

Katja Džepina, Ph.D.

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Education

University of Colorado at Boulder
Ph.D., Physical/Analytical/Atmospheric Chemistry, Jan. 2009
Dissertation title: “Detection and Modeling of Organic Species and Toxics in Mexico City”

University of Zagreb, Zagreb, Croatia
B.S. in chemistry (Diplomirani inženjer kemije), Mar. 1999
Thesis title: “Quantitative Determination of Trace Metals in River Danube by the X-Ray Fluorescence Method”

Research experience

University of Rijeka, Rijeka, Croatia

Assistant Professor, Department of Biotechnology
Nov. 2014 – now

Michigan Technological University, Houghton, MI

Postdoctoral Researcher, Department of Chemistry
Lynn Mazzoleni, Advisor
Mar. 2012 – Aug. 2014

- Field deployment of instruments and aerosol measurements at the Pico Mountain Observatory;
- Independently running the measurements station for ~1 month;
- Laboratory experiments and measurements of filter-collected aerosols;
- Analysis of ultrahigh-resolution (FT-ICR MS) data of aerosols samples;
- Analysis of PANs measured at the Pico Mountain Observatory.

Max Planck Institute for Chemistry (MPI-C), Mainz, Germany

Postdoctoral Researcher, Particle Chemistry Department

Frank Drewnick and Stephan Borrmann, Advisors

Sep. 2009 – Feb. 2012

- Operating large suite of instruments on board MPI-C Mobile Laboratory;
- Development of data acquisition software for MPI-C Mobile Laboratory;
- Data analysis of steel plants emissions.

University of Colorado, Boulder, CO

National Center for Atmospheric Research, Boulder, CO

Postdoctoral Researcher, Department of Chemistry and Biochemistry (CU) and Atmospheric Chemistry Division (NCAR)

Jose-Luis Jimenez and Sasha Madronich, Advisors

Feb. 2009 – Aug. 2009

- Implementation of SOA formation model to MILAGRO-2006 field campaign.

University of Colorado, Boulder, CO

National Center for Atmospheric Research, Boulder, CO

Graduate Research Assistant, Department of Chemistry and Biochemistry (CU) and Atmospheric Chemistry Division (NCAR)

Jose-Luis Jimenez and Sasha Madronich, Advisors

Aug. 2002 – Jan. 2009

- Ground and laboratory measurements with an Aerodyne Aerosol Mass Spectrometer (AMS);
- AMS data analysis of MCMA-2003 field campaign data set
 - Developed a method for quantification of particle-bound PAHs;
 - First time PAH detection with a real-time aerosol mass spectrometer;
- Developed a box-model for SOA formation from gas-phase precursors;
- Implemented SOA formation model to Mexico City case studies.

National Center for Atmospheric Research, Boulder, CO

Summer research visitor, Atmospheric Chemistry Division

Sasha Madronich, Advisor

Jul. 2001 – Oct. 2001

- Box model studies (Master Mechanism model) of the photo-chemistry of OH, HO₂ and NO/NO₂ in the lower troposphere during TOPSE field mission.

National Center for Atmospheric Research, Boulder, CO

Summer research visitor, Atmospheric Chemistry Division

Sasha Madronich, Advisor

Jul. 2000 – Sep. 2000

- Box model studies (TUV model) the influence of aerosols on the photolysis rate coefficients for the reaction $\text{NO}_2 + h\nu \rightarrow \text{NO} + \text{O} [\text{J}(\text{NO}_2)]$.

Ruder Bošković Institute, Zagreb, Croatia

Graduate Research Assistant, Laboratory for Chemical Kinetics and Atmospheric Chemistry

Leo Klasinc and Tomislav Cvitaš, Advisors

Nov. 1999 – Aug. 2002

- Supervision of ozone analyzing instruments at several locations in Croatia;
 - Storing / downloading, and analysis of ozone measurements data.
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Teaching and student advising

Students advised:

- Senait Gebreeyesus, Undergraduate Research: 03/2012 – 01/2013
- Simeon Schum: Ph.D. research: 10/2013 - present

Guest lecturer at Dr. Lynn Mazzoleni's classes:

- Advanced Mass Spectrometry Methods (2 classes): On-line Aerosol Mass Spectrometry: An Aerodyne Aerosol Mass Spectrometer, 02/2013
- Special Topics in Atmospheric Science: The Chemistry of Aerosols and Hydrometeors (1 class): Chemistry of secondary organic aerosols

General Chemistry, I (Freshman level), Fall 2008 – Spring 2009, TA

Physical Chemistry, I (Senior level), Fall 2002 – Spring 2003, TA

Analytical Chemistry, I and II (Freshman level), Spring 1992 – Spring 1994, TA

Fellowships and awards

Five (5) “Highly Cited Papers” (Top 1% in their journals) according to ISI Web of Science

Fast-Breaking Paper recognition from ISI Web of Science for Jimenez et al., 2009

15th most cited Atmospheric Chemistry and Physics paper in 2009 for Dzepina et al., 2009

Hoffman-Sewell CU Graduate Research Fellowship, 2008

NCAR-ACD Advanced Study Program (ASP) Fellowship, 2004 - 2007

Hoffman-Sewell CU Graduate Research Fellowship, 2003

Graduate Excellence in Teaching Award, 2003

Professional service

Referee:

Atmospheric Environment, Journal of Geophysical Research, Geophysical Research Letters, Environmental Science & Technology

Extracurricular Roles and Experiences

Interpreter for organizations monitoring peace process in ex-Yugoslavia: European Community Monitoring Mission (ECMM) and Organization for Security and Cooperation in Europe (OSCE), 1994 - 1998

- Team member during refugee crises, exhumations of war crimes victims, exchange of war prisoners, and preventing escalation of disagreements back to war;
- Led and organized teams of ~100 members twice, in Mostar, Bosnia and Herzegovina, 1994 - 1995 (European Union Police) and Zagreb, Croatia, 1998 (Out-of-County-Voting, OSCE);
- Declined repeated requests (1999-2001) to join the International Criminal Court in The Hague, Netherlands in order to pursue academic career in atmospheric sciences.

Participated in 5-day AIDS Vaccine Ride from Montreal, Canada to Portland, Maine in which ~1800 riders raised ~4 million dollars for AIDS vaccine research, 2001.

Lived internationally in 3 countries; native Croatian speaker, fluent in English, beginner in German and Italian.

Peer reviewed publications

Citations: total number > 2200 (since 2007), h-index 11

- (14) Fischer, E.V., D.J. Jacob, R.M. Yantosca, M.P. Sulprizio, D.B. Millet, J. Mao, F. Paulot, H.B. Singh, A.-E. Roiger, L. Ries, R. W. Talbot, **K. Dzepina**, and S. Pandey Deolal, Atmospheric peroxyacetyl nitrate (PAN): a global budget and source attribution, *Atmospheric Chemistry and Physics*, 14, 2679-2698, 2014.
- (13) Waxman, E.M., **K. Dzepina**, B. Ervens, J. Lee-Taylor, B. Aumont, J.L. Jimenez, S. Madronich, R. Volkamer, Secondary Organic Aerosol formation from Semi- and Intermediate-Volatility Organic Compounds and glyoxal: Relevance of O/C as a tracer for aqueous multiphase chemistry, *Geophysical Research Letters*, *Geophysical Research Letters*, 40, DOI:10.1002/grl.50203, 2013.
- (12) **Dzepina, K.**, C.D. Cappa, R.M. Volkamer, S. Madronich, P.F. DeCarlo, R. Zaveri, and J.L. Jimenez, Modeling the Multiday Evolution and Aging of Secondary Organic Aerosol During MILAGRO 2006, *Environmental Science & Technology*, 45, 3496-3503, 2011.

- (11) Jimenez, J.L., M.R. Canagaratna, N.M. Donahue, A.S.H. Prevot, Q. Zhang, J.H. Kroll, P.F. DeCarlo, J.D. Allan, H. Coe, N.L. Ng, A.C. Aiken, K.D. Docherty, I.M. Ulbrich, A.P. Grieshop, A.L. Robinson, J. Duplissy, J. D. Smith, K.R. Wilson, V.A. Lanz, C. Hueglin, Y.L. Sun, J. Tian, A. Laaksonen, T. Raatikainen, J. Rautiainen, P. Vaattovaara, M. Ehn, M. Kulmala, J.M. Tomlinson, D.R. Collins, M.J. Cubison, E.J. Dunlea, J.A. Huffman, T.B. Onasch, M.R. Alfarra, P.I. Williams, K. Bower, Y. Kondo, J. Schneider, F. Drewnick, S. Borrmann, S. Weimer, K. Demerjian, D. Salcedo, L. Cottrell, R. Griffin, A. Takami, T. Miyoshi, S. Hatakeyama, A. Shimono, J.Y. Sun, Y.M. Zhang, **K. Dzepina**, J.R. Kimmel, D. Sueper, J.T. Jayne, S.C. Herndon, A.M. Trimborn, L.R. Williams, E.C. Wood, C.E. Kolb, U. Baltensperger, and D.R. Worsnop, Evolution of Organic Aerosols in the Atmosphere, *Science*, 326, 1525-1529, 2009.
- (10) **Dzepina, K.**, R. Volkamer, S. Madronich, P. Tulet, I.M. Ulbrich, Q. Zhang, C.D. Cappa, P.J. Ziemann, and J.L. Jimenez, Evaluation of Recently-Proposed Secondary Organic Aerosols Models for a Case Study in Mexico City, *Atmospheric Chemistry and Physics*, 9, 5681–5709, 2009.
- (9) Johnson, K.S., A. Laskin, J.L. Jimenez, V. Shutthanandan, L.T. Molina, D. Salcedo, **K. Dzepina**, and M.J. Molina, Comparative analysis of urban atmospheric aerosol by particle-induced X-ray emission (PIXE), proton elastic scattering analysis (PESA), and aerosol mass spectrometry (AMS), *Environmental Science & Technology*, 42, 6619-6624, 2008.
- (8) Zhang, Q., J.L. Jimenez, M.R. Canagaratna, J.D. Allan, H. Coe, I. Ulbrich, M.R. Alfarra, A. Takami, A.M. Middlebrook, Y.L. Sun, **K. Dzepina**, E. Dunlea, K. Docherty, P.F. DeCarlo, D. Salcedo, T. Onasch, J.T. Jayne, T. Miyoshi, A. Shimono, S. Hatakeyama, N. Takegawa, Y. Kondo, J. Schneider, F. Drewnick, S. Weimer, K. Demerjian, P. Williams, K. Bower, R. Bahreini, L. Cottrell, R.J. Griffin, J. Rautiainen, and D.R. Worsnop, Ubiquity and Dominance of Oxygenated Species in Organic Aerosols in Anthropogenically—Influenced Northern Hemisphere Mid-latitudes, *Geophysical Research Letters*, 34, L13801, 2007.
- (7) Salcedo, D., T.B. Onasch, M.R. Canagaratna, **K. Dzepina**, J.A. Huffman, J.T. Jayne, D.R. Worsnop, C.E. Kolb, S. Weimer, F. Drewnick, J.D. Allan, A.E. Delia and J.L. Jimenez, Technical Note: Use of a Beam Width Probe in an Aerosol Mass Spectrometer to Monitor Particle Collection Efficiency in the Field, *Atmospheric Chemistry and Physics*, 7, 549-556, 2007.
- (6) **Dzepina, K.**, J. Arey, L.C. Marr, D.R. Worsnop, D. Salcedo, Q. Zhang, T.B. Onasch, L.T. Molina, M.J. Molina, and J.L. Jimenez, Detection of Particle-Phase Polycyclic Aromatic Hydrocarbons in Mexico City using an Aerosol Mass Spectrometer, *International Journal of Mass Spectrometry*, 263, 152-170, 2007.
- (5) San Martini, F.M., E.J. Dunlea, R. Volkamer, T.B. Onasch, J.T. Jayne, M.R. Canagaratna, D.R. Worsnop, C.E. Kolb, J.H. Shorter, S.C. Herndon, M.S. Zahniser, D. Salcedo, **K. Dzepina**, J.L. Jimenez, J. M. Ortega, K.S. Johnson, G.J. McRae, L.T. Molina, M.J. Molina, Implementation of a Markov Chain Monte Carlo Method to Inorganic Aerosol Modeling of Observations from the MCMA-2003 Campaign. Part II: Model Application to the CENICA, Pedregal and Santa Ana Sites, *Atmospheric Chemistry and Physics*, 6, 4889-4904, 2006.
- (4) Volkamer, R., J.L. Jimenez, F. San Martini, **K. Dzepina**, Q. Zhang, D. Salcedo, L.T. Molina, D.R. Worsnop, and M.J. Molina, Secondary Organic Aerosol Formation from Anthropogenic Air Pollution: Rapid and Higher than Expected, *Geophysical Research Letters*, 33(17), L17811, 2006.

- (3) Marr, L.C., **K. Dzepina**, J. L. Jimenez, F. Riesen, H. L. Bethel, J. Arey, J. S. Gaffney, N. A. Marley, L. T. Molina, M. J. Molina. Sources and transformations of particle-bound polycyclic aromatic hydrocarbons in Mexico City, *Atmospheric Chemistry and Physics*, 6, 1733-1745, 2006.
- (2) Salcedo, D., T. B. Onasch, **K. Dzepina**, M. R. Canagaratna, Q. Zhang, J.A. Huffman, P. F. DeCarlo, J. T. Jayne, P. Mortimer, D. R. Worsnop, C. E. Kolb, K. S. Johnson, B. Zuberi, L. C. Marr, R. Volkamer, L. T. Molina, M. J. Molina, B. Cardenas, R. M. Bernabé, C. Márquez, J. S. Gaffney, N. A. Marley, A. Laskin, V. Shutthanandan, Y. Xie, W. Brune, R. Leshner, T. Shirley, and J. L. Jimenez. Characterization of ambient aerosols in Mexico City during the MCMA-2003 campaign with Aerosol Mass Spectrometry: results from the CENICA Supersite, *Atmospheric Chemistry and Physics*, 6, 925-946, 2006.
- (1) Butkovic, V., T. Cvitas, **K. Dzepina**, N. Kezele, and L. Klasinc, Long Term Ozone Data Analysis, *Croatica Chemica Acta*, 75 (4), 927-933, 2002.
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Submitted publications

- (2) China, S., B. Scarnato, L.R. Mazzoleni, R.C. Owen, B. Zhang, M.T. Ampadu, S. Kumar, **K. Dzepina**, M.P. Dziobak, P. Fialho, J.A. Perlinger, J. Hueber, D. Helmig, and C. Mazzoleni, Morphology and Mixing State of Aged Soot Particles at a Remote Marine Free-tropospheric Site: Implications to Optical Properties, submitted to *Geophysical Research Letters*, 2014.
- (1) **Dzepina, K.**, S. China, S. Kumar, C. Mazzoleni, M. Dziobak, P. Fialho, J. Hueber, D. Helmig, R.C. Owen, L. Kramer, S. Olsen, and L. Mazzoleni, Chemical Characterization of Free Tropospheric Aerosols in the North Atlantic Measured at the Pico Mountain Observatory During Summer of 2012, *Atmospheric Chemistry and Physics Discussions*, manuscript in review, 2014.
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Publication in preparation

- (2) **Dzepina, K.**, Y. Zhao, P. Saranjampour, G. Hallar, S. China, S. Kumar, C. Mazzoleni, M. Dziobak, P. Fialho, J. Hueber, D. Helmig, R.C. Owen, L. Kramer, S. Olsen, and L. Mazzoleni, Comparison of Free Tropospheric Aerosols from Biogenic and Marine Environments: Lessons Learned From Ultrahigh Resolution Fourier Transform Ion Cyclotron Resonance Mass Spectrometry, *Environmental Science & Technology*, manuscript in preparation, 2014.
- (1) **Dzepina, K.**, J. Roberts, M. Dziobak, R.C. Owen, J. Hueber, D. Helmig, P. Fialho, L. Kramer, C. Mazzoleni and L. Mazzoleni, Observations of gas-phase organic nitrates at the Pico Mountain Observatory during spring and summer of 2008 – 2009, *Atmospheric Chemistry and Physics*, manuscript in preparation, 2014.

First-author conference presentations

- [21] Chemical Characterization of Free Tropospheric Aerosols in the North Atlantic Measured at the Pico Mountain Observatory During Summer of 2012 (poster): *American Geophysical Union (AGU) Fall Meeting*, San Francisco, CA, 2013.
- [20] Chemical Characterization of Free Tropospheric Aerosols in the North Atlantic Measured at the Pico Mountain Observatory During Summer of 2012 (poster): *International Aerosol Modeling Algorithms (IAMA) Conference*, Davis, CA, 2013.
- [19] Measurement of Free Tropospheric Aerosols in the North Atlantic at the Pico Mountain Observatory (poster): *31st American Association for Aerosol Research (AAAR) Annual Conference*, Minneapolis, MN, 2012.
- [18] Characterization of Emissions and Ambient Air in the Vicinity of an Integrated Steelmaking Site With a Mobile Laboratory (poster): *European Geophysical Union (EGU) General Assembly*, Vienna, Austria, 2011.
- [17] Modeling the Multiday Evolution and Aging of Secondary Organic Aerosol During MILAGRO 2006 (oral): *Atmospheric Chemical Mechanisms (ACM) Conference*, Davis, CA, 2010.
- [16] Modeling the Multiday Evolution and Aging of Secondary Organic Aerosol During MILAGRO 2006 (oral): *American Geophysical Union (AGU) Fall Meeting*, San Francisco, CA, 2010.
- [15] Modeling of Secondary Organic Aerosol (SOA) during MILAGRO 2006 (poster): *American Geophysical Union (AGU) Fall Meeting*, San Francisco, CA, 2009.
- [14] Evaluation of New Secondary Organic Aerosol Models for a Case Study in Mexico City (oral): *American Geophysical Union (AGU) Fall Meeting*, San Francisco, CA, 2008.
- [13] Comparison of Several Secondary Organic Aerosol (SOA) Models for a Mexico City case study of April 9, 2003 (poster): *8th Aerosol Mass Spectrometer (AMS) Users Meeting*, Reno, NV, 2007.
- [12] Comparison of Several Secondary Organic Aerosol (SOA) Models for a Mexico City case study of April 9, 2003 (poster): *26th American Association for Aerosol Research (AAAR) Annual Conference*, Reno, NV, 2007.
- [11] Size, Time and Composition-Resolved Aerosol Measurements in Mexico City During the MCMA-2003 Field Campaign: The Organic Component (poster): *25th American Association for Aerosol Research (AAAR) Annual Conference*, St. Paul, MN, 2006.
- [10] Detection of Particle-Phase Polycyclic Aromatic Hydrocarbons in Mexico City using an Aerosol Mass Spectrometer, (poster): *25th American Association for Aerosol Research (AAAR) Annual Conference*, St. Paul, MN, 2006.
- [9] Detection of Particle-Phase Polycyclic Aromatic Hydrocarbons in Mexico City using an Aerosol Mass Spectrometer (poster): *7th Aerosol Mass Spectrometer (AMS) Users Meeting*, Minneapolis, MN, 2006.

- [8] Organic Aerosols in Mexico City during the MCMA-2003 Field Campaign (oral): *European Aerosol Conference (EAC)*, Ghent, Belgium, 2005.
- [7] Detection of Particle-Phase Polycyclic Aromatic Hydrocarbons (PAHs) in Mexico City during the MCMA-2003 Field Campaign (poster): *European Aerosols Conference (EAC)*, Ghent, Belgium, 2005.
- [6] Size, Time, and Composition-Resolved Aerosol Measurements in Mexico City during the Mexico City Metropolitan Area Field Campaign: The Organic Component (poster): *American Geophysical Union (AGU) Fall Meeting*, San Francisco, CA, 2004.
- [5] Size, Time, and Composition-Resolved Aerosol Measurements in Mexico City during the Mexico City Metropolitan Area Field Campaign (poster): *22nd American Association for Aerosol Research (AAAR) Annual Conference*, Anaheim, CA, USA, 2003.
- [4] Analysis of long term ozone data (poster): *17th Congress of Croatian Chemist and Chemical Technologist*, Osijek, Croatia, 2001.
- [3] Analysis of long term ozone data (poster): *European Research Course on Atmospheres (ERCA)*, Grenoble, France, 2001.
- [2] Statistical evaluation of ozone measurements at Puntijarka station (poster): *European Experiment on Transport and Transformation of Environmentally Relevant Trace Constituents (EUROTRAC) Symposium*, Garmisch-Partenkirchen, Germany, 2000.
- [1] Concentrations of elements in the water of Danube river determined by XRF method (poster): *International conference on waters*, Cavtat, Croatia, 1999.

More than 40 additional co-authored conference presentations

Seminars

- [9] Seminar Series: Michigan Technological University Atmospheric Science Program, Houghton, MI, Evaluation of New Secondary Organic Aerosol Models: Models vs. Measurements Comparison for Mexico City, March 19, 2012.
- [8] Invited Seminar: Prof. Dr. Thorsten Hoffmann, Institute of Inorganic and Analytical Chemistry, Johannes Gutenberg University, Mainz, Germany, Evaluation of Recently-Proposed Secondary Organic Aerosol Models for a Case Study in Mexico City, February 24, 2011.
- [7] Invited Seminar: Desert Research Institute, Reno, NV, Evaluation of Recently-Proposed Secondary Organic Aerosol Models for a Case Study in Mexico City, December 7, 2010.
- [6] Invited Seminar: Ruđer Bošković Institute, Zagreb, Croatia, Evaluation of Recently-Proposed Secondary Organic Aerosol Models for a Case Study in Mexico City, June 6, 2010.
- [5] Institute Seminar: Max Planck Institute for Chemistry (Otto Hahn Institute), Mainz, Germany, Evaluation of Recently-Proposed Secondary Organic Aerosol Models for a Case Study in Mexico City, October 15, 2009.

- [4] Division Seminar: National Center for Atmospheric research, Atmospheric Chemistry Division, Boulder, CO, Evaluation of New Secondary Organic Aerosol Models for a Case Study in Mexico City, May 11, 2009.
- [3] Invited Seminar: National Oceanic and Atmospheric Administration, Earth System Research Laboratory, Chemical Sciences Division, Boulder, CO, Evaluation of New Secondary Organic Aerosol Models for a Case Study in Mexico City, April 1, 2009.
- [2] Ph.D. Dissertation Public Defense: Department of Chemistry and Biochemistry, University of Colorado at Boulder, Boulder, CO, Detection of Particle-Phase Polycyclic Aromatic Hydrocarbons in Mexico City using an Aerosol Mass Spectrometer, January 21, 2009.
- [1] Research Report Division Seminar: National Center for Atmospheric research, Atmospheric Chemistry Division, Boulder, CO, Detection of Particle-Phase Polycyclic Aromatic Hydrocarbons in Mexico City using an Aerosol Mass Spectrometer, May 8, 2007.