

Pavol Jozef Šafárik University in Košice
Faculty of Science
Institute of Chemistry



BOOK OF ABSTRACTS

**Novel Trends in Chemistry,
Research and Education 2025**

Mgr. Soňa Király (ed.)

Košice 2025

Novel Trends in Chemistry, Research and Education 2025

Book of Abstracts

Edited by:

Mgr. Soňa Király, Department of Physical Chemistry, Institute of Chemistry, Faculty of Science, Pavol Jozef Šafárik University in Košice, Moyzesova 11, 040 01 Košice, Slovakia
sona.kiraly@upjs.sk

Reviewed by:

doc. RNDr. Silvia Ružičková, PhD., Department of Environmental Technologies, Institute of Recycling and Environmental Technologies, Faculty of Materials, Metallurgy and Recycling, Technical University of Košice, Letná 9, 040 01, Košice, Slovak Republic,
silvia.ruzickova@tuke.sk

doc. RNDr. Zuzana Gažová, DrSc., Department of Biophysics, Institute of Experimental Physics, Slovak Academy of Sciences, Watsonova 47, 040 01 Košice, Slovak Republic,
gazova@saske.sk

prof. Ing. Marián Koman, DrSc., Department of Inorganic Chemistry, Institute of Inorganic Chemistry, Technology and Materials, Faculty of Chemical and Food Technology, Slovak University of Technology, Radlinského 9, 812 37 Bratislava, Slovak Republic,
marian.koman@stuba.sk

RNDr. Aneta Salayová, PhD., Department of Chemistry, Biochemistry and Biophysics, University of Veterinary Medicine and Pharmacy in Košice, Komenského 73, 041 81 Košice, Slovak Republic,
aneta.salayova@uvlf.sk

RNDr. Eva Mezeiová, PhD., Biomedical Research Centre, University Hospital Hradec Králové, Sokolská 581, 500 05 Hradec Králové, Czech Republic,
eva.mezeiova@fnhk.cz

Kadir Özaltın, M.Sc., Ph.D., Centre of Polymer Systems, Tomas Bata University in Zlín, 760 01 Zlín, Czech Republic,
ozaltin@utb.cz

Organisation Committee:

RNDr. Ivana Šišoláková, PhD.

RNDr. Jana Shepa, PhD.

RNDr. Radka Gorejová, PhD.

Mgr. Soňa Király

Ing. Petronela Polanská

This text is published under the Creative Commons 4.0 license - CC BY NC SA ("Attribution - Do not use commercially - ShareAlike").



The authors bear sole responsibility for the scientific and linguistic content. The manuscript has not been subjected to editorial or language revision.

Available at: www.unibook.upjs.sk

Publication date: 27.11. 2025

DOI: <https://doi.org/10.33542/NTI-0469-9>

ISBN 978-80-574-0469-9 (e-publication)

Analytical evaluation of PAH degradation during the cultivation of hydrocarbon-utilizing bacteria with bioremediation potential

E. Kupcova^{a*}, J. Sevcikova^b, V. Krempaska^c, M. Vesteg^c, M. Murgasova^c,
P. Guziurova^d

^a Department of Chemistry, Faculty of Natural Sciences, Matej Bel University, Tajovského 40, 974 01 Banská Bystrica, Slovakia

^b Department of Technology, Faculty of Natural Sciences, Matej Bel University, Tajovského 40, 974 01 Banská Bystrica, Slovakia

^c Department of Biology and Environmental Studies, Faculty of Natural Sciences, Matej Bel University, Tajovského 40, 974 01 Banská Bystrica, Slovakia

^d Institute of Food Science and Biotechnology, Faculty of Chemistry, Brno University of Technology, Purkyňova 464, 612 00 Brno, Czechia

*elena.kupcova@umb.sk

Polycyclic aromatic hydrocarbons (PAHs) are persistent environmental pollutants characterized by high toxicity and low biodegradability [1]. In this study, bacterial strains capable of utilizing PAHs [2,3] were isolated from various extreme environmental habitats. The isolates were cultivated in mineral media supplemented with selected PAHs (specifically fluorene and phenanthrene) as the sole carbon source and exposed to a range of concentrations to determine the maximum levels that the bacteria were able to utilize. The degradation efficiency was assessed by monitoring the residual concentrations of the target compounds using high-performance liquid chromatography with diode array and fluorescence detection (HPLC-DAD/FLD). The results revealed that several bacterial strains exhibited a remarkable ability to degrade specific PAHs even at elevated concentrations, highlighting their potential application in bioremediation of contaminated environments.

Acknowledgement

Funded by the EU NextGeneration EU through the Recovery and Resilience Plan for Slovakia under the project No. 09I03-03-V05-00009.

References

- [1] J. Teixeira, C. Delerue-Matos, S. Morais, M. Oliveira, *Environ. Sci. Pollut. Res.* **31** (2024) 54339-54362.
- [2] C. Lu, Y. Hong, J. Liu, Y. Gao, Z. Ma, B. Yang, W. Ling, M. G. Waigi, *Environ. Pollut.* **251** (2019) 773-782.
- [3] J. Li, W. Peng, X. Yin, X. Wang, Z. Liu, Q. Liu, Z. Deng, S. Lin, R. Liang. *J. Hazard. Mater.* **465** (2024) 133138.

Novel Trends in Chemistry, Research and Education 2025

Book of Abstracts

Edited by: Mgr. Soňa Király

Publisher: Pavol Jozef Šafárik University in Košice
ŠafárikPress Publishing

Year: 2025

Pages: 123

Author's sheets: 10,22

Edition: first

DOI: <https://doi.org/10.33542/NTI-0469-9>

ISBN 978-80-574-0469-9 (e-publication)

