European Network on New Sensing Technologies for Air Pollution Control and Environmental Sustainability - *EuNetAir* COST Action TD1105 1ST TRAINING SCHOOL

Universitat de Barcelona, Spain, 13 - 15 June 2013

organized by UB, MIND-IN2UB - Dept. of Electronics and CSIC-IDAEA

Action Start date: 01/07/2012 - Action End date: 30/06/2016

Year 1: 2012 - 2013 (Ongoing Action)



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My expertise related to the Action

- Air pollution monitoring: Using manual method of measuring PM concentration in air
- PM deposition on leaf surface:
 Using PM deposition analysis method of our own authorship
- Air phytoremediation:

Using plants (especially woody plants and grasses) for cleaning the air from PM, PAHs and metals in urban areas

Mobile XRF analysis:

Analysis of environmetal samples for excessed heavy metals



Current research topics in my laboratory



Ongoing research topics

- Modeling of air pollution removal by vegetation on plant scale
- Designing vegetation structure/composition for more efficient air clean-up
- - Investigating the fate of pollutants after vegetation period leeching to soil from fallen leaves, harvesting the leaves, composting, enhanced degradation of pollutants



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Achieved RESULTS and future activities

International Journal of Phytoremediation, 13:1037-1046, 2011 Copyright © Taylor & Francis Group, LLC ISSN: 1522-6514 print / 1549-7879 online DOI: 10.1080/15226514.2011.55229



New method described

DEPOSITION OF PARTICULATE MATTER OF DIFFERENT SIZE FRACTIONS ON LEAF SURFACES AND IN WAXES OF URBAN FOREST SPECIES

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Achieved RESULTS and future activities









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PM: 4.81 g Metals: 1.27 g PAHs: 4.38 mg

Annual average PM emission in Warsaw is ca 4 tons

> Average urban lime accumulates over 4 g



Nawrot B., Dzierżanowski K., Gawroński S.W. 2011. Accumulation of particulate matter, PAHs and heavy metals in canopy of small-leaved lime. *Environmental Protection and Natural Resources* 49: 52-60.

CONCLUSIONS

- Role of plants is still underestimated
- Plants in urban areas accumulate significant amounts of PM, PAHs and heavy metals
- There are more and less effective plant-accumulators and urban greenery keepers should be aware of that
- Most species accumulate different amounts of contaminants depending on the level of air and soil pollution – maybe consider them as bioindicators?
- What to do with highly contaminated vegetation waste?

