

VERT Meeting
17.3.2017



Empa

Materials Science and Technology

Davide Bleiner

Welcome Opening

Chair of Advanced Analytical Technologies

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Empa Bridge Between Academia & Industry



Materials Science & Technology

Innovative Methods

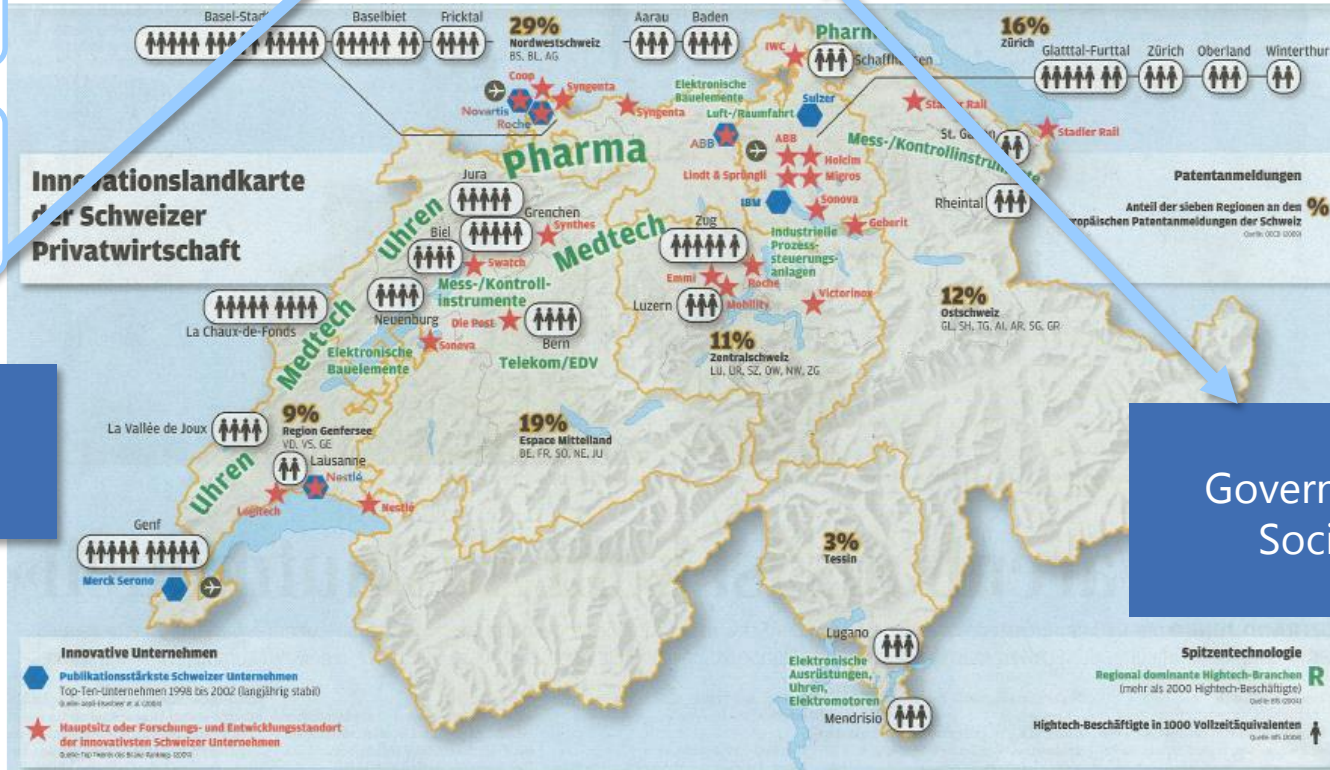
Transfer to Industry

Industry: SME, large Corporations



Empa
Dübendorf / St Gallen / Thun

ETH/EPF, Universities, Fachhochschulen, National Labs



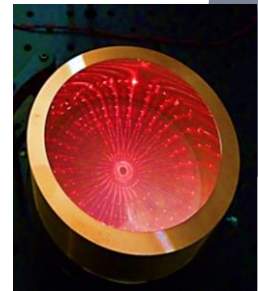
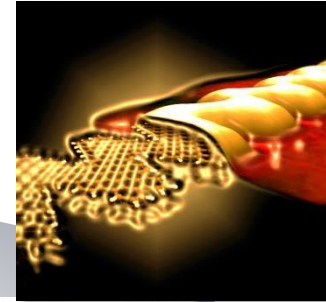
Government, Society

Empa's Research Focus Areas

Health & Performance



Nanostructured Materials



Natural Resources & Pollutants



Energy



Sustainable Built Environment



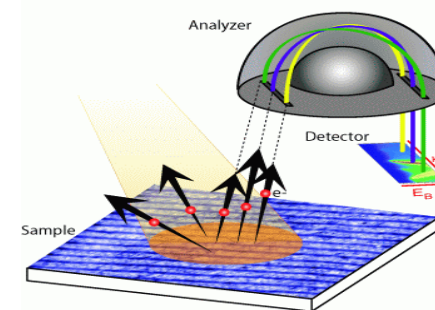
Exhaust Pollution Analysis (Joint with ETHZ / Prof. J. Wang)



Instrumental Chemical Analysis

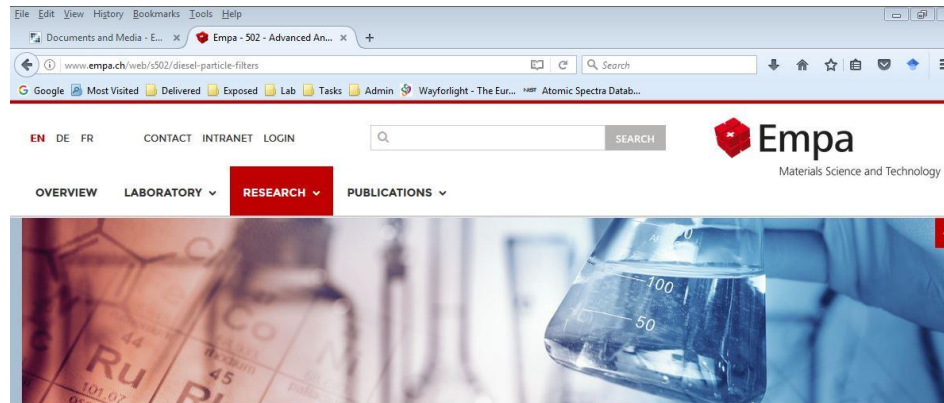


Spectroscopy of Energy Materials



Funding	3 M€
Members	45
Ave. Age	31
Women	48%
Nationalities	13
PhD Theses	12

Visit the Lab Web Pages: www.empa.ch/analytik



Empa > 500 - Mobility, Energy and Environment > 502 - Advanced Analytical Technologies > Research > Focuses & Flag Projects > Instrumental Chemical Analysis > Diesel Particle Filters

- EMPA
- 500 - MOBILITY, ENERGY AND ENVIRONMENT
- 502 - ADVANCED ANALYTICAL TECHNOLOGIES
- OVERVIEW
- LABORATORY
- RESEARCH
- FOCUSES & FLAG PROJECTS
 - Instrumental Chemical Analysis
 - Chloroparaffins
 - DeNOx Technologies
 - Diesel Particle Filters
 - E-Waste (EU H2020)
 - Gasoline Emissions (Gasomep)
 - Laser Microanalysis
 - Emissions & Pollutants Analysis
 - Interfaces & Kinetics Analysis
- PARTNERS
- PUBLICATIONS

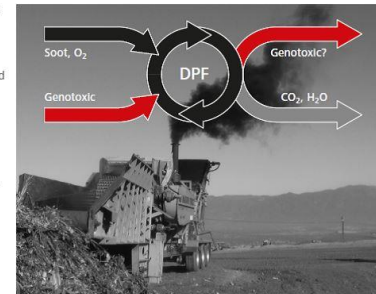
Benefit/risk assessment of diesel particle filters (DPFs)

"No diesel engine without a high quality filter" is our credo since the successful introduction of filter technology in construction machinery used to build the NEAT. NEAT railway tunnels are in operation now and construction machinery which was retrofitted with particle filters is used elsewhere. This first application of filter technology in Switzerland was a tremendous success. DPFs are widely used in tunnel construction sites since 1998, 10 years earlier than for road vehicles.

Our lab and partners established procedures to test particle filters and described them in a norm (SN 277206). Filters that are approved by the BAFU and in conformity with the Swiss clean air act should have a filtration efficiency >97% for 20-300 nm particles both, in new and aged filters (2000 operating hours). Approved filters shall not form toxic secondary pollutants such as genotoxic polycyclic aromatic hydrocarbons (PAHs), their nitrated forms (nitro-PAHs) and polychlorinated dibenzodioxins/furans (PCDD/Fs) nor have toxic metal emissions from catalysts, coatings and filter materials.

Since 1998 we assessed more than 50 diesel particle filters for their efficiency on genotoxic compounds and metals and has identified several filters that indeed induced a secondary formation of critical pollutants. These filters were not approved, but those that qualified for the filter list are safe and efficient. In other words, approved catalytic diesel particle filters are now best available technology at construction sites and many other off- and on-road applications.

In case you want to filter your exhausts, Empa can help you to assess benefits and risks of potential filters in an early stage of product development.



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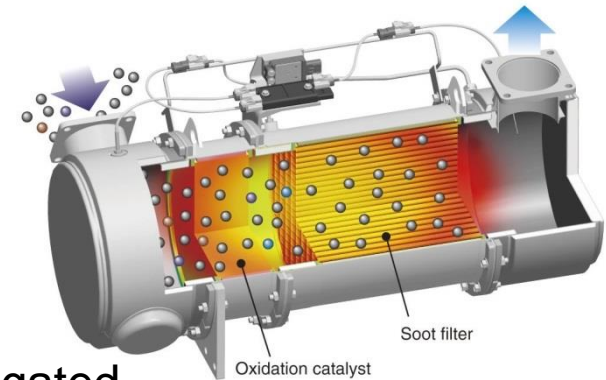


NEWSLETTER
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Theme for this VERT Forum

■ Diesel Gate

- Loss of reputation of Diesel Engines
- High gap between NO_x emissions and homologated



■ Consequences

- EU: conformity factors for real-world emission close to regulation limits

■ Status

- Diesel deNO_x made progress but still behind DPF
- Particle problem addressable with VERT filters
- deNO_x filter still an open challenge



PROGRAM



8:00 Entrance and Reception

9:00 **Welcome**
D. Bleiner, Empa



9:05 **Welcome**
President, VERT

9:10 Introduction of new VERT members
V. Hensel, VERT



KEY ADDRESSES

9:15 **The VW Scandal – VERT involvement, conclusions and actions**
A. Mayer, TTM

9:30 **Emission control technology for nonroad-engines**
F. Jaussi, LIEBHERR



RESEARCH NEWS

9:45 **Research on petrol engine particle emissions**
J. Czerwinski, UASB

10:00 **Chemistry of the NOx trap technology**
N. Heeb, Empa

10:15 **Reduction of BC content in ambient air in London and Switzerland**
C. Hüglin, Empa



10:30 **Coffee Break**

11:00 **Problems and solutions with Ad Blue injection**
P. Dimopoulos, Empa

TECHNOLOGY NEWS

11:15 **New membrane filter concept for marine engines**
T. Lutz, ETH

11:30 **Buses and coaches Euro IV+DPF for high sulfur fuel in Iran**
J. Galvarro, SCANIA

11:45 **Commercial vehicles Euro IV+DPF for high sulfur fuel in Iran**
A. Akbarzadeh, MAYAN-FUSO

12:00 **New SCR-technology**
H. Middelmann, TWINTEC

12:15 **Cleaning plugged DPFS**
C. Hochstein, TUNAP

12:30 **Lunch and Coffee**

NEW VERT RETROFIT PROJECTS AND EMERGING MARKETS

13:30 **DPF-retrofit and DPF first fit for all new diesel vehicles in Iran**
M. Doozandegan, VERT Iran

13:45 **DPF-retrofit in Israel – countrywide retrofit in two LEZ**
V. Hensel, VERT

14:00 **DPF-retrofit projects and policies in Latin America**
A. Mayer, TTM

14:15 **DPF-retrofit projects and policies in China**
L. Wang, Video VERT-DEZA

14:30 **DPF-retrofit for construction in Berlin and other German cities**
V. Hensel, VERT

14:45 **DPF-retrofit for construction in Paris**
D. Bemer

15:00 **Coffee Break**

LEGISLATION AND QUALITY ASPECTS

15:45 **NPTI with high priority and urgency – international VERT-project**
A. Mayer, TTM

16:00 **Software and hardware manipulation – a flourishing market**
V. Hensel, VERT

16:15 **REC-VERT, no longer a legal conflict?**
A. Mayer, TTM

16:30 **BAT emission legislation worldwide**
V. Hensel, VERT

16:45 **VERT Road Map 2017, white spots = new VERT-BAT application fields**
V. Hensel, VERT

17:00 **Closing Remarks**
President, VERT

Project Partners

