

## ATHANASIOS NENES

### Professional Preparation

Diploma	Chemical Engineering	1993	National Technical University of Athens, Greece
M.S.	Atmospheric Chemistry	1997	University of Miami
Ph.D.	Chemical Engineering	2002	California Institute of Technology

### Appointments

2002-present	Assistant Professor, Georgia Institute of Technology
2004-present	Blanchard-Milliken Young Faculty Chair

### Honors/ Recongnitions/Patents

Sigma Xi Young Faculty Award, 2007  
Sheldon K Friedlander Award, American Association for Aerosol Research, 2005  
Blanchard-Milliken Young Faculty Fellowship, Georgia Institute of Technology, 2004  
National Aeronautics and Space Administration New Investigator Program Award, 2004  
National Science Foundation CAREER Award, 2004  
ACCESS Colloquium Participation, 2003  
Dean's Prize, Rosenstiel School of Marine and Atmospheric Sciences, 1998  
Best Diploma Thesis Award in Chemical Engineering, Chamber of Engineers (Greece), 1996  
Roberts, G., and Nenes, A., "Stream-Wise Thermal Gradient Cloud Condensation Nuclei Chamber.", US Provisional Patent No. 60/411,688 (filed September 18, 2002)

### Refereed Publications – Published/In press

1. Barahona, D. and Nenes, A., Parameterization of cloud droplet formation in large scale models: including effects of entrainment, *J.Geoph.Res.*, in press
2. Sotiropoulou, R.E.P, Nenes A., Adams, P.J., and Seinfeld, J.H., Impact of CCN Prediction Uncertainty on the Aerosol Indirect Effect: A Global Modeling Assessment, *J.Geoph.Res.*, in press
3. Asa-Awuku, A., Nenes, A., The Effect of Solute Dissolution Kinetics on Cloud Droplet Formation: 1. Extended Kohler theory, *J.Geoph.Res.*, in press
4. Meskhidze, N., Nenes, A., Chameides, W.L., Luo, C., Mahowald, N. (2007) Southern Ocean Productivity: Iron Fertilization From Below, *Global Biog.Cycle*, **21**(2), 10.1029/2006GB002711
5. Fountoukis, C., Nenes, A., Meskhidze, N., Bahreini, R., Brechtel, F., Buzorius, G., Conant, W.C., Jonsson, H., Murphy, S., Sorooshian, A., Varutbangkul, V., Flagan, R.C. and J.H. Seinfeld (2007) Aerosol–cloud drop concentration closure for clouds sampled during ICARTT, *J.Geoph.Res.*, **112**, D10S30, doi:10.1029/2006JD007272
6. Medina, J., Nenes, A., Sotiropoulou, R.E., Cottrell, L.D. , Ziemba, L.D., Beckman, P.J., and Griffin, R.J. (2007) Cloud Condensation Nuclei (CCN) closure during the ICARTT 2004 campaign: a) effects of size-resolved composition, *J. Geoph.Res.*, **112**, D10S31, doi:10.1029/2006JD007588
7. Ervens, B., Cubison, M., Andrews, B., Feingold, G., Ogren, J.A., Jimenez, J.L., and Nenes, A. (2007) Prediction of CCN number concentration using Measurements of Aerosol Size Distributions and Composition and Light Scattering Enhancement due to Humidity, *J.Geoph.Res.*, **112**, D10S32, doi:10.1029/2006JD007426
8. Stroud, C.A., Nenes, A., Jimenez, J.L, DeCarlo, P.F., Huffman, J.A., Bruintjes, R., Nemitz, E., Delia, A.E., Toohey, D.W., Guenther, A.B., Nandi, S., (2007) Cloud Activating Properties of Aerosol Observed during CELTIC, *J.Atmos.Sci.*, **64**, 441-459
9. Meskhidze, N. and Nenes, A., (2006) Phytoplankton and Cloudiness in the Southern Ocean, *Science*, **314** , 1419-1423

10. J.B. Nowak, L.G. Huey, A.G. Russell, J. A. Neuman, D. Orsini, S.J. Sjostedt, A.P. Sullivan, D.J. Tanner, R.J. Weber, A. Nenes, E. Edgerton, and F.C. Fehsenfeld, (2006) Analysis of Urban Gas-phase Ammonia Measurements from the 2002 Atlanta Aerosol Nucleation and Real-time Characterization Experiment (ANARChE), *J.Geoph.Res.*, **111**, D17308, doi:10.1029/2006JD007113.
11. Lance, S., Medina, J., Smith, J.N., Nenes, A., (2006) Mapping the Operation of the DMT Continuous Flow CCN Counter, *Aeros.Sci.Tech.*, **40**, 242–254
12. Zhu, L., Nenes, A., Wine, P., Nicovich, J.M., (2006) Effects of Aqueous Organo-Sulfur Chemistry on Speciation and Particulate MS-to-NSS Ratios, *J.Geoph.Res.*, **111**, D05316, doi:10.1029/2005JD006326
13. Sotiropoulou, R.E.P, Medina, J., Nenes A., (2006) CCN predictions: is theory sufficient for assessments of the indirect effect?, *Geoph.Res.Lett.*, **33**, L05816, doi:10.1029/2005GL025148
14. Barth, M, McFadden, J., Sun, J., Wiedinmyer, C., Chuang, P., Collins, D., Griffin, R., Hannigan, M., Karl, T., Kim, S., Lasher-Trapp, S., Levis, S., Litvak, M., Mahowald, N., Moore, K., Nandi, S., Nemitz, E., Nenes, A., Potosnak, M., Raymond, T.M., Smith, J., Stroud, C. and Still, C., (2005) The coupling between land ecosystems and the atmospheric hydrological cycle, *BAMS*, **86**(12), 1738-1742
15. Meskhidze, N., Nenes, A., Conant, W., and Seinfeld, J.H. (2005) Evaluation of a new cloud droplet activation parameterization with in-situ data from CRYSTAL-FACE and CSTRIFE, *J.Geoph.Res.*, **110**, D16202, doi:10.1029/2004JD005703
16. Fountoukis, C., and Nenes, A. (2005) Continued Development of a Cloud Droplet Formation Parameterization for Global Climate Models, *J.Geoph.Res.*, **110**, D11212, doi:10.1029/2004JD005591
17. Roberts, G., and Nenes, A. (2005) A Continuous-Flow Longitudinal Thermal-Gradient CCN Chamber for Atmospheric Measurements, *Aeros.Sci.Tech.*, **39**, 206–221, doi:10.1080/027868290913988
18. M. Kanakidou, J. H. Seinfeld, S. Pandis, I. Barnes, F. J. Dentener, M. C. Facchini, R. van Dingenen, B. Ervens, A. Nenes, C. J. Nielsen, E. Swietlicki, J.P. Putaud, Y. Balkanski, C. E., Lund Myhre, K. Tsigaridis, E. Vignatti, E. Stephanou, J. Wilson (2005) Organic aerosol and climate modelling: A review, *Atmos.Chem.Phys.*, 1053-1123, SRef-ID: 1680-7324/acp/2005-5-1053
19. Yu, S., Dennis, R., Roselle, S., Nenes, A., Walker, J.T., Eder, B., Schere, K., Swall, J. and Robarge, W. (2005) An assessment of the ability of 3-D air quality models with current thermodynamic equilibrium models to predict aerosol NO<sub>3</sub><sup>-</sup>, *J.Geoph.Res.*, **110**, D07S13, doi:10.1029/2004JD004718
20. Meskhidze, N, Chameides, W., Nenes, A. (2005) Dust and pollution: A Recipe for Ocean Fertilization?, *J.Geoph.Res.*, **110**, D03301, doi:10.1029/2004JD005082
21. Lance, S., Nenes, A. and Rissman, T. (2004) Chemical and Dynamical Effects on Cloud Droplet Number: Implications for Current and Future Estimates of Aerosol Indirect Forcing, *J.Geoph.Res.*, **109**, D22208, doi:10.1029/2004JD004596
22. Gao, S., Nga L. N., Keyword, M., Varutbangkul, V., Bahreini, R., Nenes, A., He, J., Kee Y., Beauchamp, J.L., Hodyss, R.P., Flagan, R.C., Seinfeld, J.H. (2004) Particle Phase Acidity and Oligomer Formation in Secondary Organic Aerosol, *Env.Sci.Tech.*, **38**, 6582-6589, doi: 10.1021/es049125k
23. Medina, J. and Nenes, A. (2004) Effects of Film Forming Compounds on the growth of Giant CCN: Implications for cloud microphysics and the aerosol indirect effect., *J.Geoph.Res.*, **109**, D20207, doi:10.1029/2004JD004666
24. Conant, W., Vanreken, T., Rissman, T., Varutbangkul, V., Jimenez, J., Delia, A., Bahreini, R., Roberts, G., Nenes, A., Jonsson, H., Flagan, R.C., Seinfeld, J.H. (2004) Aerosol-cloud drop concentration closure in warm cumulus, *J.Geoph.Res.*, **109**, D13204, doi:10.1029/2003JD004324
25. VanReken T., Nenes, A., Flagan, R.C. and Seinfeld, J.H. (2004) Design for a New Cloud Condensation Nucleus (CCN) Spectrometer, *Aeros.Sci.Tech.*, **38**, 639-654
26. Rissman, T., Nenes, A. and Seinfeld, J.H. (2004) Chemical amplification (or dampening) of the Twomey effect: Conditions derived from droplet activation theory, *J.Atmos.Sci.*, **61**(8), 919-930
27. Zhang, Y., Pun, B., Vijayaraghavan, K., Wu, S., Seigneur, C., Pandis, S., Jacobson, M., Nenes, A., Seinfeld, J.H. (2004) Development and Application of the Model of Aerosol Dynamics, Reaction, Ionization and Dissolution (MADRID), *J.Geoph.Res.*, **109**, doi: 10.1029/2003JD003501

28. Meskhidze, N, Chameides, W., Nenes, A., and Chen, G (2003) Iron Mobilization in Mineral Dust: Can Anthropogenic SO<sub>2</sub> Emissions Affect Ocean Productivity?, *Geoph.Res.Lett.*, **30**(21), 2085, doi:10.1029/2003GL018035
29. Nenes, A. and Seinfeld, J.H. (2003) Parameterization of cloud droplet formation in global climate models, *J.Geoph.Res.*, **108**, 4415, doi: 10.1029/2002JD002911
30. Makar, P.A., Bouchet, V.S., and Nenes, A. (2003) Inorganic Chemistry Calculations using HETV – A Vectorized Solver for the SO<sub>4</sub>-NO<sub>3</sub>-NH<sub>4</sub> System Based on the ISORROPIA Algorithms, *Atmos.Env.*, **37**, 2279-2294
31. Kreidenweis, S.M., Walcek, C.J., Feingold, G., Gong, W., Jacobson, M.Z., Kim, C., Liu, X, Penner, J.E., Nenes, A. and Seinfeld, J.H. (2003) Modification of Aerosol Mass and Size Distribution Due to Aqueous Phase SO<sub>2</sub> Oxidation in Clouds: Comparisons of Several Models. *J.Geoph.Res.*, **108**, 4213, doi:10.1029/2002JD002697
32. Roberts, G., Nenes, A., Andreae, M.O., Seinfeld, J.H. (2003) Impact of CCN Spectra on Cloud Properties in the Amazon Basin, *J. Geophys. Res.*, **108**, doi: 10.1029/2001JD000985.
33. Nenes, A., Conant, W., and Seinfeld, J.H. (2002) Black Carbon Radiative Heating Effects on Cloud Microphysics and Implications for the Aerosol Indirect Effect: 2. Cloud Microphysics, *J. Geophys. Res.*, **107**, doi: 10.1029/2002JD002101.
34. Conant, W, Nenes, A., and Seinfeld, J.H. (2002) Black Carbon Radiative Heating Effects on Cloud Microphysics and Implications for the Aerosol Indirect Effect: 1. Extended Köhler theory, *J. Geophys. Res.*, **107**, doi: 10.1029/2002JD002094.
35. Nenes, A. Charlson, R. J., Facchini, M. C., Kulmala, M., Laaksonen, A., Seinfeld, J.H. (2002) Can Chemical Effects on Cloud Droplet Number Rival the First Indirect Effect?, *Geoph.Res.Lett.*, **29**(17), 1848, doi: 10.1029/2002GL015295
36. R. J. Charlson, J. H. Seinfeld, A. Nenes, M. Kulmala, A. Laaksonen, M. C. Facchini (2001) Reshaping the Theory of Cloud Formation, *Science*, **292**, 2025-2026
37. Nenes, A., Chuang, P.Y, Flagan, R., and Seinfeld, J.H. (2001) A Theoretical Analysis of Cloud Condensation Nucleus (CCN) Instruments, *J.Geophys.Res.*, 106 (D4), **3449-3474**
38. Nenes., A., Ghan, S., Abdul-Razzak, H., Chuang, P.Y., Seinfeld, J.H. (2001) Kinetic Limitations on Cloud Droplet Formation and Impact on Cloud Albedo, *Tellus*, **53B**, 133-149
39. Collins, D.R., Nenes, A., Flagan, R.C, and Seinfeld, J.H. (2000) The Scanning Flow DMA, *J.Aerosol.Sci.*, **31**, 1129-1144
40. Chuang, P.Y., Nenes A., Smith, J.N., Flagan, R., and Seinfeld, J.H. (2000) Design of a CCN Spectrometer for Airbourne Measurement, *J.Atmosph.Ocean.Tech.*, **17**, 1005-1019
41. Pilinis, C., Capaldo, K.P., Nenes, A., Pandis, S.N. (2000) MADM - A New Multicomponent Aerosol Dynamics Model, *Aerosol Sci. Tech.*, **32(5)**, 482-502
42. Katoshevski, D., Nenes, A., Seinfeld, J.H. (1999) A Study of Processes that Govern the Maintenance of Aerosols in the Marine Boundary Layer, *J.Aeros.Sci.*, **30**, 503-532
43. Nenes, A., Pilinis, C., Pandis, S.N. (1999) Continued Development and Testing of a New Thermodynamic Aerosol Module for Urban and Regional Air Quality Models, *Atmos. Environ.*, **33**, 1553-1560
44. Nenes, A., Pilinis, C., Pandis, S.N. (1998) ISORROPIA: A New Thermodynamic Model for Multiphase Multicomponent Inorganic Aerosols, *Aquat. Geochem.*, **4**, 123-152
45. West, J.J., Pilinis, C., Nenes, A., Pandis, S.N. (1998) Marginal Direct Climate Forcing by Atmospheric Aerosols, *Atmos. Environ.*, **32 (14-15)**, 2531-2542
46. Koloutsou-Vakakis, S., Rood, M.J., Nenes, A., Pilinis, C. (1998) Modeling of Aerosol Properties Related to Direct Climate Forcing, *J. Geophys. Res.*, **103 (D14)**, 17009-17032
47. Nenes, A., Assimacopoulos, D., Markatos, N., Mitsoulis, E. (1996) Simulation of Airlift Pumps for Deep Water Wells, *Can. J. Chem. Eng.*, **74**, 448-456

### Refereed Publications – In review

1. Fountoukis, C. and Nenes, A., ISORROPIA II: A Computationally Efficient Aerosol Thermodynamic Equilibrium Model for  $K^+ - Ca^{2+} - Mg^{2+} - NH_4^+ - Na^+ - SO_4^{2-} - NO_3^- - Cl^- - H_2O$  Aerosols, *Atmos.Chem.Phys.*
2. Padró, L.T. and Nenes, A., Cloud droplet activation: solubility revisited, *Atmos.Chem.Phys.*
3. Asa-Awuku, A., Nenes, A., Sullivan, A.P., Hennigan, C.J. and Weber, R.J., Investigation of molar volume and surfactant characteristics of water-soluble organic compounds in biomass burning aerosol, *Atmos.Chem.Phys.*
4. Padró, L.T., Asa-Awuku, A., Morrison, R., and A. Nenes, Inferring thermodynamic properties from CCN activation experiments: a) single-component and binary aerosols, *Atmos.Chem.Phys.*
5. Fountoukis, C., Nenes, A., Sullivan, A., Weber, R., VanReken, T., Fischer, M., Matias, E., Moya, M. Farmer, D., and Cohen, R., Thermodynamic characterization of Mexico City Aerosol during MILAGRO 2006, ACPD, in review
6. VanReken, T.M. and Nenes, A., Cloud Formation in the Plumes of Solar Chimney Power Generation Facilities: A Modeling Study, Solar Energy, in review

### Graduate students advised: 11

### Professional Activities

1993-1995	Environmental consultant, HELIX Consulting Engineers (Athens, Greece)
2003, March	NASA Radiation Sciences Program Panel Review, Washington DC (panel member)
2006, July	NASA ACMAP Panel Review, Washington DC (panel member)
2006-present	Pacific Northwest National Lab Aerosol-Climate Initiative External Advisory Board
2007, March	NASA Radiation Panel Review, Washington DC (panel member)
2004-present	Editor, Atmospheric Chemistry and Physics

### Membership in Professional and Honor Societies

American Meteorological Society  
Earth System Scholars Forum  
American Association for Aerosol Research  
American Geophysical Union  
American Institute of Chemical Engineers  
Technical Chamber of Engineers (Greece)

### Invited Seminars

INTROP/ESF Meeting, Heraklion, Crete, Greece, April 24, 2007.  
American Chemical Society, Annual Meeting, Chicago, IL, 2007  
Atmospheric Sciences Seminar, Massachusetts Institute of Technology, Boston, MA, December 18, 2006.  
Southeastern Regional Meeting of the American Chemical Society, Augusta, GA, November 1, 2006.  
Department of Chemical Engineering, Carnegie Mellon University, Pittsburgh, PA, October 8, 2006.  
Annual Congress of the Mexican Chemical Society, Mexico City, Mexico, September 28, 2006.  
Tutorial Speaker, International Aerosol Conference, Saint Paul, MN, September 10, 2006.  
2nd International Conference On Global Warming And The Next Ice Age And Aerosol Workshop On Climate Prediction Uncertainties, Santa Fe, NM, July 20, 2006.  
NASA-Goddard Space Flight Center, Greenbelt, MD, April 10, 2006.  
Universidad Autonoma de Aguascalientes, Aguascalientes, Mexico, March 27, 2006  
American Geophysical Union, Fall Meeting, San Fransisco, CA, December 7, 2005.  
Department of Earth Sciences, University of California at Santa Cruz, CA, November 8, 2005.

ACD Seminar, National Center for Atmospheric Research, Boulder, CO, June 25, 2005.  
NASA Jet Propulsion Laboratory, Pasadena, CA, February 18, 2005  
CDSNS Colloquium, School of Mathematics, Georgia Institute of Technology, January 10, 2005.  
American Geophysical Union, Fall Meeting, San Francisco, CA, December 17, 2004.  
Department of Earth and Atmospheric Sciences, Harvard University, December 10, 2004.  
Aspen Global Change Institute, "Aerosols and the Hydrological Cycle", 17 July 2004.  
NASA-Goddard Space Flight Center, Greenbelt, MD, June 9, 2004.  
Department of Chemical Engineering, National Technical University of Athens, Greece, May 13, 2004.  
Department of Marine, Earth and Atmospheric Sciences, North Carolina State University, April 26, 2004.  
Department of Chemistry, University of Crete, Greece, December 19, 2003.  
NOAA-Aeronomy Laboratory, Boulder, CO, May 28, 2003.  
NASA-Goddard Institute of Space Studies, New York City, NY, March 7, 2003.  
Center for Integrated Study of the Human Dimensions of Global Change, Carnegie Mellon University,  
Pittsburgh, PA, November 20, 2002.

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