



CLEAN AIR THROUGH INNOVATIVE FILTERING MEDIA

Clean air is essential to health. Whether in the city or on a workplace in closed rooms – good air quality offers a high standard of living and personal safety everywhere. Improvement of air quality and a guarantee of air without contamination require reliable control and monitoring of gas and particle emissions.

Air pollution impedes our everyday life; more efficient purification in almost every part of life is needed. Industrial production processes causing hazardous gas or particle emissions require emission monitoring; such situations profit from adapted encapsulation or advanced filter systems to guarantee occupational safety and health for employees and expert users. Airborne particles as well as noxious gases, such as carbon dioxide, nitrogen oxides (NO_x), and a number of volatile organic compounds (VOCs), such as formaldehyde or toluene are focus topics for environmental protection and occupational health. For the development of customized gas and particle abatement an expert knowledge of composition and characteristics concerning the emerging hazards is crucial. Which hazardous substances are present, and in which state – as gas, particles or both – do they occur in the exhaust stream or the ambient air? What are the concentration levels, and what are the maximal allowable concentration levels? In which respect do temperature, pressure,

and air humidity matter? Answering these questions results in the design of individual gas and particle filtration modules. Fraunhofer IWS not only offers analysis of airborne particle size distributions for process exhausts and workplaces, but also gas phase analysis using infrared spectroscopy. The researchers record the relevant metrological variables with a measuring setup tailored to the gas stream to be analyzed. Based on these data, they recommend suitable functional materials (adsorbents, catalysts, membranes) for the abatement system. The development of new measuring equipment and test methods to characterize the gas phase and functional filter materials is another key task. Based on studies, recommendations for individual gas and particle filtration modules for system implementation are developed.

1 *Innovative filtering media can filter out hazardous gases for cabin air.*

Highly sensitive measuring devices for particle and gas analysis enable the detection of minute constituents in process exhaust gas streams.



CONTACT

Prof. Dr. Stefan Kaskel

Gas and Particle Filtration

☎ +49 351 83391-3331

✉ stefan.kaskel@iws.fraunhofer.de

