

# VLASSIS A. KARYDIS

Dept. of Chemical Engineering, University of Patras, GR 265 00 Patras

tel: +30-2610-969569, E-mail: [vlkarydis@chemeng.upatras.gr](mailto:vlkarydis@chemeng.upatras.gr)

## EDUCATION

**Ph.D.**, Chemical Engineering 2004 – 2009

University of Patras, Greece

- Dissertation: Simulating the Formation and the Size Distribution of Inorganic Atmospheric Aerosols
- Academic Advisor: Prof. Spyros Pandis
- Research Interests: Air pollution; atmospheric particulate matter; regional atmospheric modeling; Inorganic atmospheric chemistry; mineral dust; aerosol thermodynamics; emission control strategies

**M.S.**, Chemical Engineering 2004 – 2009

University of Patras, Greece

- Minor: Energy and Environment
- Graduate Coursework: Analysis and Design of Chemical Reactors, Applied Mathematics, Physical Chemistry, Polymers, Inorganic Materials, Environmental Biotechnology, Alternative Energy Forms

**Dipl. Ing.**, Chemical Engineering 1999 – 2004

University of Patras, Greece

- Diploma Thesis: “Transport of Bacteria in Granular Porous Media”
- Minor: Process Simulation, Optimization and Control
- Undergraduate Coursework for Minor: Mathematical Modeling & Simulations, Process Control, Process Optimization, Systems Dynamics

## PROFESSIONAL EXPERIENCE

### Graduate Research Assistant

University of Patras, Greece: Dept. of Chemical Engineering 2004 – 2009

Air Quality Laboratory

- Atmospheric aerosol modeling using PMCAMx - Application in regional scale (Eastern United States) and in urban scale (Mexico City Metropolitan Area); Simulation of mineral dust effects on the semivolatile inorganic aerosols using PMCAMx with ISORROPIA II; Study of emission control strategies; Inorganic aerosol thermodynamics (AIM, GFEMN, ISORROPIA).

### Graduate Research Assistant

Finokalia Aerosol Measurement Experiment (FAME) field campaign 05-06/2008

- Field measurements using Aerodyne's Aerosol Mass Spectrometer (AMS) and Dry – Ambient Aerosol Size Spectrometer (DAASS).

### Visiting Researcher

Molina Center for Energy and the Environment, San Diego, CA June 2006

- Simulation of the Air Quality in Mexico City Metropolitan Area using PMCAMx.

### Undergraduate Research Assistant

University of Patras, Greece: Dept. of Chemical Engineering 2003 – 2004

Laboratory of Transport Phenomena and Physicochemical Hydrodynamics

- Experimental study and theoretical simulation of the transport phenomena in porous media.

### Research Assistant

Benaki Phytopathological Institute, Greece 07–08/2001

- Chemical analysis of pesticides

## TEACHING EXPERIENCE

### Teaching Assistant

University of Patras, Greece: Dept. of Chemical Engineering

- Unit Operations Laboratory, Fall 2005.
- Numerical Analysis, Spring 2005.
- Computer Programming for Chem. Engin., Fall 2004.

## AWARDS AND HONORS

- Molina Center for Energy and the Environment Fellowship, 2006 –2009
- Carnegie Mellon University Fellowship, 2004-2005
- Technical Chamber of Greece Scholar Award 2003-2004

## PROFESSIONAL MEMBERSHIPS

- American Association for Aerosol Research (AAAR)
- American Geophysical Union (AGU)
- European Geosciences Union (EGU)
- Hellenic Association for Aerosol Research (HAAR)

## JOURNAL PUBLICATIONS

(Peer reviewed)

**Karydis V.A.**; Tsimpidi A.P.; Fountoukis C.; Nenes A.; Zavala M.; Lei W.; Molina L.T.; Pandis S.P. Simulating the fine and coarse inorganic particulate matter concentrations in a polluted Megacity; *Atmos. Environ.*, 44, 608-620, **2010**.

Tsimpidi A.P.; **Karydis V.A.**; Zavala M.; Lei W.; Molina L.T.; Ulbrich I.M.; Jimenez J.L.; Pandis S.P. Evaluation of the Volatility Basis-Set Approach for the Simulation of Organic Aerosol Formation in the Mexico City Metropolitan Area; *Atmos. Chem. And Physics*, 10, 525-546, **2010**.

Tsimpidi, A.P.; **Karydis, V.A.**; Pandis S.N. Response of fine particulate matter to emission changes of oxides of nitrogen and anthropogenic volatile organic compounds in the eastern United States; *J. Air Waste Manage. Assoc.*, 58, 1463-1473, **2008**.

Tsimpidi, A.P.; **Karydis, V.A.**; Pandis S.N. Response of inorganic fine particulate matters to emission changes of SO<sub>2</sub> and NH<sub>3</sub>: The eastern United States as a case study; *J. Air Waste Manage. Assoc.*, 57, 1489-1498, **2007**.

**Karydis, V.A.**; Tsimpidi, A.P.; Pandis, S.N. Evaluation of a three-dimensional chemical transport model (PMCAMx) in the Eastern United States for all four seasons; *J. Geophys. Res.*, 112, D14211, **2007**.

Pikridas M., Kostenidou E., Psichoudaki M., Tsimpidi A.P., **Karydis V.A.**, Hildebrandt L., Engelhart G., Pandis S.P., Kouvarakis G., Bougiatioti A., Mihalopoulos N., Mohr C., Prevot A., DeCarlo P., Baltensperger U. Finokalia Aerosol Measurement Experiment – 2008 (FAME – 2008): An Overview; in preparation.

## CONFERENCE PRESENTATIONS

Tsimpidi A.P.; **Karydis V.A.**; Zavala M., Lei W.; DeCarlo P.F.; Ulbrich I.; Jimenez J.L.; Molina L.T.; Pandis S.N., Simulating the Formation of Semivolatile Primary and Secondary Organic Aerosol using the Volatility Basis-Set Approach: Mexico City as a case study, 7<sup>th</sup> Greek Scientific Chemical Engineering Conference, 2009 (oral presentation).

**Karydis V.A.**; Tsimpidi A.P.; Fountoukis C.; Nenes A.; Zavala M.; Lei W.; Molina L.T.; Pandis S.P. Simulating the effects of mineral dust on the semivolatile inorganic aerosol components using ISORROPIA II in PMCAMx, 7<sup>th</sup> Greek Scientific Chemical Engineering Conference, 2009 (oral presentation).

Tsimpidi A.P.; **Karydis V.A.**; Zavala M., Lei W.; DeCarlo P.F.; Ulbrich I.; Jimenez J.L.; Molina L.T.; Pandis S.N. Evaluation of Organic Aerosol Formation and Apportionment in a polluted Megacity, European Geosciences Union (EGU) Meeting, 2009 (oral presentation).

M. Zavala, W. Lei, N. Bei, G. Li, A. P. Tsimpidi, **V. A. Karydis**, S. Pandis, and L. T. Molina Modeling of secondary organic aerosols from mobile sources in Mexico City, European Geosciences Union (EGU) Meeting, 2009.

**V.A. Karydis**, A.P. Tsimpidi, C. Fountoukis, A. Nenes, M. Zavala, W. Lei, L.T. Molina, and S.N. Pandis, Effects of mineral dust on the semivolatile inorganic aerosol components in a polluted Megacity, European Geosciences Union (EGU) Meeting, 2009.

G Li, M Zavala, W Lei, **VA Karydis**, AP Tsimpidi, S Pandis, and LT Molina, Simulations of aerosols and their effects on photolysis and ozone formation in Mexico City, European Geosciences Union (EGU) Meeting, 2009.

B. Murphy, A. Tsimpidi, **V. Karydis**, and S. Pandis, Simulating the Formation of Semivolatile Primary and Secondary Organic Aerosol in a Regional Chemical Transport Model, European Geosciences Union (EGU) Meeting, 2009.

L. Hildebrandt, B.-H. Lee, C. Mohr, E. Kostenidou, A. Tsimpidi, **V. Karydis**, U. Baltensperger, N. M. Donahue, N. Mihalopoulos, S. N. Pandis and the [FAME-08 AMS and Volatility Team](#), Characterizing the Composition and Volatility of Aged Organic Aerosol from Different Source Regions: The Finokalia Aerosol Measurement Experiment – 2008, European Geosciences Union (EGU) Meeting, 2009.

**Karydis V.A.**; Tsimpidi A.P.; Fountoukis C.; Nenes A.; Zavala M.; Lei W.; Molina L.T.; Pandis S.P. Effects of mineral dust, NO<sub>x</sub>, and NH<sub>3</sub> emissions on the formation of secondary inorganic aerosol components, , American Assoc. for Aerosol Research (AAAR) 27<sup>th</sup> Annual Conference, 2008 (oral presentation).

Tsimpidi A.P.; **Karydis V.A.**; Zavala M.; Lei W.; Ulbrich I.M.; Jimenez J.L.; Molina L.T.; Pandis S.P. Organic Aerosols in Mexico City: Sources, Formation Processes and Responses to Emission Controls, American Assoc. for Aerosol Research (AAAR) 27<sup>th</sup> Annual Conference, 2008 (oral presentation).

**Karydis V.A.**; Tsimpidi A.P.; Fountoukis C.; Nenes A.; Zavala M.; Lei W.; Molina L.T.; Pandis S.P. Simulating the effects of mineral dust on the semivolatile inorganic aerosol components using ISORROPIA II in PMCAMx, European Aerosol Conference, 2008 (oral presentation).

Tsimpidi A.P.; **Karydis V.A.**; Zavala M.; Lei W.; Molina L.T.; Pandis S.P. Effects of NO<sub>x</sub> levels, volatility distribution and aging of the organic emissions on primary and secondary organic aerosols in the Mexico City Metropolitan Area, European Aerosol Conference, 2008.

Pandis, S. N.; Tsimpidi, A. P.; **Karydis, V. A.**; Zavala, M.; Lei, W.; Molina, L. T. Air quality in Mexico City: Insights from the combination of field measurements and Chemical Transport Models, European Geosciences Union (EGU) Meeting, 2008 (oral presentation).

Tsimpidi A.P.; **Karydis V.A.**; Zavala M.; Lei W.; Molina L.T.; Pandis S.P. Evaluation of the Volatility Basis-Set Approach for Modeling Primary and Secondary Organic Aerosol in the Mexico City Metropolitan Area, American Geophysical Union (AGU) Fall Meeting, 2007 (oral presentation).

**Karydis V.A.**; Tsimpidi A.P.; Nenes A.; Pandis S.P.; Zavala M.; Lei W.; Molina L.T. Simulating Inorganic Aerosol Components Using ISORROPIA II in a Chemical Transport Model (PMCAMx) - Evaluation for the MILAGRO Campaign 2006 in Mexico City, American Geophysical Union (AGU) Fall Meeting, 2007.

**Karydis, V.A.**; Tsimbidi, A.P.; Pandis, S.N. Evaluation of a three-dimensional chemical transport model (PMCAMx) in the Eastern United States for all four seasons, 6<sup>th</sup> Greek Scientific Chemical Engineering Conference, 2007 (oral presentation).

Tsimpidi, A.P.; **Karydis, V.A.**; Pandis S.N. Response of inorganic fine particulate matters to emission changes of SO<sub>2</sub> and NH<sub>3</sub>: The eastern United States as a case study, 6<sup>th</sup> Greek Scientific Chemical Engineering Conference, 2007 (oral presentation).

Zavala M.; Lei W.; Bei N.; Tsimpidi A.P.; **Karydis V.A.**; Pandis S.P.; Molina L.T. Development and Evaluation of a Gas and PM Emissions Inventory for Mexico City, American Geophysical Union (AGU) Spring Meeting, 2007 (oral presentation).

Tsimpidi A.P.; **Karydis V.A.**; Lane T.; Racherla P.; Zavala M.; Lei W.; Molina L.T.; Pandis S.P. Chemical Transport Model (PMCAMx) versus Measurements: Insights about the Sources and Production of Particulate Matter in Mexico City, American Geophysical Union (AGU) Spring Meeting, 2007 (oral presentation).

Pandis S.P.; **Karydis V.A.**; Tsimpidi A.P.; Zavala M.; Lei W.; Molina L.T. Evaluation of a Three-Dimensional Chemical Transport Model (PMCAMx) in the Mexico City Metropolitan Area, 2<sup>nd</sup> MILAGRO Science Meeting, 2007 (oral presentation).

**Karydis V.A.**; Tsimpidi A.P.; Zavala M.; Lei W.; Molina L.T.; Pandis S.P. Evaluation of a Three-Dimensional Chemical Transport Model (PMCAMx) in the Mexico City Metropolitan Area, 2<sup>nd</sup> MILAGRO Science Meeting, 2007.

Takahama S.; Pandis S.N.; **Karydis V.A.**; Tsimpidi A.P. Liquid-to-solid phase transitions of ambient aerosols, American Assoc. for Aerosol Research (AAAR) 24<sup>th</sup> Annual Conference, 2005.

**Karydis V.A.**; Tsimpidi A.P.; Pandis S.N. Evaluation of a three-dimensional chemical transport model (PMCAMx) in the Eastern United States for all four seasons, American Assoc. for Aerosol Research (AAAR) 24<sup>th</sup> Annual Conference, 2005.

Tsimpidi A.P.; **Karydis V.A.**; Pandis S.N. Predicted responses of inorganic PM<sub>2.5</sub> in the Eastern United States to emission changes using a three dimensional chemical transport model (PMCAMx) , American Assoc. for Aerosol Research (AAAR) 24<sup>th</sup> Annual Conference, 2005.