Modeling Aerosol Chemistry”, International Atmospheric Aerosol Modeling Conference, Toronto, March 1997.  
“Formation and Properties of Secondary Atmospheric Aerosol: From the Laboratory to the Super-computer”, European Aerosol Association, September 1998.  
“Secondary Atmospheric Particulate Matter”, Fifth Chemical Congress of North America, Cancun, Mexico, November 1998.  
“Organic Aerosols in the Atmosphere: Formation, Properties, and Lifetimes”, XXIV General Assembly of the European Geophysical Society, The Hague, April 1999.  
“Organic aerosols as CCN”, International Conf. on Nucleation and Atmospheric Aerosols, Missouri-Rolla, 2000.  
“Formation of Atmospheric Particulate Matter in the Urban Environment”, Annual Meeting of the American Meteorological Society, Long Beach, January 2000 .  
“Chemical Engineering, Urban Smog, and Global Change”, Chemical Engineering International Congress, ITESM, Monterrey Mexico, March 2000.  
“Aerosol Physics and Chemistry Simulation”, 2<sup>nd</sup> International Conference on Air Pollution Modeling and Simulation”, Paris, France, April 2001.  
“The Role of Ammonia in Air Quality”, American Dairy and Poultry Association Annual Meeting, Sacramento, 2002.  
“Aerosol Cloud Interactions”, Aerosol Society Meeting, Leeds, 2002.  
“Atmospheric Aerosol Flows”, Gordon Conference on Granular Fluid Flow, Oxford, 2006.

- “Trees, Biogenic Hydrocarbons and Air Quality”, Gordon Conference on Emissions of Biogenic Organics, Ventura, 2007.
- “Atmospheric Aerosol Nucleation in Sulfur Rich Environments”, International Conf. on Nucleation and Atmospheric Aerosols, Galway, Ireland, 2008.
- “Aerosols in the Atmosphere”, NATO International Meeting on Air Pollution Modeling and its Application, San Francisco, 2009.
- “Air Quality and Public Policy”, European Aerosol Conference, Karlsruhe, 2009.
- “Strategies to Improve Air Quality”, Annual Meeting of the Hellenic Meteorological Society, Athens, 2010.
- “Atmospheric Aerosol, Air Quality and Climate”, Israeli Aerosol Association Conference, 2011.
- “Atmospheric Chemistry and Air Quality”, International Chemistry Conference, Zyrich, 2011.
- “Revisiting the Atmospheric Organic Aerosol Sources”, International Catalysis Conference, Lyon, 2012.
- “Atmospheric Aerosol and Climate Change”, NOBLESSE Lecture, Warsaw, 2013.
- “Air Quality and Climate Change”, Clean Air Conference, Sydney, 2013.

#### **ORGANIZATION OF INTERNATIONAL CONFERENCES**

- American Assoc. for Aerosol Research (AAAR) Annual Meeting, AAAR, Conference Chair, Houston, USA, 2005
- Aerosols: Properties, Processes and Climate, ESF-INTROP, ESF-INTROP, Conference Co-Chair, Heraklion, Greece, 2007
- European Aerosol Conference, HAAR, Conference Co-Chair, Thessaloniki, Greece, 2008.