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

COST Action TD1105

1ST TRAINING SCHOOL

Universitat de Barcelona, Spain, 13 - 15 June 2013

organized by UB, MIND-IN2UB - Dept. of Electronics and CSIC-IDAEA

Action Start date: 01/07/2012 - Action End date: 30/06/2016

Year 1: 2012 - 2013 (*Ongoing Action*)

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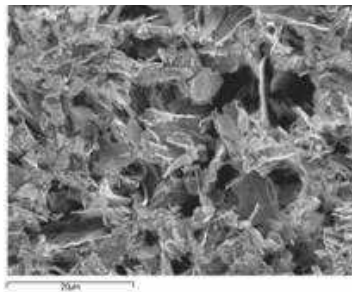
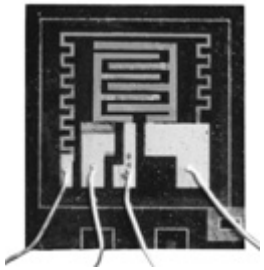
Expertise of the Trainee related to the Action

- Functionalization and decoration of carbon nanotubes
- Design of devices by screen-printed technique
- Characterization by electronic microscopy and spectroscopy analysis
- Generation of metal nanoparticles by sputtering

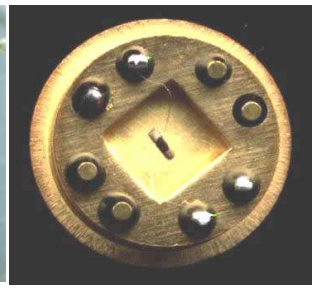
Current research activities of the Trainee (1/2)

- Design, fabrication and characterization of chemical microsystems



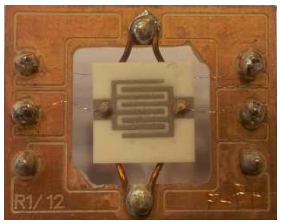


- Research in advanced signal processing techniques for multisensor systems
- Development of applications with multisensor systems and electronic nose instruments

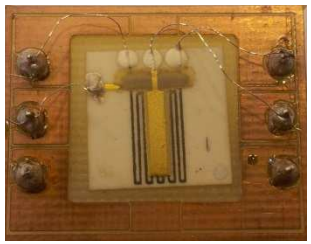


Current research activities of the Trainee (1/2)

- **Make a selective gas sensor of benzene with hybrid carbon nanotube:**



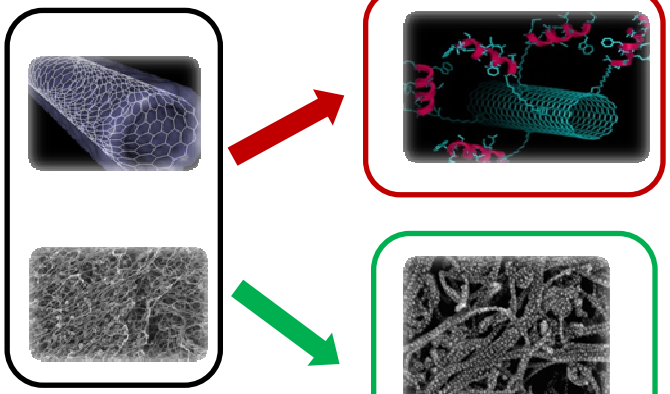
Resistive sensor



Resonant sensor

- **Modify carbon nanotubes in order to have “specific” interaction:**

Pristine carbon nanotubes

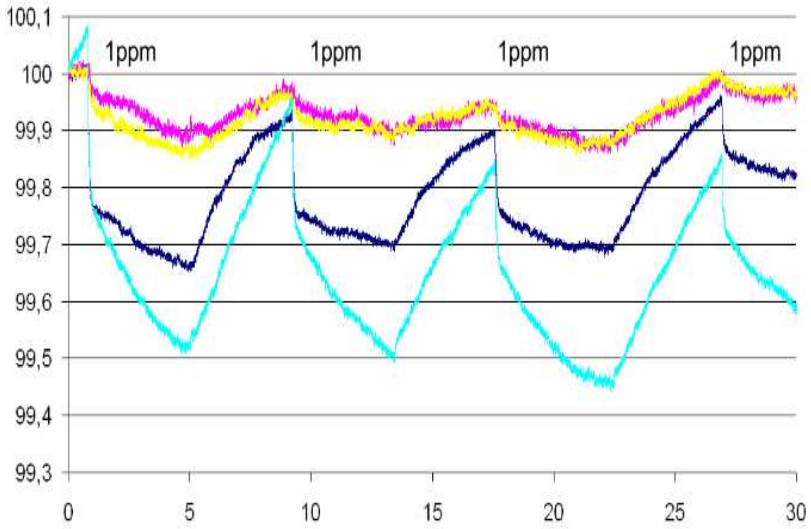


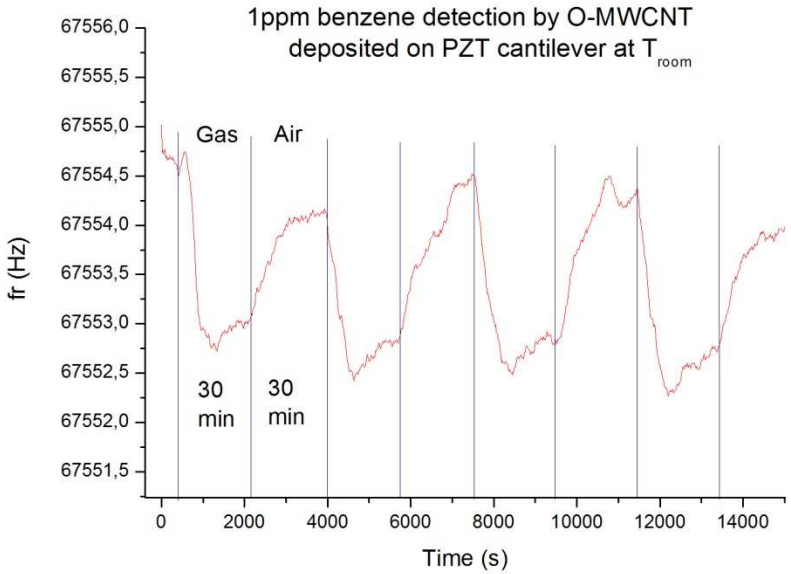
Functionalization

Decoration

Achieved **RESULTS** and future activities

- **Activities directions as RESULTS:**





SENSOR TYPE
CNT-O (Pd)
CNT-O (none)
CNT-O (Rh)
CNT-O (Pt)

- Good sensitivity for each device
- Possibility to study different functionalization (supramolecule)

CONCLUSIONS

•Make a gas sensor with good sensitivity is possible with carbon nanotubes as active layer

•Some progresses have to be done in the selectivity and the humidity effect. One way to improve this will be to use the CNT as a support to fix supramolecules which can have specific interaction with benzene