



**ENVIRONMENTAL
IMPROVEMENT IN
PANCEVO,
SERBIA
THROUGH
THE
COLLABORATIONS
AMONG
ACADEMIA,
GOVERNMENT,
INDUSTRY AND
CITIZENS**



Japan-Serbia Environmental Exchange Symposium



Capacity Building for Analysis and Reduction Measures of Persistent Organic Pollutants in Serbia (JICA Partnership Project)

Vladimir BESKOSKI, University of Belgrade – Faculty of
Chemistry

Takeshi NAKANO, Hyogo Environmental Advancement
Association, Japan

UBFC, Belgrade, February 21st, 2020

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***JICA TRAINING COURSE FOR DEVELOPING COUNTRIES - RISK
MANAGEMENT AND RESIDUE ANALYSIS OF CHEMICALS FOR
ENVIRONMENTAL SAFETY
February – August 2011***



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JICA training “Risk assessment and residue analysis of chemicals for environmental safety”, Kobe, Japan (2009-2011)



Marijana, 2009



Filip, 2009



Ivan, 2010



Vesna, 2011



Vlada, 2011

Participants from Serbia



Takeshi Nakano

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1. Action plan

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1. Action plan

Risk management and residue analysis of chemicals for environmental safety

Action Plan and Report

Vladimir P. BEŠKOSKI,
Serbia

28.02.2011. – 13.08.2011.

Kobe, Japan

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1. The Course Objective and Goal

Growth and development of industrial civilization led to environmental pollution with substances of most diverse origins and effects. Over the past two centuries, human activity affected and changed chemistry of soil, water and air. This period of time more than any other brought major changes in the environment. The reasons are numerous and complex, but it is certainly that a major impact has the use of fossil fuels and diverse substances of anthropogenic origin also called "manmade chemicals".

Long-lasting concept of sustainable development envisages continuous economic development, which provides not only technological progress, cleaner technologies involvement, society innovations and corporate social responsibility, but also sustainable use of resources, as well as pollution reduction and prevention.

One of the most important tasks towards solving priority problems is environment monitoring and reporting system reform.

The basic objective and goal of Risk Management and Residue Analysis of Chemicals for Environmental Safety course was to give basic concept of risk management based on risk assessment of chemicals released in the environment. Also course provided explanation of principles of basics and advanced analytical techniques and instruments related to monitoring of chemicals and residual analysis.

Knowledge gained through this course gives a strengthened specialist in this field and the possibility for my Institute and Faculty to fully cooperate with the Ministry of Environment and Spatial Planning. This becomes more important if the fact that Serbia still lack in its own educated staff in this field is considered. Knowledge obtained through dialogue program I will present to my colleagues, to representative and responsible institutions which should help realizing action plan and overall goal.

2. The Principle and Practice of Risk Assessment and Management of Environmental Chemicals

Since Serbia is on the way towards European Union and, presently adapting European regulations, standards and norms to our needs and also that there is a lack of experts in these areas I find this course very useful for me.

Lectures have included numerous topics ranging from monitoring and environmental behavior of anthropogenic chemicals (pesticides, fire retardants, PCB's) and also chemicals that can be produced during burning like dioxins and furans, chemicals known for their persistence and recalcitrance in the environment and basics of comprehensive risk management including risk assessment, monitoring and risk reduction. Also, subjects like toxicity and ecotoxicity of chemicals was also covered. One of the most useful lectures was about finding valuable information concerning toxicology and ecotoxicology data on the Internet and use of available and existing databases. The lecture about treatment of municipal

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2. JICA follow up project



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2. JICA follow up project



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2. JICA follow up project



Fig 3. Meeting with the Dean of FCUB and
Director of Department of Chemistry -
IchTM



Fig 4. Joint Photo after the meeting at the
Dean office



Fig 5. Visit to Center for Instrumental



Fig 6. Visit to laboratory for GC/MS and

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2. JICA follow up project



Fig 31. Morning TV show “JICA corner” at
Studio B



Fig 32. Morning TV show “JICA corner” at
Studio B

8th day, Sunday, October 14, 2012:



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EnviroChem 2013

6th Symposium Chemistry and Environmental Protection



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Programme

Symposium time-table (time-table in PDF format) - last update: May 16th, 2013, 19:39

Schedule of poster presentations (PDF, 233 KB) - last update: May 20th, 2013, 12:50

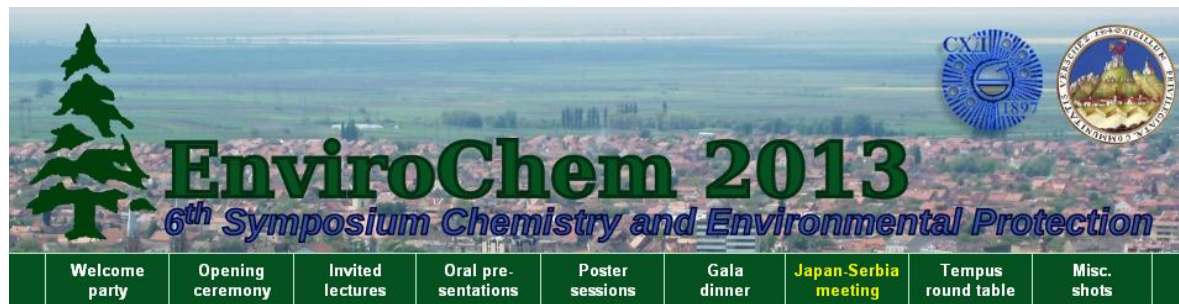
Duration of invited lectures: 25 min.

Duration of oral presentations: 12 min.

Recommended poster dimensions are 100 (height) × 80 (width) cm.

Plenary Lecturers	Presentation
Takeshi Nakano (Japan)	Enantioselective analysis of PCBs in Environmental Samples
Anne-Marie Delort (France)	Biotransformation of Methanol and Formaldehyde, atmospheric pollutants, by cloud microorganisms. Comparison with radical chemistry.
Albert Lebedev (Russian Federation)	Environmental analysis. The power and the beauty of mass spectrometry.
Ivan Špánik (Slovakia)	Identification of specific pollutants in Serbia: a case study for Novi Sad municipality
Invited Lecturers	Presentation
Jan Schwarzbauer (Germany)	Water soluble polymers - a new threat for the environment?
Milena Jovašević Stojanović (Serbia)	Low-cost sensor technologies as a complement to science and management of air quality
Mira Aničić Urošević (Serbia)	Active moss biomonitoring of airborne trace elements in the Belgrade urban area: State of the art
Mirjana Vojinović Miloradov (Srbija)	Pseudo-persistence and low doses effects - Emerging and priority substances - Challenges and perspectives
Branka Žarković (Serbia)	Capability evaluation of potentially polluted water for the safe food production
Mila Laušević (Serbia)	Pharmaceuticals and pesticides in sediments, surface and groundwater of Danube river basin in

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EnviroChem 2013

6th Symposium Chemistry and Environmental Protection

Welcome party	Opening ceremony	Invited lectures	Oral presentations	Poster sessions	Gala dinner	Japan-Serbia meeting	Tempus round table	Misc. shots
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EnviroChem 2013 - Japan-Serbia Meeting



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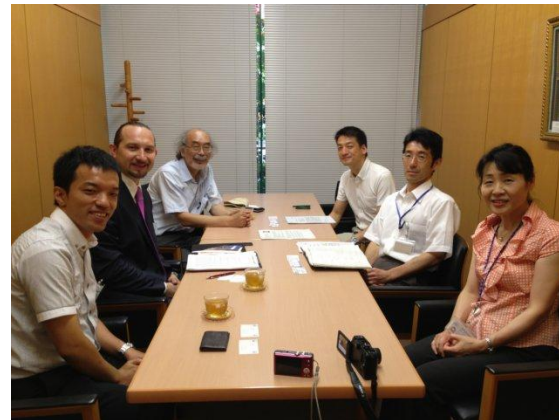
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International Session in the 22nd Symposium on Environmental Chemistry, Tokyo University of Agriculture and Technology, 2014



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3. JICA Partnership Program

Institutions
from Japan



Project of

**Capacity Building For Analysis And
Reduction Measures Of Persistent
Organic Pollutants In Serbia**

The Japan International Cooperation Agency (hereinafter referred to as "JICA") exchanged views and had a series of discussions through the [JICA Balkan Office](#) with University of Belgrade and [Pancevo City](#), Serbia for the purpose of working out the details of activities and measures to be taken by JICA, [Faculty of Chemistry](#) University of Belgrade (hereinafter referred to as "FCUB"), and Pancevo City concerning the Capacity Building for Analysis and Reduction Measures of Persistent Organic Pollutants in Serbia (hereinafter referred to as the "Project"), which will be implemented in collaboration with [Hyogo Environmental Advancement Association](#) (hereinafter referred to as "HEAA") under the JICA Partnership Program.

Institutions
from Serbia



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3. JICA Partnership Program 2014-2017

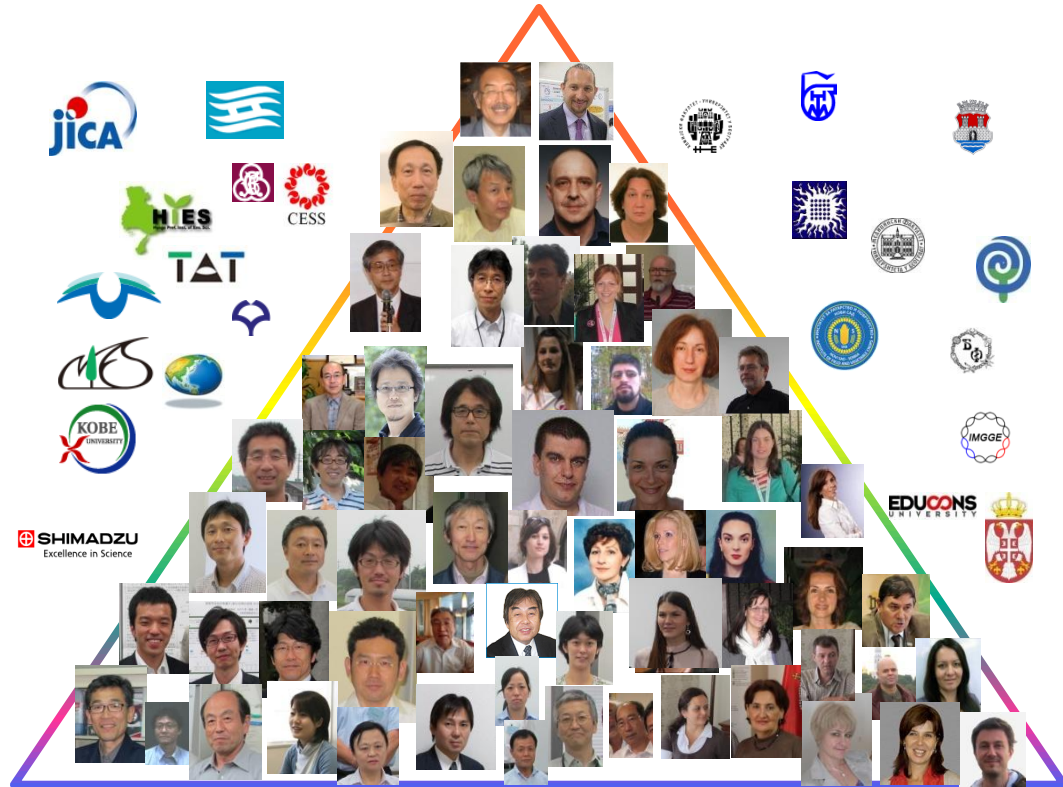


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3. JICA Partnership Program 2014-2017



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Experts from Japan who visited Serbia under JICA partnership program and Japan-Serbia collaboration:

Prof. Dr. Takeshi NAKANO, Dr. Toshiki FUJII, Dr. Yasuhiro KANDA, Dr. Shunji HASHIMOTO, Dr. Jun-ichi INAOKA, Dr. Katsuya YAMAMOTO, Dr. Nobutoshi OHTSUKA, Dr. Yuki HAGA, Dr. Ryosuke YOSHIKI, Dr. Atsuro HINO, Prof. dr. Hideyuki INUI, Prof. dr. Kiwao KADOKAMI, Ms. Aya IWABUCHI...

More than 20!!!



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Pančevo city officials and researchers from University of Belgrade who visited Japan

Mr. Vladimir DELJA, Ms. Olga ŠIPOVAC, Ms. Biljana Đordan, Ms. Vesna PETKOVIĆ-BOROVNICA, Dr. Mila ILIĆ, Dr. Jelena MILIĆ, Prof. dr. Miroslav M. VRVIĆ, Prof. dr. Branimir JOVANČIĆEVIĆ, Ms. Katarina BANJAI, Mr. Saša BORZANOVIĆ, Dr. Marijana MARKOVIĆ, Dr. Gordana GOJGIĆ-CVIJOVIĆ, Dr. Srdjan MILETIĆ, Dr. Marija LJEŠEVIĆ...
Almost 20!!!

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Lectures/Presentations/Workshops in Serbia

>40 Lectures

- 5 Workshops for researchers from University of Belgrade**
- 3 Workshops for farmers and residents of Pančevo city**
- 2 Workshop for representatives from industrial zone from
Pančevo**
- 12 Popular Science events for high school and University
students**
- 3 Round table meetings with more than 40 participants each**
- 7 High school visits**

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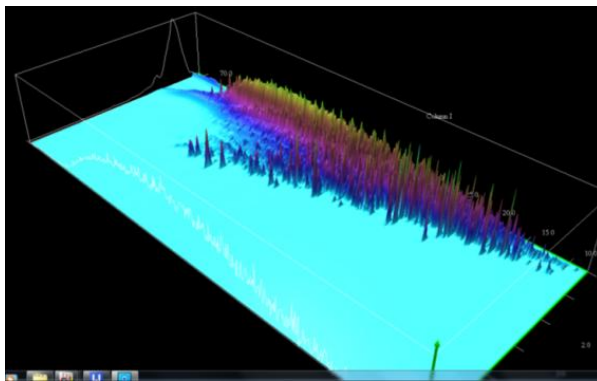
GCxGCqMS – Application at FCUB

The funds invested for laboratory renovation at FCUB: **1,000,000 JPY**

- Instrument installed: **2014**
- Training - GC-MS: **two weeks (March 2015)**
- Training - GCxGC-MS: **one week (September 2015)**
- Additional training - GCxGC-MS: **10 vcube meetings – education given by Dr. Shunji Hashimoto from NIES, Tsukuba**
- Operators: **Vladimir Beškoski, Marija Lješević, Aleksandra Djurić, and Srdjan Miletić**

Number of hours operated: **>1500h**

Number of samples analyzed: **>1000**



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Japan
Kakogawa
Arima

Serbia
Futog
Pančevo
Vršac



<http://ee-net.ne.jp/serbia/ahs/ahs.mp4>

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Selected scientific results of our joint work



Short Communication

Defluorination of perfluoroalkyl acids is followed by production of monofluorinated fatty acids

Vladimir P. Beškoski^{a,b,*}, Atsushi Yamamoto^{c,1}, Takeshi Nakano^d, Katsuya Yamamoto^e, Chisato Matsumura^e, Mamoru Motegi^f, Latinka Slavković Beškoski^g, Hideyuki Inui^{h,**}



Biodegradation of the aromatic fraction from petroleum diesel fuel by *Oerskovia* sp. followed by comprehensive GC × GC-TOF MS

Marija Lješević^{a,b}, Gordana Gojčić-Cvijović^a, Teruyo Ieda^b, Shunji Hashimoto^b, Takeshi Nakano^c, Sandra Bulatović^d, Mila Ilić^a, Vladimir Beškoski^{1,e}



Analytical and Bioanalytical Chemistry (2018) 410:1825–1831
<https://doi.org/10.1007/s00216-017-0838-0>

RESEARCH PAPER



Capillary zone electrophoresis determination of fluoride in seawater using transient isotachophoresis

Keiichi Fukushi¹, Yuki Fujita², Junpei Nonogaki², Jun-ichi Tsujimoto³, Takanari Hattori⁴, Hideyuki Inui¹, Vladimir P. Beškoski², Hiroki Hotta⁴, Mitsuru Hayashi⁴, Takeshi Nakano⁵

Received: 7 October 2017 / Revised: 11 December 2017 / Accepted: 15 December 2017 / Published online: 9 January 2018
© Springer-Verlag GmbH Germany, part of Springer Nature 2018



Short Communication

Distribution of perfluoroalkyl compounds in Osaka Bay and coastal waters of Western Japan

Vladimir P. Beškoski^{a,b,*}, Katsuya Yamamoto^c, Atsushi Yamamoto^d, Hideo Okamura^e, Mitsuru Hayashi^f, Takeshi Nakano^g, Chisato Matsumura^g, Keiichi Fukushi^h, Shinpei Wadaⁱ, Hideyuki Inui^{h,**}



Greener approaches to the measurement of polyaromatic hydrocarbons (PAHs) in unused and used crankcase motor oils from Malaysia

Kannan Narayanan¹, Haruhiko Miyagawa², Riki Kitano², Katsuhiko Nakagawa², Megumi Hirakawa³, Shunji Hashimoto³, Vladimir P. Beškoski⁴, Haris Hafizal Abd Hamid⁵, Fatemeh A. Jahromi⁶, Ignatius Phang¹, Ahmad Zaharin Aris⁷, Donghao Li⁵, Takeshi Nakano⁸



Perfluorinated compounds in sediment samples from the wastewater canal of Pančevo (Serbia) industrial area

Vladimir P. Beškoski^{a,b,*}, Shusuke Takemine^c, Takeshi Nakano^d, Latinka Slavković Beškoski^e, Gordana Gojčić-Cvijović^b, Mila Ilić^b, Srđan Miletic^b, Miroslav M. Vrvic^{a,b}



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**Our dream:
A cleaner environment for future generations!**

How:

- **through international collaboration**
- **by establishing a network between Serbia and Japan**
- **by the exchange of knowledge and experience**



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Thank you for your attention



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