

OpenEducation Modules for MEMS and MicroSensors in MECA European Project

Politecnico di Torino, November 30, 2018

Maxwell Room, Corso Castelfidardo 42, Department of Electronics & Telecommunications



9:00 - 9:30 Workshop Introduction

- **Danilo Demarchi**, Politecnico di Torino, Italy
Introduction to MECA project, the Microelectronics Cloud Alliance
- **Paolo Dondo**, MESAP, Torino, Italy
Link of MEMS and MicroSensors to Piedmont Industry



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9:30 - 10:15 Implementing an e-Learning based MEMS and Sensors teaching

Olivér Krammer, BME-ETT, Budapest
Implementing e-Learning based MEMS and Sensors teaching in BME-ETT



10:15 - 10:30 BREAK

10:30 - 11:30 Feasibility Study of Novel Gas Sensor for Air Quality Monitoring

- **Vladimir Stavrov**, AMG Technology, Botevgrad, Bulgaria
Industry-Academia cooperation for modeling and design of a MEMS Gas Sensor - Device Specification
- **Chiara Bielli**, **Gian Luca Barbruni**, **Vincenzo Caroprese**, **Nevena Musikic**, Politecnico di Torino, Italy
Implementation of the Comsol model for AMG Technologies Gas Sensor



11:30 - 12:00 Handling Techniques of Critical Silicon Wafers

- **Paolo Astengo**, ASTEL Srl, Italy
Design of an optical inspection station for semiconductor wafers



12:00 - 12:30 The MECA Cloud system

- **Massimo Ruo Roch**, Politecnico di Torino, Italy
The technical structure of MECA Cloud System, based on OpenSource applications

With the support of MESAP Cluster
Smart Products and Manufacturing



Olivér Krammer, BME-ETT, Budapest

Implementing e-Learning based MEMS and Sensors teaching in BME-ETT

BME-ETT has realised in the beginning of 21st century that teaching methods need to be rethought to get the best out of new pedagogical methods of deployment. When introducing technology in educational settings, employing rich multimedia content that provides a more interactive and engaging learning experience can absolutely be beneficial. Two e-learning courses of BME-ETT (MEMSEDU and SENSEDU) were realised by focusing on interactivity and on virtual presentation of technologies and equipment related to MEMS and Sensor technologies. These e-learning based courses were implemented into our curricula both at BSc and MSc level, and we experienced that better learning outcomes can be reached compared to traditional didactic approaches.

Vlado Vladimir, AMG Technologies, Sofia, Bulgaria

Chiara Belli, Gianluca Barbruni, Vincenzo Caroprese, Nevena Musikic, Politecnico di Torino Feasibility Study of Novel Gas Sensor for Air Quality Monitoring

Precise and reliable air quality monitoring is a problem of top importance recently. Since multiple factors have impact on measurement of every particular parameter of the air, it is essential to collect real-time in-situ data that have very high time and spacial coherence. Presented study aims to analyses and experimentally evaluate a novel self-sensing MEMS gas sensor, capable to overcome most of the cantilever based sensors. It comprises an array of flexures with identical active surface area, but different resonance frequencies, as well as an embedded monomorph actuator. Presented CAD-model study proofs that the actuator can be used for compensation of frequency shifts of selected flexure due to drifts, surface adsorbtion and other factors.

Paolo Astengo, ASTEL Srl, Italy

Handling Techniques of Critical Silicon Wafers

In this talk are explained the main criticisms in handling semiconductor devices manufacturing. The design of an optical inspection station of semiconductor wafers is presented.

Massimo Ruo Roch, Politecnico di Torino, Italy

The MECA Cloud system

The MECA Cloud system, the Cloud-based European infrastructure for improving the education in microelectronics. In MECA open educational resources, educational and professional software, remote access to virtual laboratories are shared, all based on modules and learning facilities remotely available.