



COST

European Network on New Sensing Technologies for Air Pollution Control and Environmental Sustainability - *EuNetAir* COST Action TD1105

WGs and MC Meeting at Rome, 4-6 December 2012

Sub-WG 1.3: Emerging sensor materials for air-pollution detection
molecular materials, organic/inorganic, hybrid, nanocomposites, polymers ...



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Scientific context and objectives in the Action

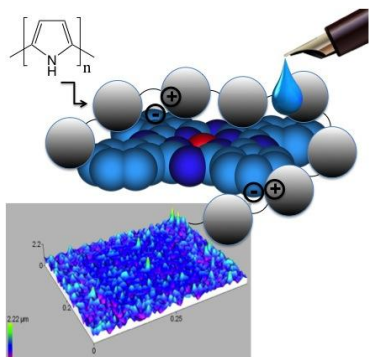
- **Background / Problem statement:**
 - Interest: The tuning of properties
 - Morphology
 - Roughness and specific surface
 - Hydrophilicity and sensitivity to humidity
 - Processability
 - Electrical properties
 - to combine materials for improving sensing properties (e.g. compatibility with humidity)
- **Brief reminder of MoU objectives:**
 - selectivity
 - low-cost: solution processing (e.g. printing techniques ...)

Current research activities of the Partner (1/2)

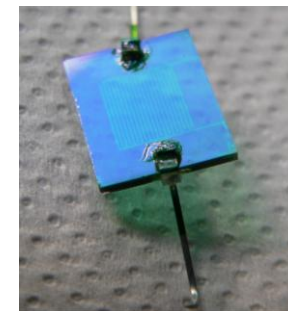
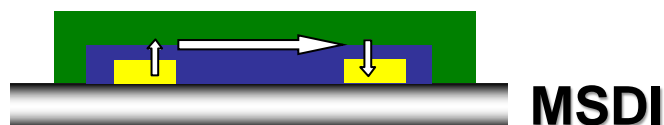
- Current research topics at the partner organization / Problem statement:

- New materials

J. Mater. Chem. 2012



- New transducers



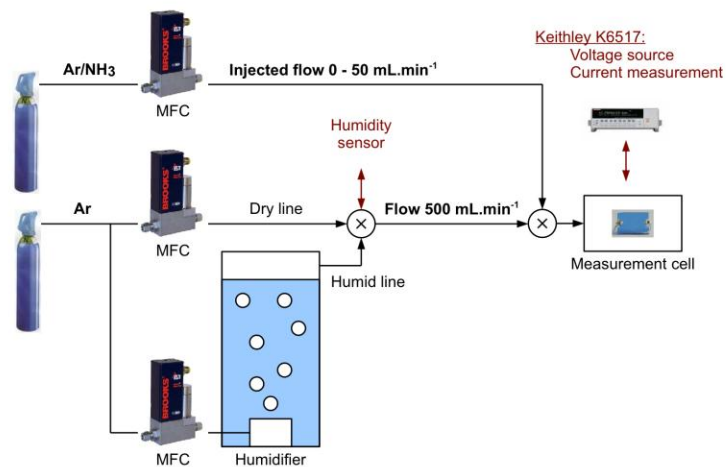
- Brief list of ongoing research topics of the Partner:

- Humidity-insensitive ammonia sensors
- Molecular Semiconductor- Doped Insulator (MSDI) heterojunctions as new conductimetric transducers
- New polymer/macrocycle hybrid materials (e.g. PPy/sulfonatedPc)
- Bioelectrochemical sensors for detection of odorants with OBP

Research Facilities available for the Partner (2/2)

- Research Facilities:
- Synthesis
- Solution processing and vacuum chamber
- Electrical measurements
- Workbenches: O₃ (generator/analyser, ppb range), NH₃ (ppm range), BTX (ppm range), humidity

chemistry
electronics
biology





Suggested **Priorities** for future research

- **Research directions as PRIORITIES:**
- Solution processing
- Humidity-insensitive sensors
- Room temperature operating sensors
- Innovation: new hybrid materials