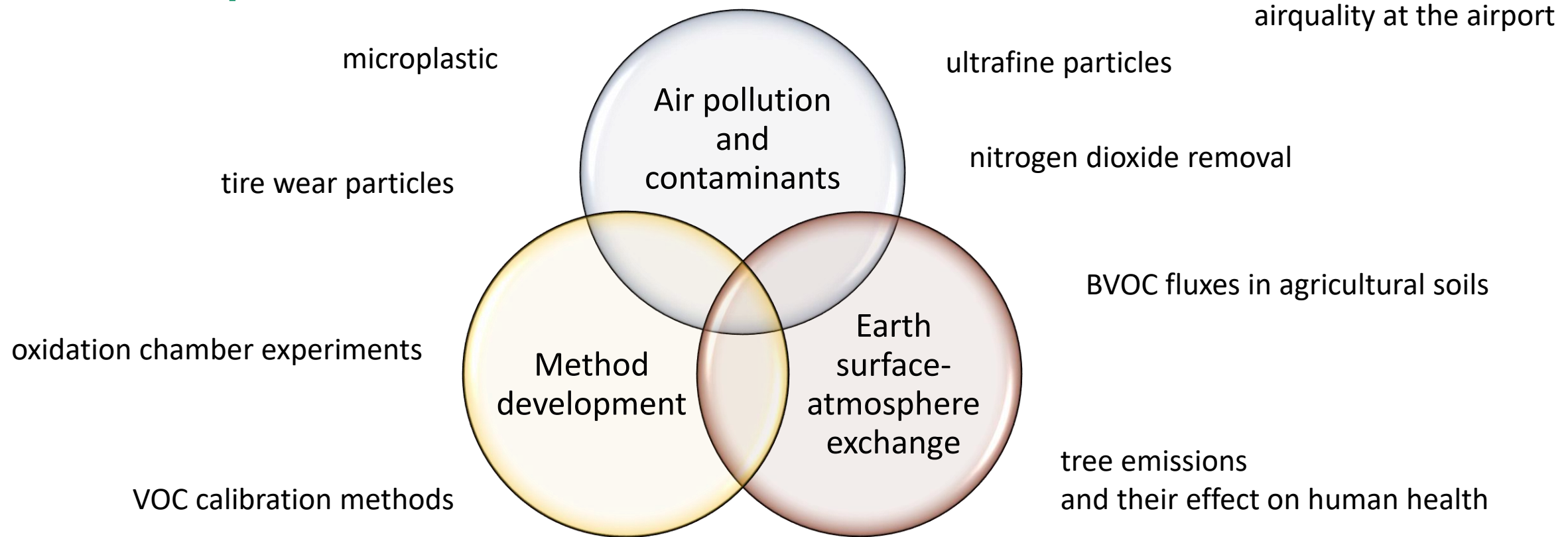


Theses Topics Atmospheric Chemistry group

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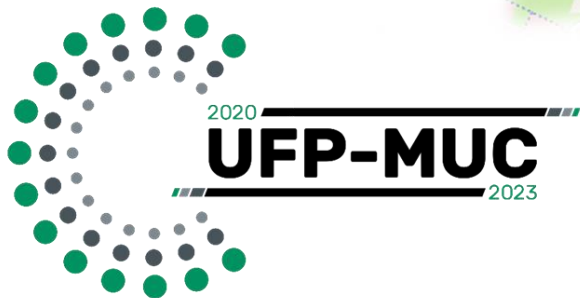
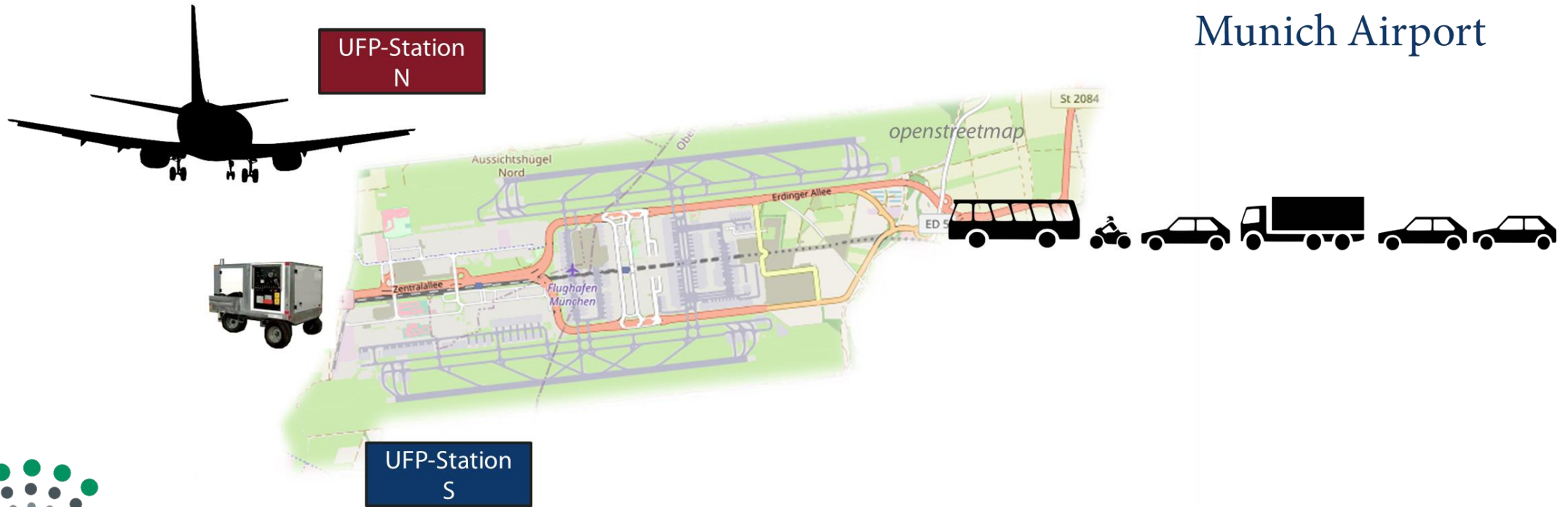
Theses Topics: Overview





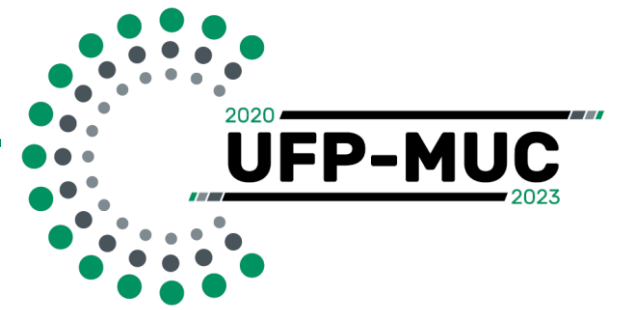
Ultrafine particles @ Munich airport

Munich Airport





Ultrafine particles @ Munich airport



Motivation:

Airports can be significant sources for ultrafine particles. The impact of these particles on the surrounding neighbourhoods is yet poorly understood.



Possible theses topics:

- How to take meaningful snap-shots with hand-held UFP-analyzers?
- Method development for the chemical analysis of airport UFP – analyzing the airports fingerprint
- How do airport UFP compare to other atmospheric pollutants?

Tools:

Hand-held particle analyzers, reference particle size spectrometers, data analysis, HPLC-MS or GC-MS, lab and field work

Method development for analyzing ultrafine particle chemical compositions

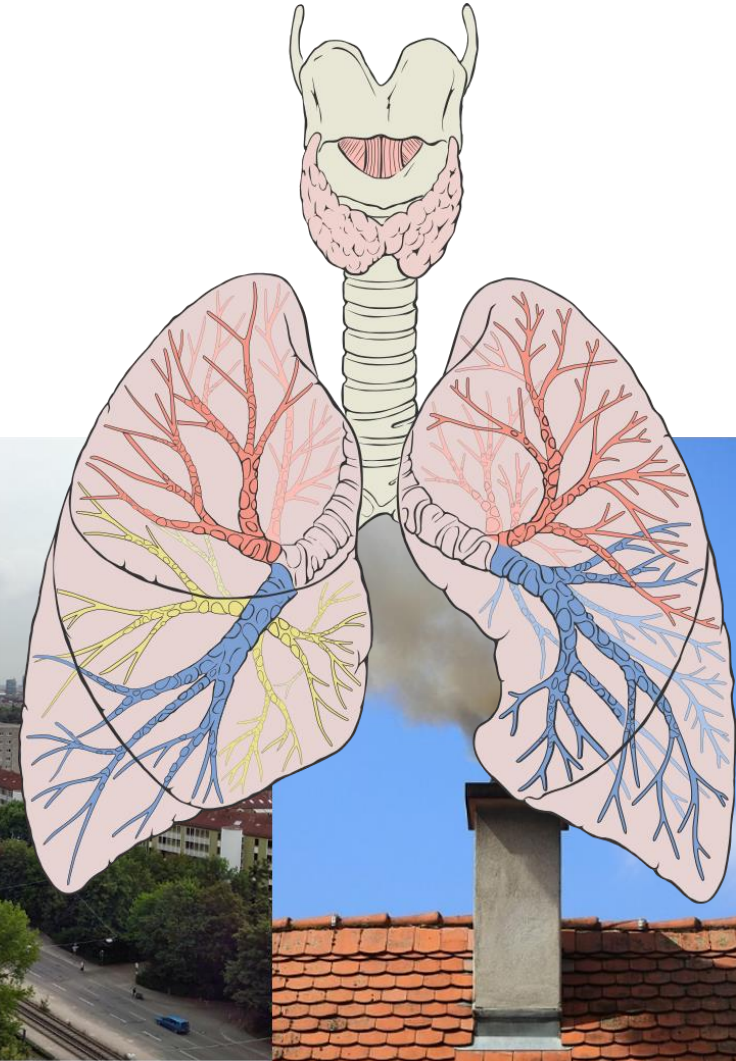
Particle chemical composition reveals hidden information

Origin & source

Age & history

Risk for human health

Impact on the environment





Method development for analyzing ultrafine particle chemical compositions

Motivation:

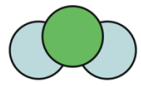
Ultrafine particles in air expose a so far understudied and non-regulated health risk. Knowledge of their chemical composition may reveal their sources and fate.

Possible theses topics:

- Optimize existing methods to analyse **selected marker components** in UFP (tire wear, soot, PAH, ELVOC or SVOC, elemental composition)
- Develop fingerprint analysis for ambient UFP samples
- Chamber experiments for understanding the formation of particle-bound products of VOC

Tools:

impactor techniques for separation and collection, tuning and method development of standard analytical instrumentation (GC-MS, HPLC-MS/FLD, others)

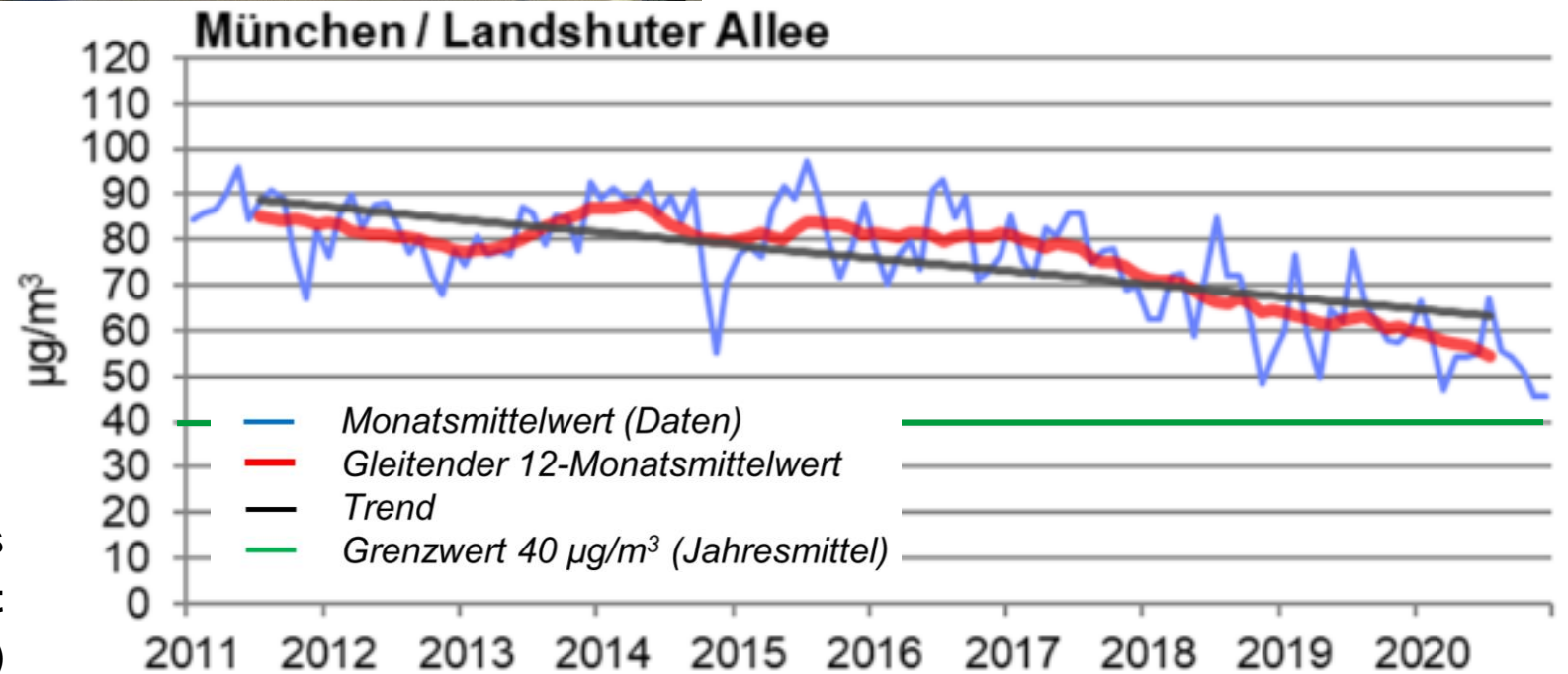


Can we filter NO₂ from urban air?

REINELUFFT?



Bayerisches Staatsministerium für
Umwelt und Verbraucherschutz



Stickstoffdioxid (NO₂) Messungen des
Bayerischen Landesamts für Umwelt
(Bericht 2021)



Can we filter NO₂ from urban air?

Motivation:

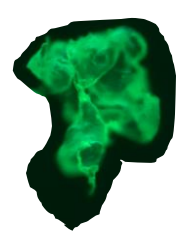
Despite generally improving air quality the pollutant NO₂ remains high at urban sites in Munich. We want to test whether and how passive air filtration systems can reduce NO₂.

Possible theses topics:

- Field campaign study on the NO₂ reduction efficiency within the outflow of the filtration systems
- Budgeting sources and sinks of NO₂ in Munich
- Mobile measurements of NO-NO₂-O₃ within Munich urban street canyons
- Annual variation of VOC @ Landshuter Allee

Tools:

NO-NO₂-O₃ measurements and/or data



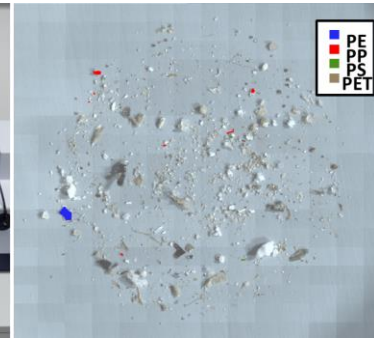
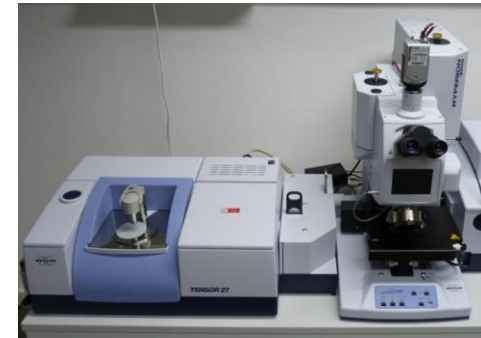
Airborne Microplastic

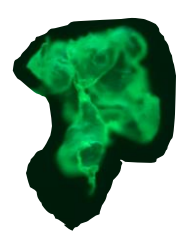


sources

sampling

analysis





Airborne Microplastic



Motivation:

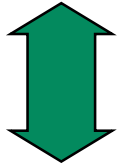
The atmosphere transports and ages microplastic. However, both sufficient methods for detection and mechanistic studies on airborne microplastic are rare.

Possible theses topics:

- Analysis of airborne microplastic in one year of monthly deposition samples
- Method development for microplastic tracer detection in airborne particulate matter
- Atmospheric transport of microplastics originated from plastics used in agriculture
- Aging of PS under realistic atmospheric conditions

Tools:

clean-up of atmospheric samples, μ FTIR, PTR-ToF-MS, SPME-GC-MS



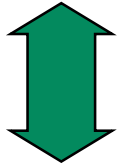
Earth surface - atmosphere exchange

BVOC emissions from trees under climate change and their effect on human health.



Experimental quantification of simultaneous water states, fluxes and BVOCs exchange in agricultural soils.





Earth surface - atmosphere exchange

Motivation:

Earth surface-atmosphere exchange processes shape the air we breath. However, they are a vulnerable and so far only poorly understood subject to climate change.

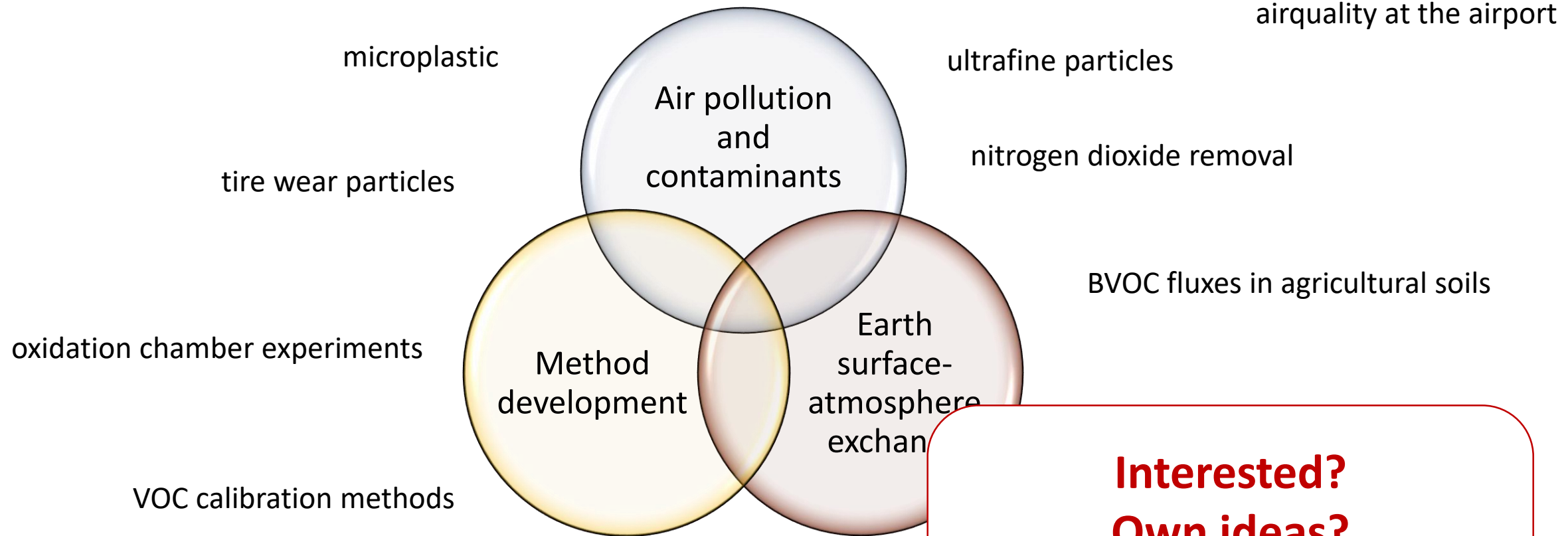
Possible theses topics:

- BVOC emissions from trees under climate change and their effect on human health
- Experimental quantification of simultaneous water states, fluxes and BVOCs exchange in agricultural soils
- Calibration techniques for high-quality atmospheric BVOC-measurements

Tools:

PTR-ToF-MS, TD-GC-FID

Theses Topics: Overview



**Interested?
Own ideas?**

**contact me:
anke.noelscher@uni-bayreuth.de**

