הטכניון מכון טכנולוגי לישראל TECHNION Israel Institute of Technology

Faculty of Mechanical Engineering הפקולטה להנדסת מכונות

MECHANICAL ENGINEERING SEMINAR

Monday, September 11, 2023 at 14:30, D. Dan and Betty Kahn Building, Room 217

Minimizing indoor infection risks with automotive nanofiltration and with a laminar vertical flow

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Hosted by: Prof. Leonid Tartakovsky

The knowledge about nanoaerosols, their potential health effects, their measurement, limitation and administrative-legal treatment has been developed in the last 3 decades in connection with the exhaust gas cleaning of the combustion engines. Nanofiltration, which has thus become known, almost completely eliminates nanoparticles with filters of high durability, high specific filtration areas, and reasonable costs.

On the occasion of the COVID pandemic, NanoCleanAir experimentally proved that the viruses in an automotive filter substrate are separated as well as the combustion particles and are also deactivated.

To minimize cross exchange of infectious aerosol, new attention must be paid to flow management in ventilated spaces. Digitized flow analysis has also received significant inspiration from engine technology in the past.

This presentation provides information on some basic investigations and gives valuable advice based on the experimental and numerical results of a retrofitted classroom.

Seminars Coordinator: Assoc. Prof. Matthew Suss.

Prof. Dr. Jan Czerwinski holds Ph.D. degree from TU Vienna on combustion in gasoline engines. He was involved in industrial activities on research and development of diesel injection and diesel combustion with Vöst Alpine Friedmann, and on development of turbocharging technologies with BBC/ABB. From 1989 to 2019 Jan Czerwinski was a Professor of Thermodynamics, Internal Combustion Engines and Exhaust Technology, Head of the Exhaust Testing Unit in the Bern University of Applied Sciences. He is a founding member of VERT association, as well as of NPC association (Nanoparticle Conference ETHZ since 1997). Prof. Czerwinski is honorary member of Polish Scientific Society of Combustion Engines since 2007, European Science Society of Powertrain and Transport - since 2008. In 2009 he was elected SAE Fellow. Prof. Czerwinski served as Swiss Delegate to the International Energy Agency Implementing Agreement on Advanced Motor Fuels in 2004 – 2015 and is a founding member of NanoCleanAir association. His research interests are focused on engine and emission technology with focus on nanoparticle and unregulated pollutant components. Prof. Czerwinski contributed to the global introduction of Diesel Particle Filter (DPF) technology and the DPF quality assessment system. He is an author of more than 260 scientific publications.

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