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Experiments in the EMRP project KEY-VOCs: Adsorption/desorption effects of VOCs in different tubing materials and preparation and analysis of a zero gas

Jennifer Englert, Anja Claude, Dagmar Kubistin, Erasmus Tensing, Katja Michl, and Christian Plass-Duelmer
DWD, Hohenpeissenberg, Germany (jennifer.englert@dwd.de)

Atmospheric chemistry and composition are influenced by volatile organic compounds (VOCs) emitted from natural and anthropogenic sources. Due to their toxicity and their crucial role in ozone and aerosol formation VOCs impact air quality and climate change and high quality observations are demanded. The European Metrology Research Programme (EMRP) project KEY-VOCs has targeted the improvement of VOC measurement capabilities with the focus on VOCs relevant for indoor air as well as for air quality and climate monitoring programmes. One major uncertainty is the influence of surface effects of the measurement devices. By developing a test system the adsorption/desorption effects of certain VOCs can be systematically examined. Different tubing materials e.g. stainless steel and PFA were analysed with the oxygenated VOC methanol and results of these experiments will be presented.
In air quality monitoring very low levels of VOCs have to be measured. Purified air or nitrogen is widely used as a zero gas to characterize measurement systems and procedures as well as for instrument calibration. A high quality zero gas is an important contributor to the quality of the measurements and generally achieved by using state-of-the-art purification technologies. The efficiency of several air purifiers was assessed and the results have been analysed.