



**COST**  
EUROPEAN COOPERATION  
IN SCIENCE AND TECHNOLOGY

**COST**  
EUROPEAN COOPERATION IN SCIENCE AND TECHNOLOGY



COST Office  
Avenue Louise 149  
1050 Brussels, Belgium  
t: +32 (0)2 533 3800  
f: +32 (0)2 533 3890  
office@cost.eu

[www.cost.eu](http://www.cost.eu)

# COST Action TD1105 EuNetAir

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

## 2<sup>nd</sup> 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  
66123 Saarbruecken, Germany  
schuetze@LMT.uni-saarland.de  
+49 681 302 4663



COST Action TD1105 – EuNetAir  
2<sup>nd</sup> training school, Saarbruecken, March 31 – April 2, 2014



## 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, USAAR-LMT
- 10:00 – 10:45**                      **Novel gas mixing system and its validation for low VOC concentrations**  
Martin Leidinger, USAAR-LMT
- 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 – 15:00**                      **Microstructured metal oxide gas sensors**  
NN, SGX Sensortech S.A. (*tbc*)
- 15:00 – 16:00**                      **Gas-sensitive field effect devices**  
Mike Andersson, U Linköping, Applied Sensor Science Group
- 16:00 – 16:30                      *Coffee Break*

### Session 4: State-of-the-art

---

- 16.30 – 18:00**                      **JRC Ispra gas mixing system and sensor validation tests**  
Michel Gerboles, JRC Ispra, Italy
- 18.00 – 18:45**                      **Performance examples of dynamically operated gas sensors:**  
**Adicos: Industrial Early Fire Detection Technology**  
**Selective VOC detection at ppb levels against background**  
Tilman Sauerwald, USAAR-LMT
- 18:45                                      *End of day 1*



COST Action TD1105 – EuNetAir  
2<sup>nd</sup> training school, Saarbruecken, March 31 – April 2, 2014



## 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, USA (*tbc*)

10:30 – 11:00      *Coffee Break*

**11:00 – 12:30**      **Electrical Impedance Spectroscopy for MOS sensors**

Marco Schüler, USAAR-LMT

12:30 – 14:00      *Lunch Break combined with Poster session*

additionally: lab visit (group 2)

### Session 6: Novel sensor operating approaches

---

**14:00 – 15:30**      **Ionization based gas sensing**

N.N., EADS, Germany (*tbc*)

15:30 – 16:00      *Coffee Break*

**16:00 – 17:30**      **Optical excitation of gas sensors**

Thorsten Wagner, University of Paderborn, Germany

**17:30 – 18:15**      **Gate Bias Cycling for gas-sensitive field effect transistors**

Christian Bur, USAAR-LMT and U Linköping, Applied Sensor Science Group

18:15                *End of day 2*

19:30                *Social dinner organized by EuNetAir*

## 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, USAAR-LMT

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 (*tbc*)

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*

### 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, USAAR-LMT

16:30 – 17:00      *Coffee Break*

**17:00 – 17:45**      **Outlook: advanced gas sensor systems**

Michele Penza, Chair COST network EuNetAir, ENEA, Italy (*tbc*)

17:45                *End of the training school*





COST Action TD1105 – EuNetAir  
2<sup>nd</sup> training school, Saarbruecken, March 31 – April 2, 2014



## *Impressions from the Campus of Saarland University*

