

EMEC21

21st European Meeting on Environmental Chemistry
November 30 – December 3, 2021, Novi Sad, Serbia

www.emec21.rs



Association of Chemistry
and the Environment



Serbian Chemical Society



Matica Srpska

Scientific Committee

Jan Schwarzbauer, president

Organisational Committee

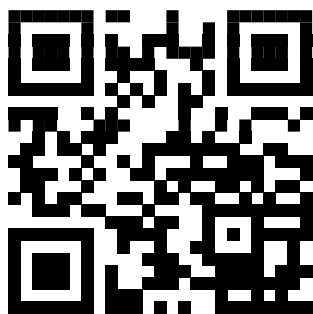
Branimir Jovančičević, president

Executive Committee

Vladimir Beškoski, president



BOOK OF ABSTRACTS





21st European Meeting
on Environmental Chemistry

BOOK OF ABSTRACTS
EMEC 21

November 30 – December 3, 2021

Novi Sad, Serbia



Book of Abstracts
21st European Meeting on Environmental Chemistry

Publisher

Serbian Chemical Society
Karnegijeva 4/III, Belgrade, Republic of Serbia

For the publisher

Dušan Sladić
President of the Serbian Chemical Society

Editors

Ivana Ivančev-Tumbas
Vladimir P. Beškoski
Aleksandra Šajnović

Cover page photo

Branko Lučić

Design and prepress

Beoživković, Belgrade

Printed by

RIS Studio, Belgrade

Circulation

150

ISBN

978-86-7132-078-8

Year

2021

Determination of Extractable Organic Matter Type from Urban Sediments of Vrbas River (Banja Luka, Bosnia and Herzegovina)

S. Stojadinović^{1,*}, G. Veselinović¹, S. Pržulj², A. Šajnović¹, G. Gajica¹, S. Štrbac¹, B. Jovančičević³. (1) Institute of Chemistry, Technology and Metallurgy, University of Belgrade, Njegoševa 12, Belgrade, Serbia, (2) University of Banja Luka, Faculty of Natural Sciences and Mathematics, Dr. Mladena Stojanovića 2, 78000 Banja Luka, Bosnia and Herzegovina (3) Faculty of Chemistry, University of Belgrade, Studentski trg 12-16, Belgrade, Serbia. *sanja.stojadinovic@ihm.bg.ac.rs.

The Vrbas River is an important river ecosystem in Bosnia and Herzegovina with a length of 250 km and catchment areas of 5900 km². Before reaching Banja Luka, the Vrbas River passes through a canyon and numerous gorges, which are from 1955 protected by the Law on the Protection of Natural Values. This river flows through many towns and villages along the entire course, but the main anthropogenic influence comes from Banja Luka, one of the largest cities in Bosnia and Herzegovina. The aim of this research was to characterise extractable organic matter of sediments from the Vrbas River in the city area of Banja Luka.

Six samples were collected at locations which were selected based on the vicinity of potential sources of anthropogenic pollution: 1 and 3 – sites near bridge and frequent traffic, 2 – city's promenade, 6 – site in the vicinity of the thermal power plant, 7 – site close to Banja Luka Brewery and the bridge on frequent road, and 8 – site close to the food industry "Vitaminska". Extractable organic matter was isolated with dichloromethane/methanol mixture using a Soxhlet apparatus. Hydrocarbons were isolated from the extracts using a column chromatography and analyzed by gas chromatography – mass spectrometry (GC-MS). Detailed analysis of *n*-alkanes (*m/z* 71), diterpanes (*m/z* 123), hopanes (*m/z* 191) and steranes (*m/z* 217) was done. The individual peaks were identified by comparison with literature data [1] and based on their mass spectra (library: NIST11).

Among saturated hydrocarbons diterpane, 16 α (H)phyllocladane is the most dominant component in almost all samples (Fig.1). The exception is a sample 7. This diterpane is followed by *n*-alkanes with a predominance of higher odd homologues.

It indicates predominately native organic matter of Vrbas river sediments, originated mostly from terrestrial plants. That was noticed the predominant presence of native organic material in noticed in samples 2, 3, 6, while the presence of oil type pollutants was confirmed in other samples (1, 7, 8), which are near the bridge and frequent traffic roads.

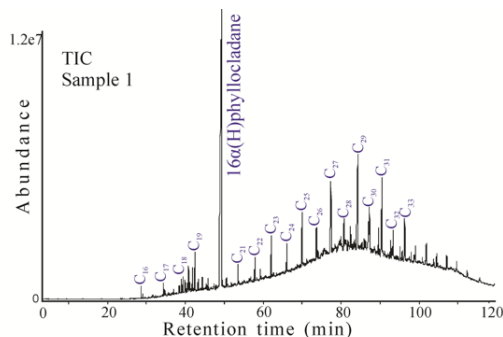


Fig 1. Total ion current (TIC) of saturated fraction.

The previous study regarding the contents distribution of heavy metals in these sediments showed that most contaminated samples are at sampling points 2 and 6 [2]. That is not the case with oil contamination pointing to probably different sources of anthropogenic pollution.

Acknowledgements

The authors would like to thank the Ministry of Education, Science and Technological Development of Republic of Serbia (Grants No: 451-03-9/2021-14/200026 and 451-03-9/2021-14/ 200168) for financial support.

References

- [1] *The Biomarker Guide, Vol. 2: Biomarkers and isotopes in petroleum Exploration and Earth History.* K. Peters, C. Walters, M. Moldowan, Cambridge, Cambridge University Press, 2005.
- [2] S. Pržulj, A. Radojičić, M. Kašanin-Grubin, D. Pešević, S. Stojadinović, B. Jovančičević, G. Veselinović, *Journal of Serbian Chemical Society*, (2021) – <https://doi.org/10.2298/JSC210608070P>.