EUROSENSORS XXX, Budapest (HU), Sep 4-7, 2016

Special session SENSIndoor

Wednesday, September 7, 14:00 – 16:00

Title: Nanotechnology-based multi-sensor systems for Indoor Air Quality –
Real time monitoring for improved health, comfort and energy efficiency

Within the EU project SENSIndoor novel sensor systems for extremely sensitive, highly selective and long-term stable operation were developed for advanced control of Indoor Air Quality. The project made use of both physical and chemical nanotechnologies for sensing layers and pre-concentrators, MEMS technology for component realization and system integration as well as advanced signal processing and networking to integrate sensors into building control systems.

SENSIndoor achieved its overall aim by realizing the following specific objectives:

- Identification of priority application scenarios for demand controlled ventilation based on comprehensive indoor air quality (IAQ) assessment.
- Metal Oxide Semiconductor (MOS) and Silicon-Carbide based Field Effect Transistor (SiC-FET) sensors, containing novel nanocrystalline gas sensitive materials, used as complementary sensor technologies with unrivalled sensitivity for hazardous indoor air pollutants, especially volatile organic compounds (VOCs).
- Nanotechnology based selective pre-concentrators to boost sensitivity and selectivity by at least two orders of magnitude.
- Optimized dynamic operation of gas sensors and pre-concentrators combined with advanced data evaluation to further enhance selectivity and improve long-term stability.
- Integration of sensors and pre-concentrators in complex multi-sensor systems and demonstration of their performance in lab and field tests.

In the final stages of the project integrated multi-sensor systems will be tested in a field test for health and energy optimized IAQ control.

Time	Title	Speaker
14:00	Introduction Application requirements and project goals: selective detection of hazardous VOCs at ppb level for IAQ	Chairman Andreas Schütze, Saarland University
14:05	Pulsed Laser Deposition for improved metal-oxide gas sensing layers	**Joni Huotari**, University of Oulu Ville Kekkonen, Picodeon Ltd Oy
14:25	Novel low-cost selective pre-concentrators based on metal organic frameworks	**Isabel Wilhelm**, Max Rieger, Fraunhofer ICT Christine Alépée, SGX Sensortech SA
14:45	SiC-FET sensors for selective and quantitative detection of VOCs down to ppb level	**Donatella Puglisi**, Linköping University Mike Andersson, SenSiC AB
15:05	Miniaturized integrated gas sensor systems combining metal oxide gas sensors and pre-concentrators	**Martin Leidinger**, Saarland University Christine Alépée, SGX Sensortech SA
15:25	Dynamic multi-sensor operation and read-out for highly selective gas sensor systems	**Manuel Bastuck**, Saarland University Wolfhard Reimringer, 3S GmbH
15:45	System calibration and evaluation under defined lab and real field conditions	**Tilman Sauerwald**, Saarland University Olivier Martimort, NanoSense SARL

Each presentation incl. 5 min discussion