#### CURRICULUM VITAE



## GORDANA VUKOVIĆ

Address: Primorska 22, Belgrade, Republic of Serbia

Date of birth: 16/11/1988 Nationality: Serbian

Telephone: +381113713004 E-mail: gordana.vukovic@ipb.ac.rs

www.envpl.ipb.ac.rs, www.researchgate.net/profile/Gordana Vukovic

**EDUCATION** 

June 2017 – present Postdoctoral Research

Biochemistry and Organic Analytical Chemistry Unit, Institute for Medical Research and

Occupational Health, Zagreb, Croatia

2012 – 2015 Doctoral academic studies in Chemistry

Department of Applied Chemistry, Faculty of Chemistry, University of Belgrade

2011 – 2012 Master academic studies in Environmental Chemistry

Department of Applied Chemistry, Faculty of Chemistry, University of Belgrade

Basic academic studies in Environmental Chemistry

Department of Applied Chemistry, Faculty of Chemistry, University of Belgrade

**WORK EXPERIENCE** 

2007 - 2011

October 2016 – present | Assistant Research Professor

**Environmental Physics Laboratory** 

Institute of Physics Belgrade, University of Belgrade, Serbia

March 2017 – June 2017 Assistant Lecturer

Courses: Chemodynamics of Pollutants and Bioindicators

Department of Applied Chemistry

Faculty of Chemistry, University of Belgrade, Serbia

March 2014 – October 2016 Research Assistant

**Environmental Physics Laboratory** 

Institute of Physics Belgrade, University of Belgrade, Serbia

March 2013 – March 2014 Research Trainee

**Environmental Physics Laboratory** 

Institute of Physics Belgrade, University of Belgrade, Serbia

AWARDS

2017 Fellowship of Ministry of Science and Technological Development of the Republic of Serbia for

postdoctoral research
The First award of the

The First award of the Foundation "Dr Milena Dalmacija", for the doctoral thesis which has made the greatest scientific contribution in the field of environmental protection at the universities in the Republic of Serbia during the period from October 2012 to October 2015

Special recognition of Serbian Chemical Society for remarkable achievement during the Basic academic studies at the Faculty of Chemistry

2012

## **SCIENTIFIC INTERESTS**

- Environmental chemistry; environmental compartments (air, soil, sediment, freshwater and marine organisms);
- Active and passive moss biomonitoring of air quality, environmental biomagnetism;
- The fate of pollutants including spatio-temporal variations;
- Human biomonitoring (breast milk, placenta);
- Multiphase systems (soil-plant-air; water-air);
- Persistent organic compounds (POPs): organochlorine pesticides (OCPs), polychlorinated biphenyls (PCBs), polycyclic aromatic hydrocarbons (PAHs);
- Volatile organic compounds (VOCs);

# RESEARCH PROJECTS

March 2013 - present

Institution Position Responsibilities

- Trace elements;
- Instrumental analytical chemistry (ICP-OES, ICP-MS, GC-MS, PTR-MS).

III 43007: "Investigation of climate change and its influences on environment – Monitoring the Influences, Adaptations, and Offsets", The Ministry of Science and Technological Development of the Republic of Serbia

Dr Zoran Mijić, zoran.mijic@ipb.ac.rs, +381113713134

Environmental Physics Laboratory, Institute of Physics Belgrade, University of Belgrade, Serbia

#### Assistant Research Professor

- Examination of the air pollutant spatio-temporal variations (gases, heavy metals, suspended particles PM, polycyclic aromatic hydrocarbons PAHs), postulated in Directives 2000/69/EC, 2004/107/EC and 2008/50/EC, and the Serbian national regulations ("Official Gazette of the Republic of Serbia", No. 36/2009, 11/2010, 75/2010, 63/2013);
- Integration of instrumental and biomonitoring measurements of air pollution to mitigate the environmental vulnerability in Serbia and the Balkan region;
- Establishment of the Serbian biomonitoring database directly comparable on the Euro-Asian scale within The International Cooperative Programme on Effects of Air Pollution on Natural Vegetation and Crops (UNECE ICP Vegetation);
- Evaluation of the cryptogam (mosses) and vascular plant (tree leaves, bushes) characteristics towards improvement of plant biomonitoring and harmonized procedures for its application in the air pollutant assessment;
- Enhancing understanding of the existing methodology of moss biomonitoring of air pollutants addressing its practical application and demonstrating its usefulness in the field;
- Optimization of the procedures for the chemical analyses of emerging pollutants in plant (moss) material;
- Clarifying the pathways of air pollutants in the air—plant—soil system depending on the
  pollutant bioavailability, and its transfer into the food chain based on the investigations
  conducted across agricultural areas (vineyards) in Serbia;
- Investigation of processes affecting distribution, transport, and transformation of selected volatile organic compounds (VOCs) in air-water multiphase systems;
- Surveys of processes influencing sources of variability of air pollutants (PM, gaseous oxides, VOCs) in urban areas:
- Writing and submitting project proposals for the for the EU competitions, local authorities and enterprises, and scientific financiers;
- Drafting annual financial and overview reports corresponding to the project activities.

No. 8336: "OPENTOX - Organic Pollutants in Environment - Markers and Biomarkers of Toxicity", The Croatian Science Foundation

Dr Snježana Herceg Romanić, sherceg@imi.hr, +38514682553

Biochemistry and Organic Analytical Chemistry Unit, Institute for Medical Research and Occupational Health, Zagreb, Croatia

#### Postdoc Research Assistant

agreement

- Investigations towards amending and adopting the Croatian National Action Plan for sustainable use of pesticides (OCPs) and biphenyls (PCBs) concerning demands of Directive 2009/128/EC, the EU Thematic Strategy for Pesticides and Stockholm Convention on POPs;
- Evaluation of long-term trends of POPs level in the Croatia environment (air, food, and human specimens):
- Assessment of species, levels, distribution, and origin of POPs in air, soil and vegetation in Serbia, and investigation of their temporal and geographical variations;
- Evaluation of human exposure to PCBs and OCPs using toxic equivalents (TEQs) and target hazard quotients (THQs);
- Implementation of advanced statistical methods for the analysis of environmental results.

  No. 690133: "GEO-CRADLE Coordinating and integrating state-of-the-art Earth Observation Activities in the regions of North Africa, Middle East, and Balkans and Developing Links with GEO related initiatives towards GEOSS", EU Framework Programme Horizon 2020 under grant

Dr Zoran Mijić, zoran.mijic@jpb.ac.rs, +381113713134

Environmental Physics Laboratory, Institute of Physics Belgrade, University of Belgrade, Serbia **Assistant Research Professor** 

• Engagement in Working Package for Gap analysis, indicators and priorities - Building Soil

June 2017 - present

Institution

Position Responsibilities

April 2017 – present

Institution
Position
Responsibilities

September 2015 - October 2015

Institution

Position Responsibilities

June 2014 - December 2014

Institution Position Responsibilities

April 2013 - December 2013

Institution Position Responsibilities

May 2013 - June 2013

Institution Position Responsibilities

## **TEACHING EXPERIENCES**

**Master Theses** 

Bachelor Theses

Spectral Library for Serbia;

 Participation in the activities of Working Package for Communication, Dissemination & Engagement – Preparation of outreach materials and GEO-CRADLE website in Serbia.

COST Action FP1204 "GreenInUrbs", EU Framework Programme Horizon 2020

Prof. dr. ir. Roeland Samson, roeland.samson@uantwerpen.be

Laboratory of Environmental and Urban Ecology, Department of Bioscience Engineering, University of Antwerp, Belgium

## Research Assistant

- Analysis of the environmental benefits of urban green and urban forests, including vegetationair pollution interactions;
- Education and application of magnetic monitoring for pre-screening of PM levels in the air as a rapid and cost-effective alternative to regulatory measurements.

"Biomonitoring of heavy metals in the air along the main roads of the city of Belgrade", The company NIS Novi Sad and the City of Belgrade

Dr Mira Aničić Urošević, mira.anicic@jpb.ac.rs, +381113713004

Environmental Physics Laboratory, Institute of Physics Belgrade, University of Belgrade, Serbia

#### **Research Assistant**

- Performing a case study for the NIS company fulfilling sustainable environmental
  management and responsibility with the aim to determine the harmful impacts that the
  company's facilities/products have on the environment (air);
- Enhancing the corporate social responsibility through raising public awareness about air issues and making connections with local community ("Together for the Community");
- Drafting reports and dissemination material.

"Active biomonitoring of airborne major and trace elements in the Belgrade urban area using moss bags technique", The Secretariat for Environmental Protection, Belgrade Dr Mira Aničić Urošević, mira.anicic@jpb.ac.rs, +381113713004

Environmental Physics Laboratory, Institute of Physics Belgrade, University of Belgrade, Serbia

## **Research Assistant**

- Carrying out an extensive screening of urban air pollution for entire metropolitan area of Belgrade distinguishing high-, moderate- and low-polluted urban land use classes;
- Offering optimization the representativeness of the regulatory monitoring networks;
- Establishment of the partnership between local authorities and scientific community;
- · Drafting reports.

"Atmospheric deposition study in street canyon of Belgrade and Moscow", bilateral cooperation between the Ministry of Science and Technological Development of the Republic of Serbia and Joint Institute for Nuclear Research, Russia

Dr Mira Aničić Urošević, mira.anicic@ipb.ac.rs, +381113713004

Frank Laboratory of Neutron Physics, Joint Institute for Nuclear Research, Dubna, Russia Research Assistant

• Validation of moss biomonitoring of the priority air pollutants by studies in the field.

Zorana Živković: "Comparison of liquid and convergent chromatography for determination of polycyclic aromatic hydrocarbons (PAHs) in mosses exposed across Belgrade urban area", Faculty of Chemistry University of Belgrade, Serbia (mentor)

Lodewijk Lefevre: "Magnetic monitoring of the impact of atmospheric pollution on vineyards in Serbia", Department of Bioscience Engineering, University of Antwerp, Belgium

Olivera Jevtić: "Passive biomonitoring of macro and microelements in the air in the territory of Serbia using moss", Faculty of Chemistry University of Belgrade, Serbia (member of the commission)

Aleksandra Mitrović: "Biomonitoring of trace elements in the air in the territory of Serbia using moss Hypnum cupressiforme Hedw.", Faculty of Chemistry University of Belgrade, Serbia (member of the commission)

Milena Stamenković: "Assessment of environmental and human health risks based on concentrations of macro and microelements in soil in the territory of the Autonomous Province of Kosovo and Metohija", Faculty of Chemistry University of Belgrade, Serbia (mentor)

Aleksandra Kostić: "Surface soil contamination by macro and microelements in the territory of the Autonomous Province of Kosovo and Metohija", Faculty of Chemistry University of

Belgrade, Serbia (mentor)

# **PUBLICATIONS**

**BOOKS** 

**CHAPTERS** 

INTERNATIONAL JOURNALS

Aničić Urošević, M., **Vuković G.**, Tomašević, M. (2017): Biomonitoring of Air Pollution Using Mosses and Lichens, A Passive and Active Approach, State of the Art Research and Perspectives. Nova Science Publishers, New York, NY

**Vuković G.**, Aničić Urošević M. (2017): Is moss bag biomonitoring suitable method for assessment of intricate urban air pollution?, In: Aničić Urošević, M., Vuković G., Tomašević, M. (Eds.), Biomonitoring of Air Pollution Using Mosses and Lichens, A Passive and Active Approach, State of the Art Research and Perspectives. Nova Science Publishers, New York, NY

- 1. Šoštarić A., Stojić S.S., **Vuković G.**, Mijić Z., Stojić A., Gržetić I. (2017): Rainwater capacities for BTEX scavenging from ambient air, Atmos. Environ. 168, 46–54.
- 2.Milićević T., Aničić Urošević M., Vuković G., Škrivanj S., Relić D., Frontasyeva M, Popović A. (2017): Assessment of species-specific and temporal variations of major, trace and rare earth elements in vineyard ambient using moss bags, Ecotox. Environ. Safety 144:208–215.
- 3. Vuković G., Aničić Urošević M., Škrivanj S., Vergel K., Tomašević M., Popović A. (2017): The first survey of airborne trace elements at airport using moss bag technique, Environ. Sci. Pollut. Res. doi 10.1007/s11356-017-9140-0.
- 4. Aničić Urošević M., **Vuković G.**, Jovanović P., Vujičić M., Sabovljević A., Sabovljević M., Tomašević M. (2017): Urban background of air pollution: Evaluation through moss bag biomonitoring of trace elements in Botanical garden, Urban For. Urban Gree. 25:1–10.
- 5. Lazić L., Aničić Urošević M., Mijić Z., Vuković G., Ilić L. (2016): Traffic contribution to air pollution in urban street canyons: Integrated application of the OSPM, moss biomonitoring and spectral analysis, Atmos. Environ. 141:347–360.
- 6.Goryainova Z., Vuković G., Aničić Urošević M., Vergel K., Ostrovnaya T., Frontasyeva M., Zechmeister H. (2016): Assessment of vertical element distribution in street canyons using the moss *Sphagnum girgensohnii*: A case study in Belgrade and Moscow cities, Atmos. Pollut. Res. 7:690–697
- 7.**Vuković G.**, Aničić Urošević M., Škrivanj S., Milićević T., Dimitrijević D., Tomašević M., Popović A. (2016): Moss bag biomonitoring of airborne toxic element decrease on a small scale: a street study in Belgrade, Serbia, Sci. Total Environ. 542:394–403.
- 8. **Vuković G.**, Aničić Urošević M., Pergal M., Janković M., Goryainova Z., Tomašević M., Popović A. (2015): Residential heating contribution to persistent air pollutants (PAHs, trace and rare earth elements): A moss bag case study, Environ. Sci. Pollut. Res. 23:18956–18966.
- 9.Deljanin I., Antanasijević D., Vuković G., Aničić Urošević M., Tomašević M., Perić-Grujić A., Ristić M. (2015): Lead spatio-temporal pattern identification in urban microenvironments using moss bags and the Kohonen self-organizing maps, Atmos. Environ. 117:180–186.
- 10. **Vuković G.**, Aničić Urošević M., Goryainova Z., Pergal M., Škrivanj S., Samson R., Popović A. (2015): Active moss biomonitoring for extensive screening of urban air pollution: Magnetic and chemical analyses, Sci. Total Environ. 521–522:200–210.
- Vuković G., Aničić Urošević M., Tomašević M., Samson R., Popović A. (2015): Biomagnetic monitoring of urban air pollution using moss bags (*Sphagnum girgensohnii*), Ecol. Indic. 52:40– 47.
- 12. **Vuković G.**, Aničić Urošević M., Razumenić I., Kuzmanoski M., Pergal M., Škrivanj S., Popović A. (2014): Air quality in urban parking garages (PM10, major and trace elements, PAHs): Instrumental measurements vs. Active moss biomonitoring, Atmos. Environ. 85:31–40.
- 13. **Vuković G.**, Aničić Urošević M., Razumenić I., Goryainova Z., Frontasyeva M., Tomašević M., Popović A. (2013): Active moss biomonitoring of small-scale spatial distribution of airborne major and trace elements in the Belgrade urban area, Environ. Sci. Pollut. Res. 20:5461–5470.
- 1. **Vuković G.**, Janković M., Aničić Urošević M., Milićević T., Popović A. (2017): *Convergence chromatography as an emerging technique for determination of PAHs in biomonitors* (poster presentation), 6<sup>th</sup> International WeBIOPATR Workshop & Conference, September 6–8, Belgrade, Serbia.
- 2. Perišić M., Vuković G., Mijić Z., Šoštarić A., Stojić A. (2017): Relative importance of gaseous pollutants and aerosol constituents for identification of PM10 sources of variability (<u>oral presentation</u>), 6<sup>th</sup> International WeBIOPATR Workshop & Conference, September 6–8, Belgrade, Serbia.
- 3. Aničić Urošević M., **Vuković G.**, Stević N., Deljanin I., Nikolić M., Tomašević M. Samson R. (2017): Leaves of common urban tree species as a measure of particle and particle-bound pollution: a four-year study (<u>oral presentation</u>), 6<sup>th</sup> International WeBIOPATR Workshop & Conference, September 6–8, Belgrade, Serbia.
- 4. Milićević T., Relić D., Aničić Urošević M., **Vuković G.**, Škrivanj S., Popović A. (2017): Grapevine accumulation of potentially toxic elements from soil; Implications and health risk

INTERNATIONAL MEETINGS

- assessment (oral presentation), 15<sup>th</sup> International Conference on Environmental Science and Technology (CEST2017), August 31–September 2, Rhodos, Greece.
- 5. Milićević T., Aničić Urošević M., Relić D., **Vuković G.**, Orlić J., Škrivanj S. and Popović A. (2017) *Monitoring, environmental and health risk assessment of potentially toxic elements in the soil-plant system in vineyard area* (short oral & poster presentation) The International Conference on the Biogeochemistry of Trace Elements ICOBTE, ETH Zurich, Switzerland, July 16–20, Book of abstracts, p. 395.
- 6. Milićević T., Relić D., **Vuković G.**, Perišić M., Majstorović D., Aničić Urošević M., Popović A. (2016): Survey of potentially toxic element pollution of the vineyard soil (<u>poster presentation</u>), 13<sup>th</sup> International Conference on Fundamental and Applied Aspects of Physical Chemistry, Physical Chemistry, September 26–30, Belgrade, Serbia, pp. 739–742.
- 7. Milićević T., Relić D., **Vuković G.**, Škrivanj S., Popović A., Aničić Urošević M. (2016): Grapevine accumulation of potentially toxic elements from vineyard soil (<u>poster presentation</u>), 18<sup>th</sup> International Conference on Heavy Metals in the Environment, September 12–15, Ghent, Belgium, Book of abstracts, pp. 415.
- 8. Aničić Urošević M., **Vuković G.**, Milićević T., Vergel K., Frontasyeva M., Tomašević M., Popović A. (2016): *Moss bag biomonitoring of airborne toxic element decrease on a small scale: crossroad and two- and one-lane street study* (poster presentation), 29<sup>th</sup> ICP Vegetation Task Force meeting, February 29-March 4, Dubna, Russian Federation, Book of abstracts, pp. 40.
- 9. **Vuković G.**, Aničić Urošević M., Škrivanj S., Milićević T., Dimitrijević D., Tomašević M., Popović A. (2015): *Upgrade of micro-scale siting of airborne toxic elements by moss bag technique: crossroad, two- and one-lane street study* (oral presentation), 5<sup>th</sup> International WeBIOPATR Workshop & Conference, October 14–16, Belgrade, Serbia, Book of Abstracts, p. 42.
- 10. Tomašević M., Aničić Urošević M., **Vuković G.**, Deljanin I. (2015): *Plant biomonitoring in urban air quality studies: tree leaves and moss* (oral presentation), XIX INTERNATIONAL ECOCONFERENCE, September 23–25, Novi Sad, Serbia, Book of Abstracts, pp. 63–70.
- 11. **Vuković G.**, Aničić Urošević M., Tomašević M., Samson R., Popović A. (2015): *Biomagnetic monitoring of urban air pollution using moss bags (Sphagnum girgensohnii)* (oral presentation), 7<sup>th</sup> International Workshop on Biomonitoring of Atmospheric Pollution (BIOMAP 7), June 14–19, Lisbon, Portugal, Book of abstracts, p. 63.
- 12. Aničić Urošević M., **Vuković G.**, Tomašević M., Frontasyeva M.V., Popović A. (2015): *Is moss bag technique a suitable approach for monitoring of air pollution in urban environment?* (oral presentation), 7th International Workshop on Biomonitoring of Atmospheric Pollution (BIOMAP 7), June 14–19, Lisbon, Portugal, Book of abstracts, p. 48.
- 13. Aničić Urošević M., **Vuković G.**, Tomašević M., Goryainova Z., Škrivanj S., Pergal M., Samson R., Popović A. (2015): *Active moss biomonitoring: An approach for extensive screening of air pollution over urban area Belgrade case study* (poster presentation), 7<sup>th</sup> International Workshop on Biomonitoring of Atmospheric Pollution (BIOMAP 7), June 14–19, Lisbon, Portugal, Book of abstracts, p. 67.
- 14. Goryainova Z., **Vuković G.**, Aničić Urošević M., Vergel K.N., Ostrovnaya T.M., Frontasyeva M.V., Zechmeister H. (2015): Assessment of vertical element distribution in street canyons of Belgrade and Moscow using moss transplant technique (poster presentation), 28th ICP Vegetation Task Force Meeting, February 3–5, Rome, Italy, Book of Abstracts, p. 67.
- 15. Deljanin I., **Vuković G.**, Aničić Urošević M., Antanasijević D., Tomašević M., Perić-Grujić A., Ristić M. (2014): *Active moss biomonitoring of lead isotope composition in public parking garages and tunnel in Belgrade urban area* (poster presentation), Book of Abstracts, 51<sup>th</sup> Meeting of Serbian Chemical Society and 2nd International Conference of Young Chemists of Serbia, Niš, Serbia, June 5–7, 2014, p. 57.
- 16. **Vuković G.**, Aničić Urošević M., Kuzmanoski M., Tomašević M., Pergal M., Popović A. (2013): *Health risk assessment of pollutants (PAHs and heavy metals) associated with PM10 in urban parking garages* (oral presentation), 4<sup>th</sup> International WeBIOPATR Workshop & Conference, October 2–4, Belgrade, Serbia, Book of Abstracts, p. 38.
- 17. Deljanin I., **Vuković G.**, Aničić Urošević M., Antanasijević D., Tomašević M., Perić-Grujić A., Ristić M. (2013): *Active moss biomonitoring of lead isotopic composition in Belgrade urban area* (poster presentation), 8th International Conference of the Chemical Societies of the South-East European Countries, June 27–29, Belgrade, Serbia, Book of Abstracts, p. 47.
- 18. Aničić Urošević M., **Vuković G.**, Razumenić I., Goryainova Z., Frontasyeva M., Tomašević M., Popović A. (2012): *Active moss biomonitoring of small scale inner city spatial distribution of ambient trace elements in Belgrade urban area* (oral presentation), Biomonitoring Air Quality Symposium, November 12–14, Antwerp, Belgium, Proceedings, pp. 24–27.
- 19. Aničić M., Vuković G., Razumenić I., Goryainova Z., Frontasyeva M., Tomašević M.,

Popović A. (2012): *Active Moss Biomonitoring of Trace Element Distribution in Belgrade Canyon Streets* (poster presentation), Urban Environmental Pollution – Create healthy, liveable cities, 17–20 June, Amsterdam, The Netherlands, P1. 63.

- 20. Lazić L., Aničić M., **Vuković G.**, Tasić M., Rajšić S., Mijić Z.: *Modelling of local traffic contributions to particulate air pollution in Belgrade street canyons using WinOSPM model* (poster presentation), Urban Environmental Pollution Create healthy, liveable cities, 17–20 June, Amsterdam, The Netherlands, P2.112
- 1. **Vuković G.,** Aničić Urošević M., Tomašević M., Popović A. (2016): Biomonitoring of urban air pollution (particulate matter, trace elements and polycyclic aromatic hydrocarbons) using mosses Sphagnum girgensohnii Russow and Hypnum cupressiforme Hedw. (invited lecture), 4th Memorial meeting on environmental protection "Docent dr Milena Dalmacija", April 9–12, Novi Sad, Serbia, Book of abstracts, pp. Va-1.
- 2. **Vuković G.**, Aničić Urošević M., Škrivanj S., Tomašević M., Popović A. (2015): *Moss-bag biomonitoring for screening urban air pollution: An extensive case study for Belgrade* (oral presentation), 7<sup>th</sup> Symposium Chemistry and Environmental Protection, June 9–12, Palić, Serbia, Book of abstracts, pp. 73–74.
- 3. **Vuković G.**, Aničić Urošević M., Milićević T., Tomašević M., Škrivanj S., Popović A. (2015): Moss-bag biomonitoring of small-scale decline in toxic element content: crossroad, two- and one-lane street study (poster presentation), 7th Symposium Chemistry and Environmental Protection, June 9–12, Palić, Serbia, Book of abstracts, pp. 192–193.
- 4. **Vuković G.**, Aničić Urošević M., Tomašević M., Razumenić I., Škrivanj S., Popović A. (2013): *Air quality in urban parking garages: Instrumental monitoring vs active moss biomonitoring* (poster presentation), 6<sup>th</sup> Symposium Chemistry and Environmental Protection EnviroChem, May 21–24, Vršac, Serbia, Book of Abstracts, pp. 136–137.
- **5.** Aničić Urošević M., Tomašević M., **Vuković G.**, Frontasyeva M., Popović A. (2013): *Active moss biomonitoring of airborne trace elements in the Belgrade urban area: State of the art* (<u>invited lecture</u>), 6<sup>th</sup> Symposium Chemistry and Environmental Protection EnviroChem, May 21–24, Vršac, Serbia, Book of Abstracts, pp. 44–45.

NATIONAL MEETINGS