

BOOK OF ABSTRACTS

— INTERNATIONAL CONFERENCE —

„NATURAL ORGANIC MATTER (NOM) GEOCHEMICAL FLOWS AND PROPERTIES:
FROM THEORY TO PRACTICE”

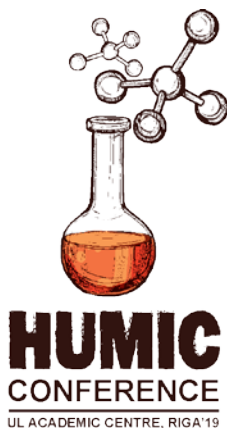
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UL Academic Centre House of Nature

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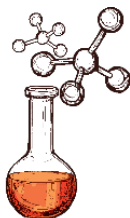
International Conference

**NATURAL ORGANIC MATTERS
GEOCHEMICAL FLOWS AND PROPERTIES:
FROM THEORY TO PRACTICE**

5 – 8 June 2019
Riga, Latvia

Book of Abstracts

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**HUMIC
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The International conference of IHSS Nordic-Baltic Chapter is organised by University of Latvia and International Humic Substances Society (IHSS).

The aim of the conference is to exchange the results of recent studies and provide a place for creative discussions for those, who are interested in NOM and humic substances. We hope that the topics of the conference will be addressed by researchers not only from Northern Europe, but from other countries as well. We are inviting you to contribute to the success of the conference, enjoy warm and friendly atmosphere of Riga and meet old and new members of the NOM and humus research community.



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SPECTROSCOPIC INDEXES CAN REVEAL ABILITY OF MICROSCOPIC FILAMENTOUS FUNGI TO TRANSFORM HUMIC SUBSTANCES

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Abstract: Humic substances (HSs), both natural and industrially manufactured, provide various effects: as agents for remediation of degraded soils, as plant biostimulants and others. Potential benefits of HSs can be associated with direct nutrient values, plant physiological mechanisms, modifications in physical, chemical or biological components of soil health. Soil filamentous fungi are involved in HS turnover. The study of interactions between HSs and soil filamentous fungi can help us to understand the sustainable soil functioning. The aim of the work was to perform multifaceted laboratory experiments on the transformation of various HS samples (industrial HSs and extracted humic acids) by soil filamentous fungi using a set of spectral indices. As a potential agent for HS decomposition, we used three strains: melanin containing phytopathogenic *Alternaria alternata*, non-pigmented phytopathogenic *Fusarium solani*, and antagonistic *Trichoderma harzianum*. As spectral indices, we estimated absorbance ratio A_{250}/A_{365} , emission wavelength of the humic-type fluorescence, and fluorescence quantum yield measured with excitation at 355 nm (QY_{355}). The transformations of HSs under cultivation of *A. alternata* led to increase of A_{250}/A_{365} ratio, shortening of the emission wavelength, and growth in QY_{355} . Under cultivation of *F. solani* and *T. harzianum*, we did not find remarkable transformations of HSs. A positive correlation was observed between the accumulation of fungal biomass and the degree of HS decomposition. The obtained results show that fungi *A. alternata*, *F. solani* (phytopathogens) and *T. harzianum* (which is antagonistically active against alternaria and fusaria) have different patterns of interaction with HSs, and this fact should be considered when humic-based biostimulants are used.

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