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COST Action TD1105 EuNetAir

**European Network on New Sensing Technologies
for Air-Pollution Control and Environmental Sustainability**

2nd training school

March 31 to April 2, 2014

- Agenda -

**Saarland University
Lab for Measurement Technology**

Building A5.1
66123 Saarbruecken
Germany

Local organizer:

Prof. Andreas Schütze
Lab for Measurement Technology (LMT)
Saarland University, Building A5.1
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Focus topic:

Optimized operation of solid state gas sensors for environmental technologies and air quality monitoring

Day 1: Monday, 31 March 2014: Sensor fundamentals and state of the art

Session 1: Welcome and Introduction to the Lab for Measurement Technology

- 9:30 – 10:00** **Welcome, introduction to LMT and to the training school program**
Andreas Schütze, Saarland University, Lab for Measurement Technology
- 10:00 – 10:45** **Novel gas mixing system and its validation for low VOC concentrations**
Martin Leidinger, Saarland University, Lab for Measurement Technology
- 10:45 – 11:15 *Coffee Break*

Session 2: Introduction of the Participants

- 11:15 – 12:15** **Introduction of training school participants:**
Each person should briefly introduce with 2 slides in 2 minutes
- 12:15 – 14:00 *Lunch Break combined with **Poster session***
additionally: lab visit (group 1)

Session 3: Sensor fundamentals

- 14:00 – 14:45** **Metal oxide gas sensors**
Tilman Sauerwald, Saarland University, Lab for Measurement Technology
- 14:45 – 15:45** **Gas-sensitive field effect devices**
Mike Andersson, Linköping University, Applied Sensor Science Group, Sweden
- 15:45 – 16:15 *Coffee Break*

Session 4: State-of-the-art

- 16.15 – 17:45** **JRC Ispra gas mixing system and sensor validation tests**
Michel Gerboles, JRC Ispra, Italy
- 17.45 – 18:30** **Performance examples of dynamically operated gas sensors:**
Adicos: Industrial Early Fire Detection Technology
Selective VOC detection at ppb levels against background
Tilman Sauerwald, Saarland University, Lab for Measurement Technology
- 18:45 *End of day 1*



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Day 2: Tuesday, 1 April 2014: Dynamic sensor operation

Session 5: Dynamic operation of MOS sensors

- 9:00 – 10:30** **Temperature cycled operation and systematic optimization**
Steve Semancik, NIST, Gaithersburg, MD, USA
- 10:30 – 11:00 *Coffee Break*
- 11:00 – 12:30** **Electrical Impedance Spectroscopy for MOS sensors**
Marco Schüler, Saarland University, Lab for Measurement Technology
- 12:30 – 14:00 *Lunch Break combined with Poster session*
additionally: lab visit (group 2)

Session 6: Novel sensor technologies and operating approaches

- 14:00 – 14:45** **Microstructured metal oxide gas sensors**
Hervé Delprat, SGX Sensortech S.A., Corcelles, Switzerland
- 14:45 – 15:30** **Ionization based gas sensing**
Gerhard Müller, EADS Deutschland GmbH, Ottobrunn, Germany
- 15:30 – 16:00 *Coffee Break*
- 16:00 – 17:30** **Optical excitation of gas sensors**
Thorsten Wagner, University of Paderborn, research group morPhOx Germany
- 17:30 – 18:15** **Gate Bias Cycling for gas-sensitive field effect transistors**
Christian Bur, Saarland University, Lab for Measurement Technology, and Linköping University, Applied Sensor Science Group, Sweden
- 18:15 *End of day 2*
- 19:30 *Social dinner organized by EuNetAir*



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Day 3: Wednesday, 2 Apr 2014: Data processing and practical demonstrations

Session 7: Data acquisition and signal processing, part 1

9:00 – 10:30

Fundamentals of signal processing

Andreas Schütze, Saarland University, Lab for Measurement Technology

10:30 – 11:00

Coffee Break

11:00 – 13:00

Demonstration of gas sensors and operating platforms

3S – Sensors, Signal Processing, Systems GmbH: OdorChecker, SniffChecker

SGX Sensortech SA

SenSiC AB

Micronas GmbH: integrated GasFET and test kits

NIST (*tbc*)

Odometric SA

USAAR-LMT: Combined EIS/TCO and GBCO/TCO platforms

13:00 – 14:30

Lunch Break combined with Poster session

additionally: lab visit (group 3, if required)

Session 8: Data acquisition and signal processing, part 2

14:30 – 16:30

**Practical examples for signal processing using the LMT toolbox:
effects of normalization and feature extraction on PCA/LDA performance**

Christian Bur, Thomas Fricke, Saarland University, Lab for Measurement Technology

16:30 – 17:00

Coffee Break

17:00 – 17:45

Outlook: advanced gas sensor systems

Michele Penza, Chair COST action EuNetAir, ENEA, Brindisi, Italy

17:45

End of the training school



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Impressions from the Campus of Saarland University

