

23rd Congress of Chemists and Technologists of Macedonia

BOOK of ABSTRACTS



8-11 October 2014
Ohrid, Republic of Macedonia



Сојуз на хемичарите и технолозите на Македонија
Society of Chemists and Technologists of Macedonia

8-11 October 2014, Metropol Lake Resort, Ohrid

SCIENTIFIC COMMITTEE MEMBERS

President

Prof. Dr. **Ljupčo Pejov**, Institute of Chemistry, Faculty of Natural Sciences and Mathematics, Ss. Cyril and Methodius University, Skopje, Macedonia

Members:

Prof. Dr. **Trajče Stafilev**, Institute of Chemistry, Faculty of Natural Sciences and Mathematics, Ss. Cyril and Methodius University, Skopje, Macedonia

Prof. Dr. **Jadranka Blaževska-Gilev**, Faculty of Technology and Metallurgy, Ss. Cyril and Methodius University, Skopje, Macedonia

Prof. Dr. **Marina Stefova**, Institute of Chemistry, Faculty of Natural Sciences and Mathematics, Ss. Cyril and Methodius University, Skopje, Macedonia

Prof. Dr. **Gordana Bogoeva-Gaceva**, Faculty of Technology and Metallurgy, Ss. Cyril and Methodius University, Skopje, Macedonia

Prof. Dr. **Blažo Boev**, Faculty of Natural and Technical Sciences, Goce Delcev University-Stip, Macedonia

Prof. Dr. **Ružica Manojlović**, Faculty of Technology and Metallurgy, Ss. Cyril and Methodius University, Skopje, Macedonia

Prof. Dr. **Perica Paunović**, Faculty of Technology and Metallurgy, Ss. Cyril and Methodius University, Skopje, Macedonia

Prof. Dr. **Borislav V. Toshev**, Department of Physical Chemistry, University of Sofia, 1 James Bourchier Blvd., 1164 Sofia, Bulgaria

Prof. Dr. **Dražen Vikić-Topić**, Ruđer Bošković Institute, NMR Center, P. O. Box 180, Zagreb, Croatia

Prof. Dr. **Tomaž Skopin**, Department of Inorganic Chemistry and Technology, Jožef Stefan Institute, Ljubljana, Slovenia

Prof. Dr. **Panče Naumov**, New York University Abu Dhabi, Saadiyat Island, POB 129188, Abu Dhabi, UAE

- EN 003 Mirela Alushllari, Nikolla Civici
Lead concentration in soil inside the area of former battery production factory, Berat, Albania
- EN 004 Natasha Bakreska Kormushoska, Goce Cvetkoski, Ane Anceev
Implementation of snrc method for reduction of nox emissions in Usje cement plant
- EN 005 L. Bekteshi, P. Lazo, F. Qarri, T. Stafilov
The survey of atmospheric deposition of heavy metals in Albania by using moss biomonitoring
- EN 006 Biljana Jordanoska, Valentina Pelivanoska, Trajče Stafilov
Availability and distribution of some heavy metals in different organs of oriental tobacco plants
- EN 007 Ružica Micić, Anja Jokić, Ranko Simonović, Milan Čekerevac, Ljiljana Nikolić-Bujanović
Removal of Th(IV) from natural water samples using the electrochemically synthesized ferrate(VI)
- EN 008 Ružica Micić, Snezana Mitić, Anja Jokić, Aleksandra N. Pavlović, Milan Mitic, Biljana Arsić, Milan Čekerevac, Ljiljana Nikolić-Bujanović
ICP-OES determination and correlation of selected elements in vegetables from Kosovo
- EN 009 Yana Koleva, Yordanka Tasheva
Methyl tert-butyl ether. I. Examination of biodegradation in the environment
- EN 010 Yana Koleva, Yordanka Tasheva
Methyl tert-butyl ether. II. Prediction of the persistence, bioaccumulation and toxicity
- EN 011 Kaltrina Jusufi, Trajče Stafilov, Majlinda Vasjari, Bardha Korça, Katerina Bačeva
Determination of the heavy metals Pb, Zn, Cu AND Cd in the surrounding soils of a power plant in Kosova
- EN 012 Kaltrina Jusufi, Majlinda Vasjari, Trajče Stafilov, Bardha Korça, Mentor Ismajli
Distribution of As, Cr, Ni and V in agricultural soils near Kosova's power plant
- EN 013 Biljana Dimkova, Trajče Stafilov, Robert Šajn
Distribution of heavy metals in soil from Prespa region
- EN 014 Ana Puteska, Bojana Dimovska, Trajče Stafilov, Robert Šajn
Distribution of chemical elements in soil from Pelagonia region, Republic of Macedonia
- EN 015 Biljana Balabanova, Trajče Stafilov, Robert Šajn, Claudiu Tănăsela
Elemental distribution in surface waters from Bregalnica River basin
- EN 016 Anila Neziri, Elda Marku
Persistent organochlorine pesticide residues in water samples from buna river mouth and viluni lagoon ecosystem (Albania)

EN 015

ELEMENTAL DISTRIBUTION IN SURFACE WATERS FROM BREGALNICA RIVER BASIN

Biljana Balabanova¹, Trajče Stafilov², Robert Šajn³, Claudiu Tănăselia⁴

e-mail: biljana.balabanova@ugd.edu.mk

¹Faculty of Agriculture, University "Goce Delčev", Krste Misirkov bb, Štip, Republic of Macedonia

²Institute of Chemistry, Faculty of Natural Sciences and Mathematics,
Ss. Cyril and Methodius University, Skopje, Republic of Macedonia

³Geological Survey of Slovenia, Dimičeva ulica 14, 1000 Ljubljana, Slovenia

⁴INCDO-INOE 2000 Research Institute for Analytical Instrumentation (ICIA), Cluj-Napoca, Romania

The concentrations of the 24 elements (Al, As, Ba, Ca, Cd, Co, Cu, Fe, K, Li, Mg, Mn, Na, Ni, P, Pb, Rb, Sb, Sc, Sr, Ti, V, Y and Zn) were determined in the water samples from river Bregalnica and its tributaries. Inductively coupled plasma-mass spectrometry (ICP-MS) was applied as quantification method. It was found that due to the pollution from Pb-Zn mine "Sasa" the concentration of Zn ($664 \mu\text{g L}^{-1}$) and Pb ($45 \mu\text{g L}^{-1}$) in the water from Kamenichka River exceeded the maximum allowed concentrations in accordance to the national regulation for surface water quality. Significant deviation in the Fe, Pb, Sb and Zn concentrations were determined along the river Bregalnica, from the river source to the estuary in the river Vardar. The multivariate processing singled out three dominant geochemical associations in the river waters from the Bregalnica River Basin: F1 (Ca-K-Mg-Na-Ba-Li-Mn-Sr-V), F2 (Al-Fe) and F3 (Sb) with the total variability 80.6%.

Keywords: water, heavy metals, factor analysis, spatial distribution, ICP-MS, Bregalnica