

# 14<sup>th</sup> VERT Forum, March 22<sup>nd</sup> 2024

## with NPTI Instrument Exhibition Particulae Omnipraesentes

## VERT Tools to mitigate Toxic Nanoparticles from a Variety of Sources

### Registration

Fee: 400 CHF - "Early Bird" Fee: 300 CHF EXTENDED! by 15.03.2024

VERT Members: free

ONLINE Option NOW available only on request

Bank transfer with code "VERT FORUM 2024" to:

VERT-Verein Zürcher Kantonalbank

IBAN CH6800700110001986432 -

BIC (SWIFT) ZKBKCHZ80A

### Conference venue

"Akademie" EMPA, Überlandstrasse 129  
CH-8600 Dübendorf, Switzerland

### What VERT<sup>®</sup> stands for

VERT, "Verification of Emission Reduction Technologies" is an association dedicated to the promotion of Best Available Technology (BAT) for emission control and ultra fine and nanoparticle emissions reduction via filtration means.

The core objective of VERT is the minimization of health effects caused by combustion engine emissions, especially the elimination of Ultra Fine Particles (UFP).

Members of VERT are international manufacturers of engines, testing devices, DPF and SCR systems, as well as of substrate producers, chassis builders, universities and research centers among others.

VERT stresses and recommends the application of particle number measurement against a pure particle mass metric. Ultra Fine Particles (UFP) cause a major threat to health.

We set the highest quality standards for emission control technology by certifying emission control technologies and publishing the VERT filter list. [VERT-Filter list](#)

VERT supports traffic pollution reduction programs all over the world, especially in megacities, occupational health and indoor.

### 14<sup>th</sup> VERT<sup>®</sup> Forum

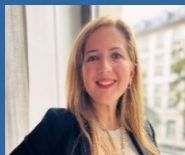
Expertise in emission control now applied to provide solutions to mitigate toxic nanoparticles from a variety of different sources and solve urgent global problems:

- **Mitigation of Global Warming** by elimination of Black Carbon (BC) through filtration and proposing the introducing for CO<sub>2</sub>-credits for BC equivalents → a fast and powerful tool to reduce global warming
- **NPTI-PN as unique solution** for emission control of not only Diesel but also Petrol engines of any application → to eliminate high emitters - "the dirty-tail phenomena"- support legislation and go global with new instrumentation
- **GPF-retrofit within HORIZON Europe AeroSolfid Project** → to support EU for 5 Mio retrofits in LEZ 2025
- **Cleaning breathing air in vehicle cabins**, the highest exposure to carcinogens → filling a high priority occupational health gap
- **Virus protection by cleaning indoor air** (schools and hospitals) from UFP and aggressive bioaerosols like viruses → to reach infection risk reduction of >95%
- **Eliminating nanoparticle emissions from brakes, tyres and wood-firing**



## Key Elements of the upcoming 14<sup>th</sup> VERT Forum – 22<sup>nd</sup> March 2024 (9am - 5 pm)

- GLOBAL WARMING
- NPTI TO CURB THE “DIRTY TAIL” OF VEHICLE FLEETS
- PARTICLES FROM BRAKES AND TYRES
- HORIZON EUROPE AEROSOLFD - GASOLINE VEHICLE RETROFIT
- PARTICLE EMISSION WITH LOW CARBON FUELS FOR ICE
- PARTICLE ELIMINATION INDOORS
- PARTICLES FROM WOOD CHIP COMBUSTION



Dr. Laretta Rubino  
VERT CEO



Lars Christian Larsen,  
VERT President

### “Particulae Omnipresentes” – VERT Tools to Mitigate Toxic Nanoparticles from a Variety of Sources

The VERT Association, "Verification of Emission Reduction Technologies," has been actively engaged at the international level since 1993, dedicated to raising awareness about verified emissions reduction technologies. Our primary focus is on identifying the best available technology (BAT) for applications involving combustion-generated nanoparticles and NO<sub>x</sub> emissions reduction. The increasing health concerns associated with nanoparticle emissions extend beyond diesel engines to all types of combustion, including gasoline, low carbon fuel, and hydrogen combustion, necessitating serious monitoring and control efforts.

In 1996, VERT introduced the particle number (PN) criterion for health reasons, a standard that has become the foundation of European and Chinese legislation. Notably, VERT has pioneered the implementation of a New Periodic Testing Inspection (NPTI) system, ensuring that products and technologies are not only functional and efficient during test and validation but also maintain performance during normal operation over time, applied to both Diesel and Petrol engines.

By providing cost-efficient retrofit solutions with Particle Filters for Diesel engines, VERT has significantly contributed to reducing nanoparticle emissions, Black Carbon (BC), and CO<sub>2</sub> emissions, yielding positive effects on global warming. Presently, VERT is embracing the new challenge of Gasoline vehicle retrofit with Gasoline Particle Filters (GPF), conducting secondary emissions investigations and implementing NPTI for gasoline vehicles within the Horizon Europe AeroSolfd project.

VERT remains committed to its mission, utilizing innovative tools for nanoparticle abatement, not only at the tailpipe but also for non-tailpipe generated nanoparticles from sources such as tires and brakes. This approach enhances in-cabin emissions and overall air quality in closed and semi-closed environments.

The VERT FORUM serves as the ideal platform for discussing health, air quality, global warming, and all emissions-related issues from diverse sources, including indoor air quality, in-cabin emissions, and tyre and brake emissions. Adopting a holistic approach to nanoparticle abatement, VERT utilizes the best available technologies.

The VERT FORUM seeks to identify optimal solutions to environmental challenges by fostering international collaborations, developing new strategies at both national and international levels, supporting emissions legislation, and providing scientific evidence for policymakers.

Join the VERT FORUM 2024 in Dübendorf and actively contribute to making a difference in protecting Human Health and the Environment!

# Agenda | 14<sup>th</sup> VERT Forum 2024



Materials Science and Technology



08:30 door opening. registration

09:00 – 09:20

## WELCOME

- Opening: *N. Heeb, EMPA*
- Welcome: *L.C. Larsen, VERT*
- Chair: *L. Rubino, VERT, D. Engelmann, BFH*

09.20 – 09.50

## Keynote Speech

- The importance of particle size for health impacts  
*Kappeler R., SwisSTPH*

09.50 – 10:30

## Global Warming

- A central arctic extreme aerosol event  
*Dada L. PSI*
- DPF for health and climate  
*Mayer A., VERT*

## Coffee Break

11.00 - 11.40

## NPTI to Curb the Dirty Tail of Vehicle Fleets

- Technical reasons for dirty tail of vehicle fleets  
*Rubino L., VERT*
- NPTI Instrument market penetration  
*Wilce R., VERT*

11.40 am- 12.20

## Particles from Brakes and Tyres

- Legislation Euro 7 to mitigate brake and tyre wear  
*Melas A., JRC*
- Filtration of brake wear particles  
*Lehmann M., MANN+HUMMEL*

## Lunch Break

01.00 - 02.00

## HORIZON Europe AeroSolfd – Gasoline Vehicle Retrofit

- A 3-years EU HORIZON AeroSolfd project  
*Larsen L., VERT*
- Challenges retrofitting petrol cars with GPF  
*Borgmeier H., HJS*
- In depth investigation of four DI and MPI cars  
*Engelmann D., AFHB*

2.00 – 2.40

## Particle Emission with Low Carbon Fuels for Int. Combustion Engines

- Particle emission of the hydrogen engine  
*Tartakovsky J., TECHNION- prerecorded*
- Low carbon fuels need particle filters  
*Philipp T., LIEBHERR*

## Coffee Break

03.00 – 03.40

## Particle Elimination Indoors

- Nanofiltration and WHO recommendations  
*Czerwinski J., VERT*
- Pathogene particle protection at the hospital bed  
*Sousa de Almeida M./AMI, Burtscher H./FHNW*

03.40 - 4.20

## Particles from Wood Chip Combustion

- Blue Angel with PN- or EC- limits for filters  
*Friedrich A. / DUH*
- Particles and volatiles with wood combustion  
*Keller A. /FHNW*

04.20 – 05.00

## VERT Emission Control Highlights

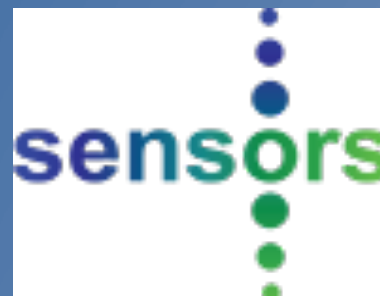
- Emission control in Chile and Columbia  
*Osses M., UNI SANTIAGO*
- SCR retrofit and low carbon fuels  
*Neumann P., HJS*

## Closing Remarks

- L.C. Larsen, VERT*



# Exhibition of NPTI Instruments



## VERT Forum 2024 on March 22<sup>nd</sup>

9 am until 5 pm

### Information for Attendees

- The VERT Forum 2024 is an “in-person event”.
- Please take advantage of this opportunity and be part of a lively and active event that can make a difference for the environment.
- All VERT FORUM speakers will provide their presentation for distribution to the participants.
- Due to High Request – ONLINE Option is Now available!

### Registration

Please register under the following Email address:

[lauretta.rubino@vert-dpf.eu](mailto:lauretta.rubino@vert-dpf.eu)

ONLINE OPTION NOW AVAILABLE on REQUEST via Email

To [lauretta.rubino@vert-dpf.eu](mailto:lauretta.rubino@vert-dpf.eu)

Conference Fee= 400 CHF --- free only for VERT members

“Early Bird” Fee= 300 CHF EXTENDED by 15.03.2024

Payment via Bank Transfer to:

VERT-Verein , Zürcher Kantonalbank I

BAN CH6800700110001986432 –

BIC (SWIFT) ZKBKCHZZ80A

**The VERT Forum is “in-person” only.**

The conference will start at 9 am (opening at 8:30 m) and last until 5 pm CEST

In case of any registration issues please contact:

Email [lauretta.rubino@vert-dpf.eu](mailto:lauretta.rubino@vert-dpf.eu)

Presentations will be available a couple of days after the event on the VERT website for the participants.

For questions and recommendations in advance, please contact:

For presentations: **Dr. A. Mayer** [ttn.a.mayer@bluewin.ch](mailto:ttn.a.mayer@bluewin.ch)

SPONSORS Welcome!

For any organizational topic:

**Dr. L. Rubino, VERT CEO** [lauretta.rubino@vert-dpf.eu](mailto:lauretta.rubino@vert-dpf.eu)

**A list of hotels and All Info on EMPA & VERT FORUM location can be found at: <https://www.empa.ch/>**