

Dr. Jernej Markelj

Assistant

Department of Analytical Chemistry, Faculty of Chemistry and Chemical Technology,
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Research Interests

Development of novel analytical separation techniques (GC/MS and HPLC/MS) and prediction models (QSAR) for study of secondary organic aerosol.

Analysis of bioactive compounds in food with ion chromatography.

Education

- Doctorate of Chemical Sciences (Ph.D.), Oct. 2012 - June 2016
University of Ljubljana, FCCT, Ljubljana, Slovenia
 - o Doctoral thesis: "Study of secondary organic aerosols formation mechanisms"
 - o Mentor: ass. prof. dr. Matevž Pompe
- Diploma in Chemistry (B.S.), Oct. 2006 - July 2011
University of Ljubljana, FCCT, Ljubljana, Slovenia
 - o Diploma thesis: "Research and separation of the purine and pyrimidine bases with HPLC in real samples"
 - o Mentor: prof. dr. B. Pihlar

Academic Experience

- Member of research programme, Dec. 2012 -
Research and Development of Analytical Methods and Procedures,
P1-0153 (head ass. prof. dr. Matevž Pompe)
- Teaching assistant for field of analytical chemistry, Dec. 2012 -
Laboratory Courses - First and Second Cycle Study Programmes
- Teaching Materials
 - o Markelj J., Marolt G., Advanced Methods of Instrumental Analysis: Instructions on Laboratory Exercises, 2016
(University Study Programme Chemistry 2nd Cycle, 1st Year)

- Marolt G., Markelj J., Analytical Methods for the Characterization of Materials and Biological Systems: Instructions on Laboratory Exercises, 2015
(University Study Programme Biochemistry - 2nd Cycle, Elective Course)
- Summer School of Chemical Science 2017
Cerkovnik J., Gaber A., Godec A., Žgajnar Gotvajn A., Kalčíková G., Markelj J., Šarac B., Ljubljana, FCCT, UL and ZOTKS.
- Cooperation with Industry
Kolar M., Genorio B., Marolt G., Markelj J., students: Rajer-Kanduč K., Jože Košir I., Berglez T., Može M., Leban M., Peklar P., Gričar E., Oražem T., Mohorič U., Metličar V., Project: Creative path to practical knowledge 2017

Publications

- Markelj J., Madronich S., Pompe M., Modeling of hygroscopicity parameter kappa of organic aerosols using quantitative structure-property relationships, *J. atmos. chem.*, vol. 74, no. 3, pp. 357-376, 2017, doi: 10.1007/s10874-016-9347-3
- Markelj J., Pompe M., Modeling of atmospheric OH reaction rates using use newly developed variable distance weighted zero order connectivity index, *Atmos. environ.*, vol. 131, pp. 418-423, 2016, doi: 10.1016/j.atmosenv.2016.02.022
- Markelj J., Zupančič T., Pihlar B., Optimization of high performance liquid chromatography method for simultaneous determination of some purine and pyrimidine bases, *Acta chim. slov.*, vol. 63, no. 1, pp. 8-17, 2016, doi: 10.17344/acsi.2015.1340

Recent Conference Presentations

- Mrzlikar M., Heath D. J., Heath E., Markelj J., Prosen H., Analysis of neonicotinoid pesticides in honey. 24th Young Investigators Seminar on Analytical Chemistry, Venice, Italy, June 28th-30th, 2017
- Markelj J., Balaban A. T., Pompe M., Can variable connectivity index be used to predict biological activity? Inhibition of carbonic anhydrase II. Slovenian chemical days 2015, Ljubljana, Slovenia, Sept. 24th-25th, 2015.
- Markelj J., Turšič J., Veber M., Pompe M., Determination of potential SOA markers by microwave-assisted extraction. 21st International Symposium on Separation Sciences, Ljubljana, Slovenia, June 30th-July 3rd, 2015.
- Markelj J., Veber M., Pompe M., MACI: novel software for developing QSPR models using variable connectivity-based topological indices. 16th International Workshop on Quantitative Structure-Activity Relationship in Environmental and Health Sciences, Milano, Italy, June 16th-20th, 2014.
- Markelj J., Veber M., Pompe M., Modeling of some key properties related to secondary organic aerosol formation. 21st Young Investigators Seminar on Analytical Chemistry, Pardubice, Czech Republic, June 25th-28th, 2014.

Other Professional Experience

- Research Abroad (part of Ph.D. study), July 2014 - Aug. 2014
National Centre for Atmospheric Research (NCAR),
Atmospheric Chemistry Division (ACN)
Mentor: Dr. Sasha Madronich
Boulder, Colorado, USA

- Quality Control Manager, Nov. 2011 - Nov. 2012
Lek d.d., Quality Control of Raw Material, Ljubljana, Slovenia
- Internship scholarship, Sep. 2008 - July 2011
Krka d.d.