nanoSeminar Series 2022

Institute for Materials Science

Prof. Andreas Schütze

Lab for Measurement Technology, Dept. Systems Engineering, Saarland University, Saarbrücken

“Measurement of complex gas mixtures with inexpensive metal oxide gas sensors: dynamic operation, calibration, signal evaluation and validation”

Thursday, April 21st 2022
13:00 – 14:00

Normal: Seminar Room 115, Hallwachsstr. 3 (HAL)
Pandemic version: https://tinyurl.com/nanoSeminar-GA

Metal oxide semiconductor (MOS) gas sensors offer high sensitivity and long lifetime at low cost. However, due to the broad response spectrum, their selectivity is limited which is often addressed with multisensory arrays. The talk will present an alternative approach based on dynamic operation yield so-called virtual multisensors. A simple model for temperature cycled operation (TCO) is presented which allows development of highly sensitive, selective and long-term stable sensor systems based on pattern analysis using machine learning. A challenge for complex mixtures is the required comprehensive calibration which is addressed with randomized gas mixtures. The results are discussed for indoor air quality (IAQ) monitoring in comparison to analytical reference instruments.

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Andreas Schütze received his diploma in physics from RWTH Aachen in 1990 and his doctorate in Applied Physics from Justus-Liebig-Universität in Gießen in 1994 with a thesis on microsensors and sensor systems for the detection of reducing and oxidizing gases. From 1994 until 1998 he worked for VDI/VDE-IT, Teltow, Germany, mainly in the fields of microsystems technology. From 1998 until 2000 he was professor for Sensors and Microsystem Technology at the University of Applied Sciences in Krefeld, Germany. Since April 2000 he is professor for Measurement Technology in the Department Systems Engineering at Saarland University, Saarbrücken, Germany and head of the Laboratory for Measurement Technology (LMT). His research interests include smart gas sensor systems as well as data engineering methods for industrial applications.

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