

Oldřich Motyka



DEPARTMENT OF
ENVIRONMENTAL ENGINEERING

WATER MANAGEMENT
UNIT

WASTE MANAGEMENT
UNIT

ENVIRONMENTAL
UNIT

3-fold focus

DEPARTMENT OF
ENVIRONMENTAL ENGINEERING

WATER MANAGEMENT
UNIT

WASTE MANAGEMENT
UNIT

ENVIRONMENTAL
UNIT

- **Study programme:**
Water – A Strategic Resource
- **Staff:**
prof. Ing. Václavík Vojtěch, Ph.D.
Ing. Drabinová Silvie, Ph.D.
prof. Ing. Heviánková Silvie, Ph.D.
Ing. Brožová Kateřina, Ph.D.
doc. Mgr. Čabanová Kristina, Ph.D.
doc. Ing. Dvorský Tomáš, Ph.D. Paed.IGIP
Ing. Halfar Jan, Ph.D.
Ing. Chromíková Jitka, Ph.D.
prof. Dr. Ing. Kyncl Miroslav
Ing. Malíková Petra, Ph.D.
Rasool Atta, Ph.D.

- **Focus:**
Searching for water sources.
Collection and treatment of water for its further use.
Transport of water to the consumer.
Drainage and subsequent treatment.
Economical use of water.
Care for water in the landscape.
Design of water management/hydrogeological facilities.



DEPARTMENT OF
ENVIRONMENTAL ENGINEERING

WATER MANAGEMENT
UNIT

WASTE MANAGEMENT
UNIT

ENVIRONMENTAL
UNIT



- **Study programme:**
Waste Management and Mineral Processing

- **Staff:**
doc. Ing. Janáková Iva, Ph.D.
prof. Ing. Čablík Vladimír, Ph.D.
Ing. Čech Martin
Mgr. Drahorádová Nikola
doc. Dr. Ing. Kučerová Radmila
Ing. Mudruňka Jaroslav, Ph.D.
Ing. Šigut Oldřich

- **Focus:**
Terminology and legislation
in mining and mineral processing.
Waste management,
evaluation of waste properties,
mineralogy, chemistry.
Processing of raw materials and waste.
Characteristics and properties of raw materials and waste,
and their processing.



DEPARTMENT OF
ENVIRONMENTAL ENGINEERING

WATER MANAGEMENT
UNIT

WASTE MANAGEMENT
UNIT

ENVIRONMENTAL
UNIT

- **Study programme:**
Environmental Protection in Industry

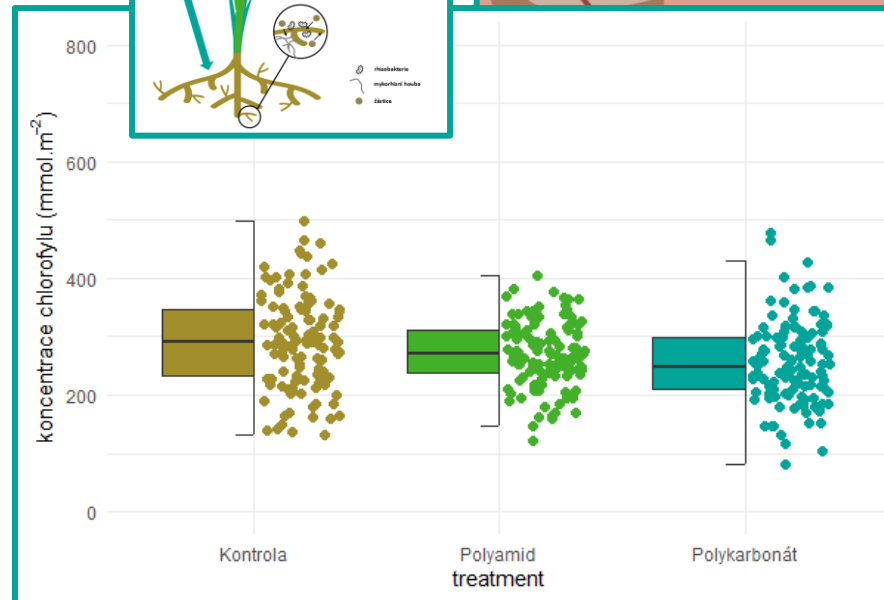
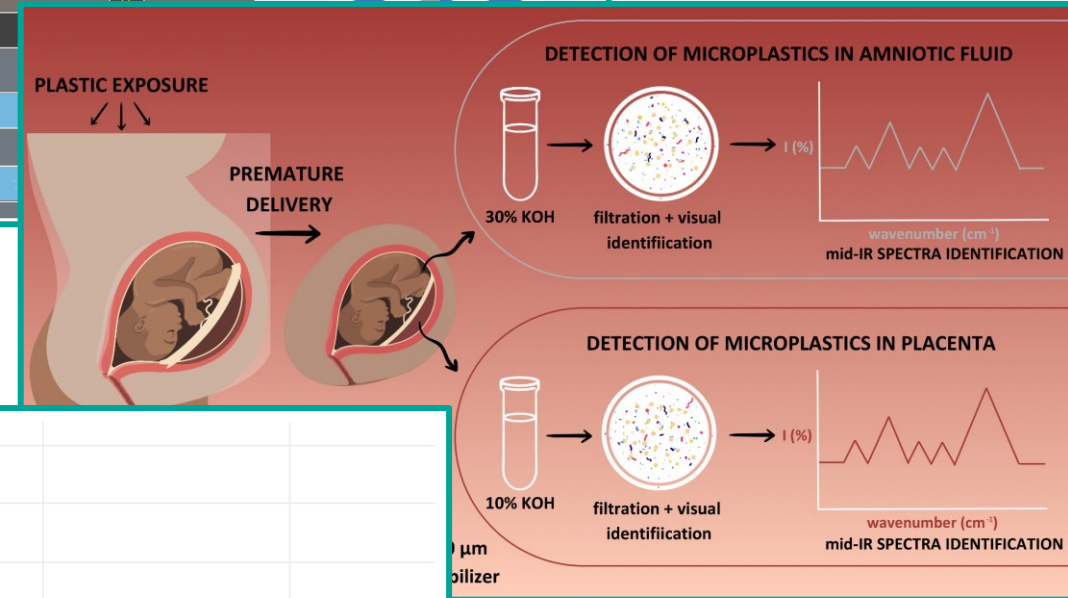
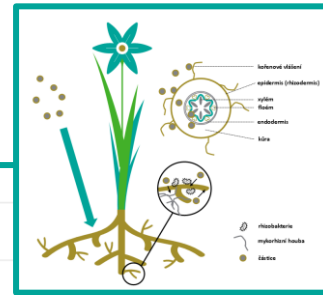
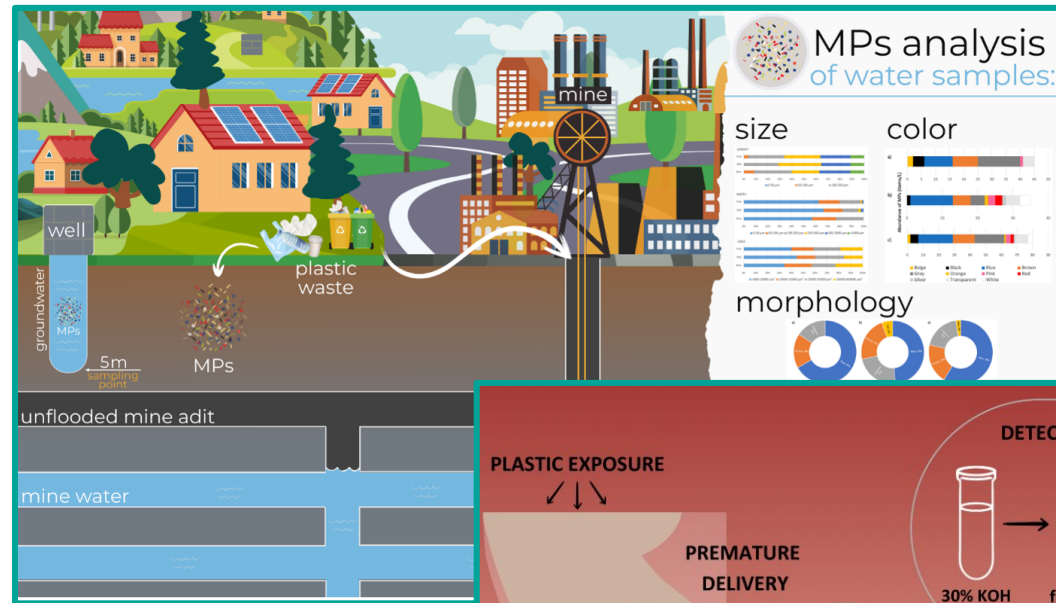
- **Staff:**
doc. Mgr. Vojtková Hana, Ph.D.
Ing. Kodymová Jana, Ph.D.
doc. Ing. Kupka Jiří, Ph.D.
prof. Ing. Lapčík Vladimír, CSc.
Ing. Matušková Simona, Ph.D. Paed.IGIP
doc. Mgr. Motyka Oldřich, Ph.D.
doc. Mgr. Pertile Eva, Ph.D.
doc. Ing. Stalmachová Barbara, CSc.
Ing. Švehláková Hana, Ph.D.

- **Focus:**
Industrial, mining and post-mining environment
Global problems in an industrialized environment.
Biological changes in the industrial landscape.
Monitoring, reduction, and elimination of contaminants in air, soil and water.
Regeneration and revitalization of the industrial environment.



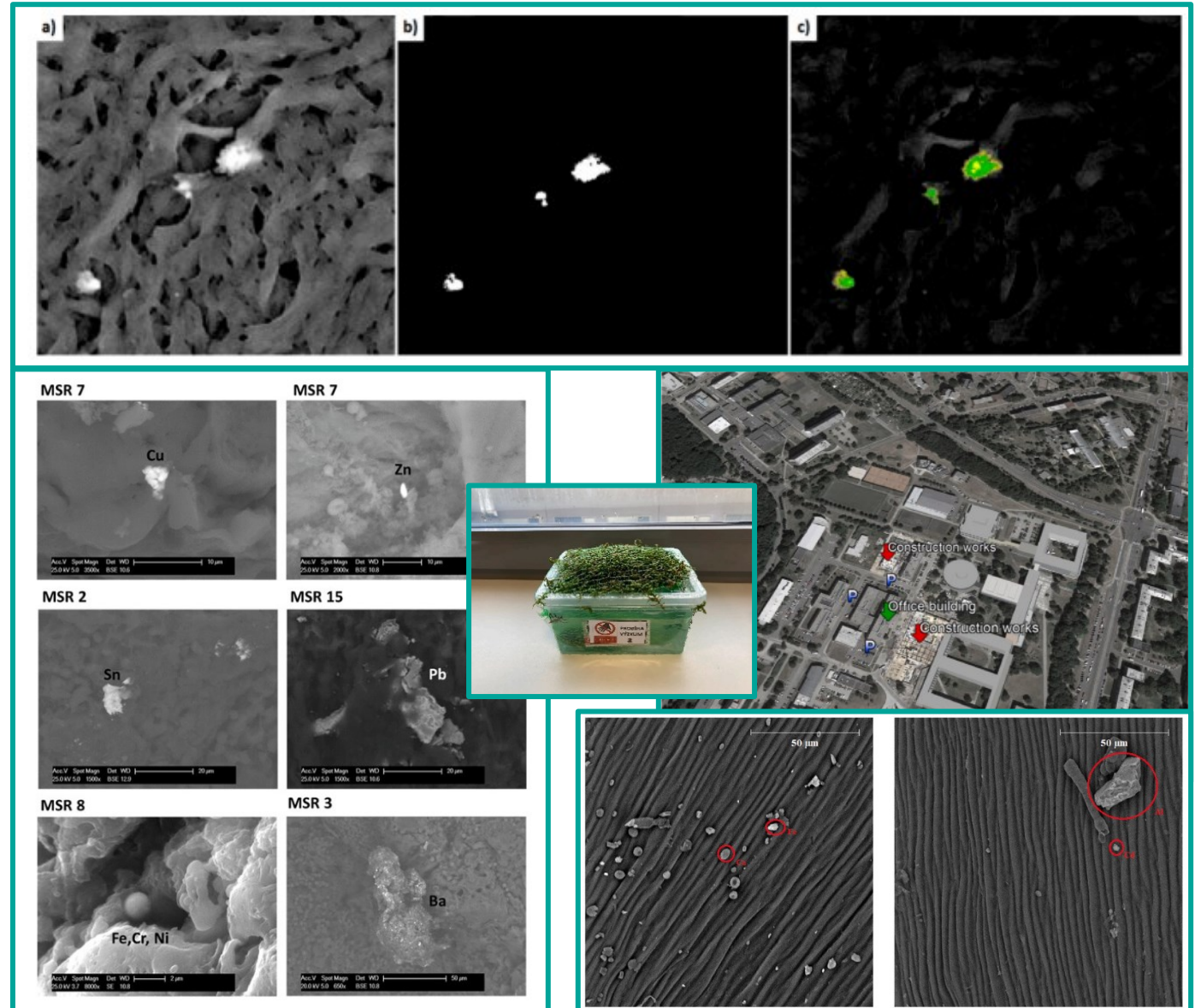
Research Focus (Excellent and Unique)

- Environmental contaminants in general
- MICROPLASTICS
 - aquatic environment
 - human body
 - plant physiology
- METAL-BASED PARTICLES



Research Focus (Excellent and Unique)

- Environmental contaminants in general
- **MICROPLASTICS**
 - aquatic environment
 - human body
 - plant physiology
- **METAL-BASED PARTICLES**
 - human body
 - traffic-related pollution
 - plants: biomonitoring



Key results

Environmental Science and Pollution Research (2022) 29:39131–39138
<https://doi.org/10.1007/s11356-022-18869-w>

RESEARCH ARTICLE

Traffic pollution tracers in the lymphatic system tissue of children—possible link to chronic tonsillitis development: pilot study

Kristina Čabanová^{1,2} · Kristína Štrbová³ · Oldřich Motyka⁴ · Karol Zeleník⁵ · Jana Dvořáčková⁶ · Dominika Zabiegaj⁷ · Miroslav Havlíček⁸ · Jana Kukutschová¹



Contents lists available at ScienceDirect

Environmental Toxicology and Pharmacology

journal homepage: www.elsevier.com/locate/etap

Simple method for quantification of metal-based particles in biopsy samples of patients with long bone implants – Pilot study

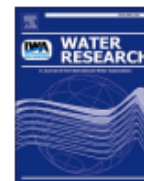
Eva Olšovská^{a,b,*}, Kristina Čabanová^{b,c}, Oldřich Motyka^{a,c}, Hana Bielníková Kryštofová^{b,d}, Petra Matějková^b, Jiří Voves^{e,f}, Vladimír Židlík^{d,f}, Roman Madeja^{e,f}, Jiří Demel^{e,f,g}, Jan Halfar^{b,c}, Jana Kukutschová^b



Contents lists available at ScienceDirect

Water Research

journal homepage: www.elsevier.com/locate/watres



The first evidence of microplastic occurrence in mine water: The largest black coal mining area in the Czech Republic

Kateřina Brožová^a, Jan Halfar^{a,*}, Kristina Čabanová^{a,b}, Oldřich Motyka^{a,c}, Silvie Drabinová^a, Pavel Hanus^a, Silvie Heviánková^a



Contents lists available at ScienceDirect

Building and Environment

journal homepage: www.elsevier.com/locate/buildenv



Indoor moss biomonitoring proving construction-related pollution load from outdoors

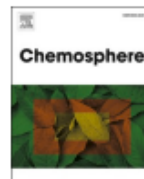
Kristina Štrbová^a, Oldřich Motyka^{b,*}, Gabriela Mikesková^c, Eva Olšovská^{d,e}, Jana Seidlerová^{c,d}



Contents lists available at ScienceDirect

Chemosphere

journal homepage: www.elsevier.com/locate/chemosphere



Microplastics and additives in patients with preterm birth: The first evidence of their presence in both human amniotic fluid and placenta

Jan Halfar^{a,*}, Kristina Čabanová^{a,b}, Karel Vávra^{d,e}, Patricie Delongová^{c,f}, Oldřich Motyka^{a,g}, Richard Špaček^{d,e}, Jana Kukutschová^b, Ondřej Šimetka^{d,e}, Silvie Heviánková^a

Key results

Environmental Science and Pollution Research (2022) 29:18869–18880
<https://doi.org/10.1007/s11356-022-18869-w>

RESEARCH ARTICLE

Traffic pollution tracers in the urine of children—possible link to traffic pollution study

Kristina Čabanová^{1,2} · Kristína Štrbová³ · Dominika Zabiegaj⁷ · Miroslav Havlíček⁸



Environmental Science and Pollution Research

Simple method for quantification of patients with long bone implants – Pilot study

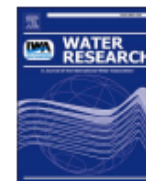
Eva Olšovská^{a,b,*}, Kristina Čabanová^{b,c}, Oldřich Motyka^{a,c}, Hana Bielníková Kryštofová^{b,d}, Petra Matějková^b, Jiří Voves^{e,f}, Vladimír Židlík^{d,f}, Roman Madeja^{e,f}, Jiří Demel^{e,f,g}, Jan Halfar^{b,c}, Jana Kukutschová^b



Contents lists available at ScienceDirect

Water Research

journal homepage: www.elsevier.com/locate/watres



ne water: The largest

Motyka^{a,c}, Silvie Drabinová^a,

Direct

ment

[locate/buildenv](http://www.elsevier.com/locate/buildenv)



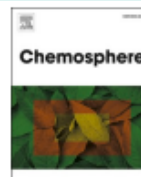
lated pollution load

Olšovská^{d,e},



Direct

[e/chemosphere](http://www.elsevier.com/locate/chemosphere)



Microplastics and additives in patients with preterm birth: The first evidence of their presence in both human amniotic fluid and placenta

Jan Halfar^{a,*}, Kristina Čabanová^{a,b}, Karel Vávra^{d,e}, Patricie Delongová^{c,f}, Oldřich Motyka^{a,g}, Richard Špaček^{d,e}, Jana Kukutschová^b, Ondřej Šimetka^{d,e}, Silvie Heviánková^a



Key results

Year	Jimp	Q1	Q2	Q3	Q4
2024	24	16	5	1	2
2023	21	14	5	1	1
2022	17	4	6	2	3
2021	24	11	8	2	3
2020	11	1	4	0	3

Current projects

- **REsilient WAter Innovation for Smart Economy (REWAISE), 2020-2025**

Programme: Horizon 2020, Call: H2020-SC5-2018-2019-2020 (Greening the economy in line with the Sustainable Development Goals (SDGs) - PARTICIPANT

- **IP LIFE FOR COAL MINING LANDSCAPE ADAPTATION (COALA)**

Programme: LIFE20, IPC/CZ/000004, 2021-2031 – PARTICIPANT

- **BIOTECHNOLOGICAL INNOVATIONS FOR SUSTAINABLE FLAT PANEL DISPLAYS RECYCLING**

Programme: Interreg Danube, 2024-2025 – PRINCIPAL INVESTIGATOR

- **UTILIZATION OF CONSTRUCTION AND DEMOLITION WASTE FOR THE PRODUCTION OF CEMENT-BASED COMPOSITES WITH SOLIDIFICATION CAPABILITY AND REDUCED ENVIRONMENTAL IMPACT**

Programme: Technology Agency of the Czech Republic: “Environment for Life”, 2024-2026 – PRINCIPAL INVESTIGATOR



**Cirk
Arena**

SELECTED
PROJECTS



Current

- **REsilient**
Program
economy

- **Research**
the C
resou
Program
Trade)
- PRINCIPAL

- **IP LIFE**
Program

- **RECOVER**
areas
Program

PARTICIPANT
24/11/2025

SELECTED
PROJECTS



REFRESH



Cooperation



Collaboration with industry and institutions:

DIAMO, s.p., River Basin Authorities, BorsodChem MCHZ, s.r.o., University Hospital Ostrava, SmVaK Ostrava a.s., etc.



International academic collaborations

IPL Lisbon (Portugal), UCAM Murcia (Spain), HOGENT (Belgium), UAS Frankfurt (Germany), Metropolia (Finland), AGH (Poland), etc.



International mobility and collaboration

Senior researcher: Atta Rasool, Ph.D. (Pakistan) - employee of the department

Incoming mobility: Isabel María Martínez Alcalá, Ph.D. (Spain) - 07/2025 – 09/2025

Research stays at partner institutions: IPL (Lisbon, Portugal), UCAM (Murcia, Spain), UniLaSalle (Rennes, France), UAntwerp (Antwerp, Belgium)...

Research internship at institutions in the USA:

- Plastic Ocean Project, Inc. (North Carolina, USA)
- Ocean Plastic Recovery Project (Alaska, USA)

Cooperation

Participation in Blended Intensive Programmes (BIPs)

Membership in university alliance U!REKA

Active involvement in BIPs

One BIP already hosted at our department on 28.04.2025

– 02.05.2025 „Industrial past, Sustainable Future:

Pathways to a Greener Tomorrow“

Collaboration with institutions from: Poland, Portugal, Spain, Finland, Ireland, Germany, Belgium, Netherlands (mostly within U!REKA alliance)



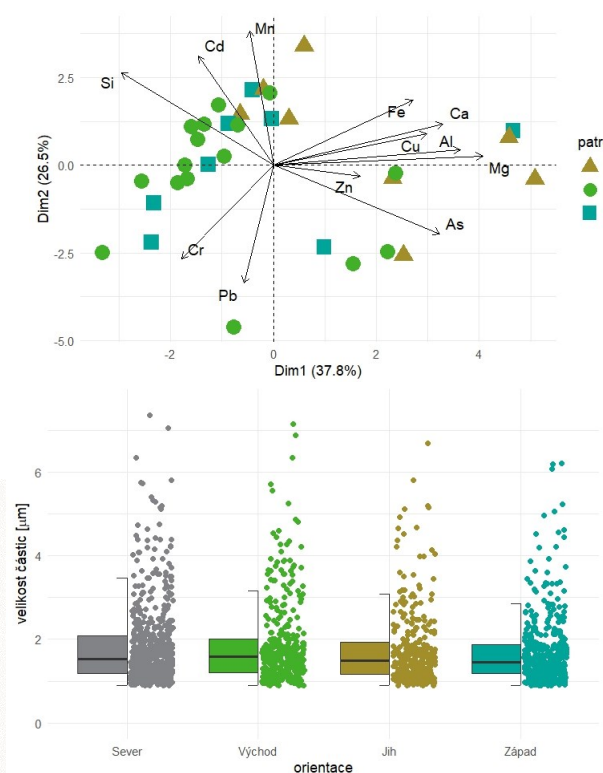
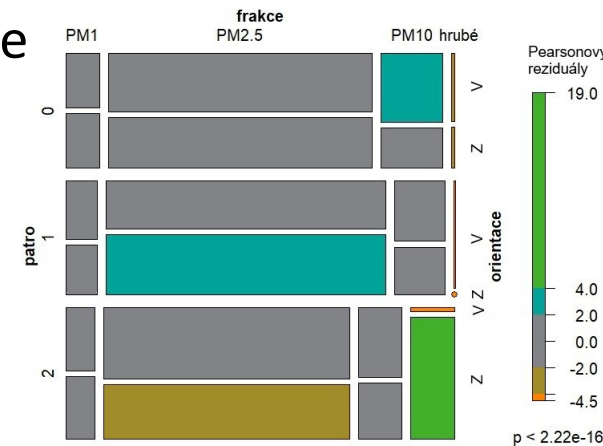
What are we offering?

- Facilities with state-of-the art equipment
- Mainly focusing on environmental contaminants in air water and soil, both human and plant tissue
- Experience in producing excellent publications – including data analysis and visuals



What are we looking for?

- Facilities with state-of-the art equipment
- Mainly focusing on environmental contaminants in air water and soil, both human and plant tissue
- Anyone/anything that can help us achieve our primary goal:
using technology to help our environment.



[illegible][illegible][illegible]