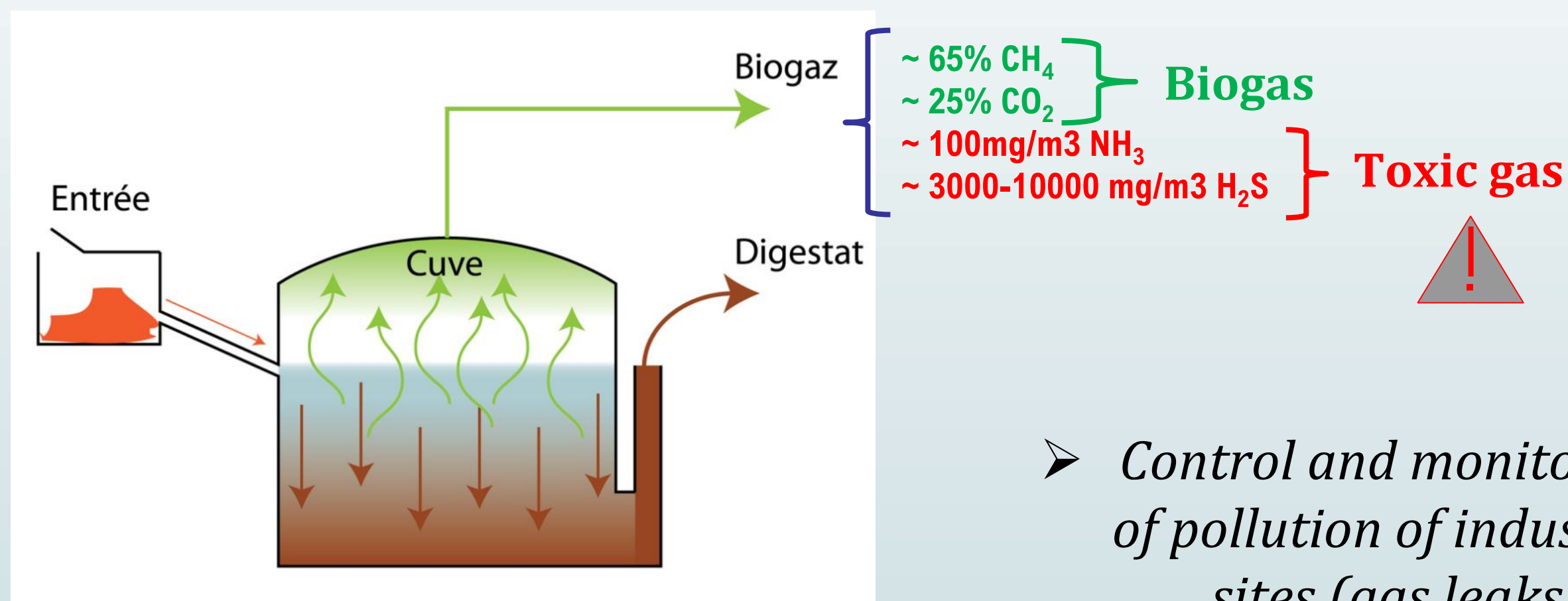


# Elaboration of new polymer/nanocarbon hybrid materials : application as sensing materials for the detection of $H_2S$ and $NH_3$

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## Introduction



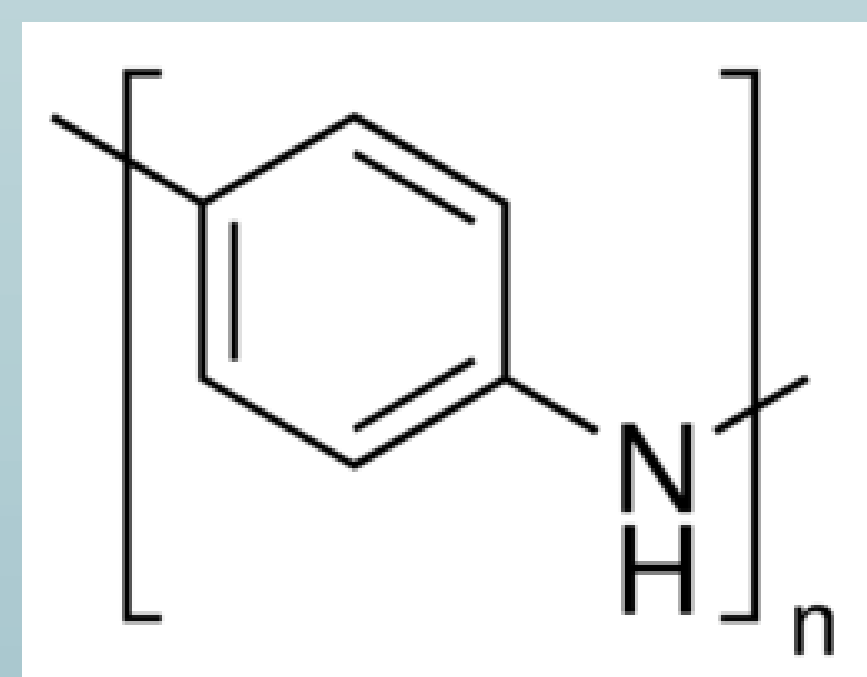
$H_2S$ : highly toxic and flammable gas (toxicity threshold  $\sim 10$ -20ppm 6-7h)

$NH_3$ : Irritant and harmful gas (toxicity threshold  $\sim 50$ ppm 7h)

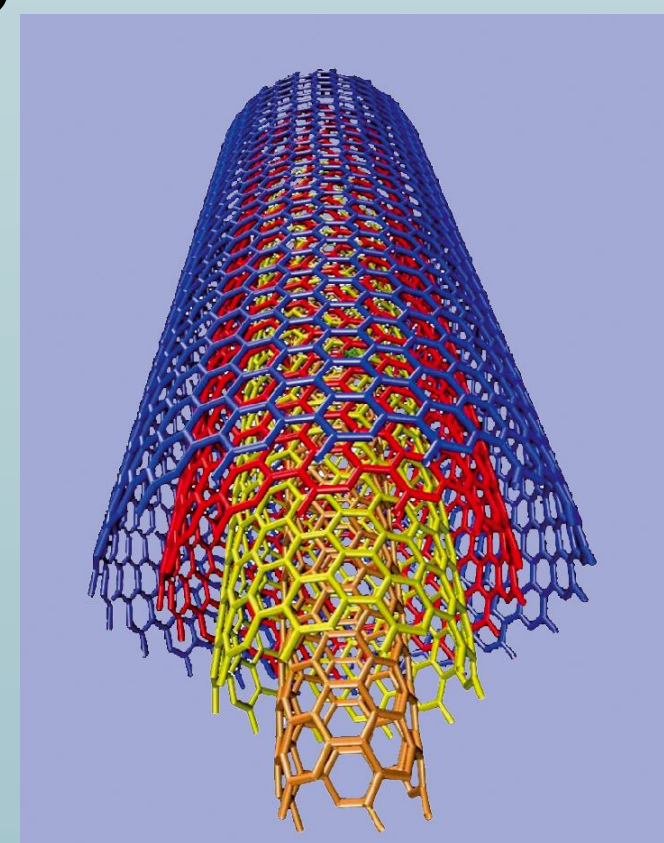
*Make sensors sensitive to these gases  
below threshold toxicity*

## Methods

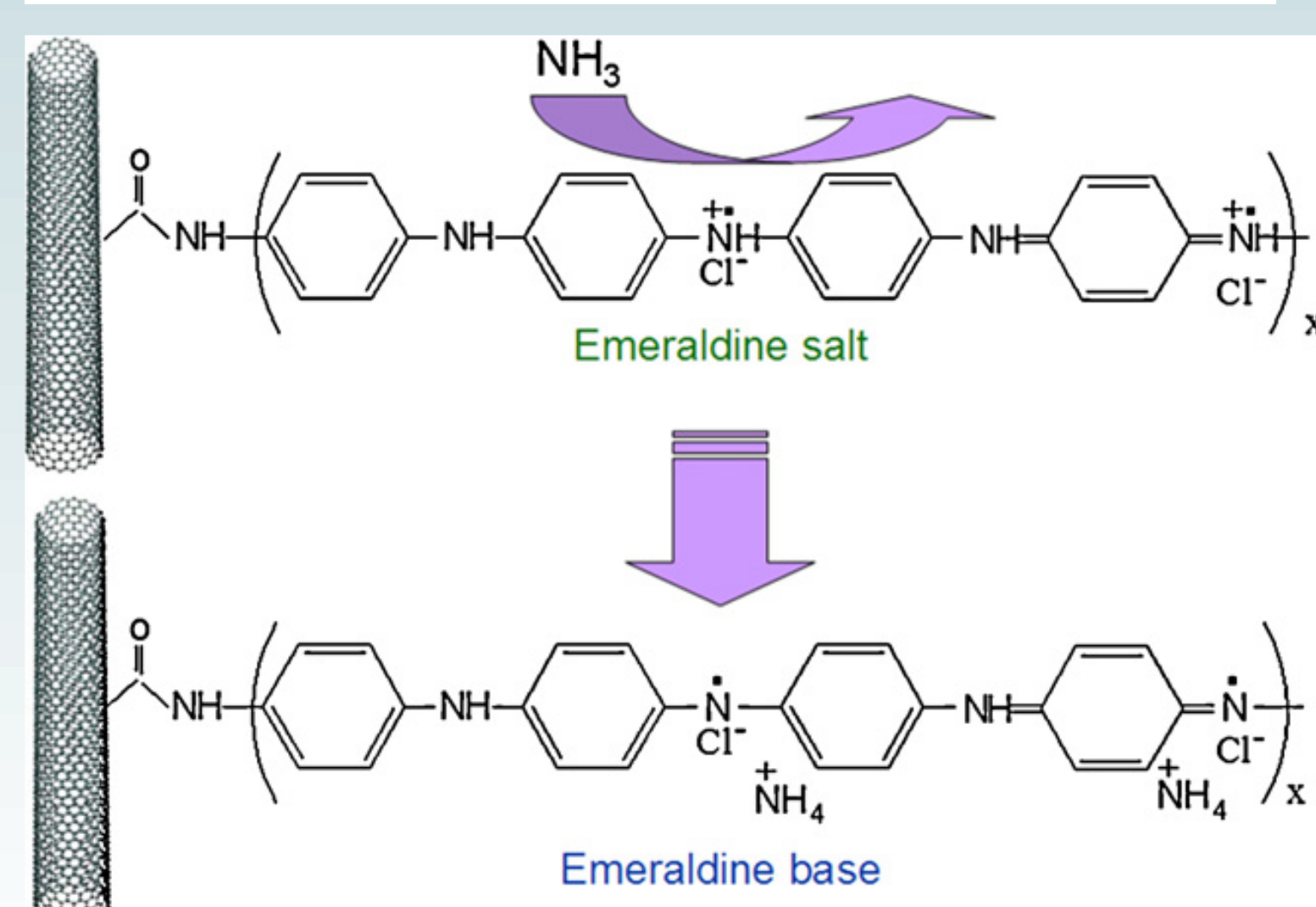
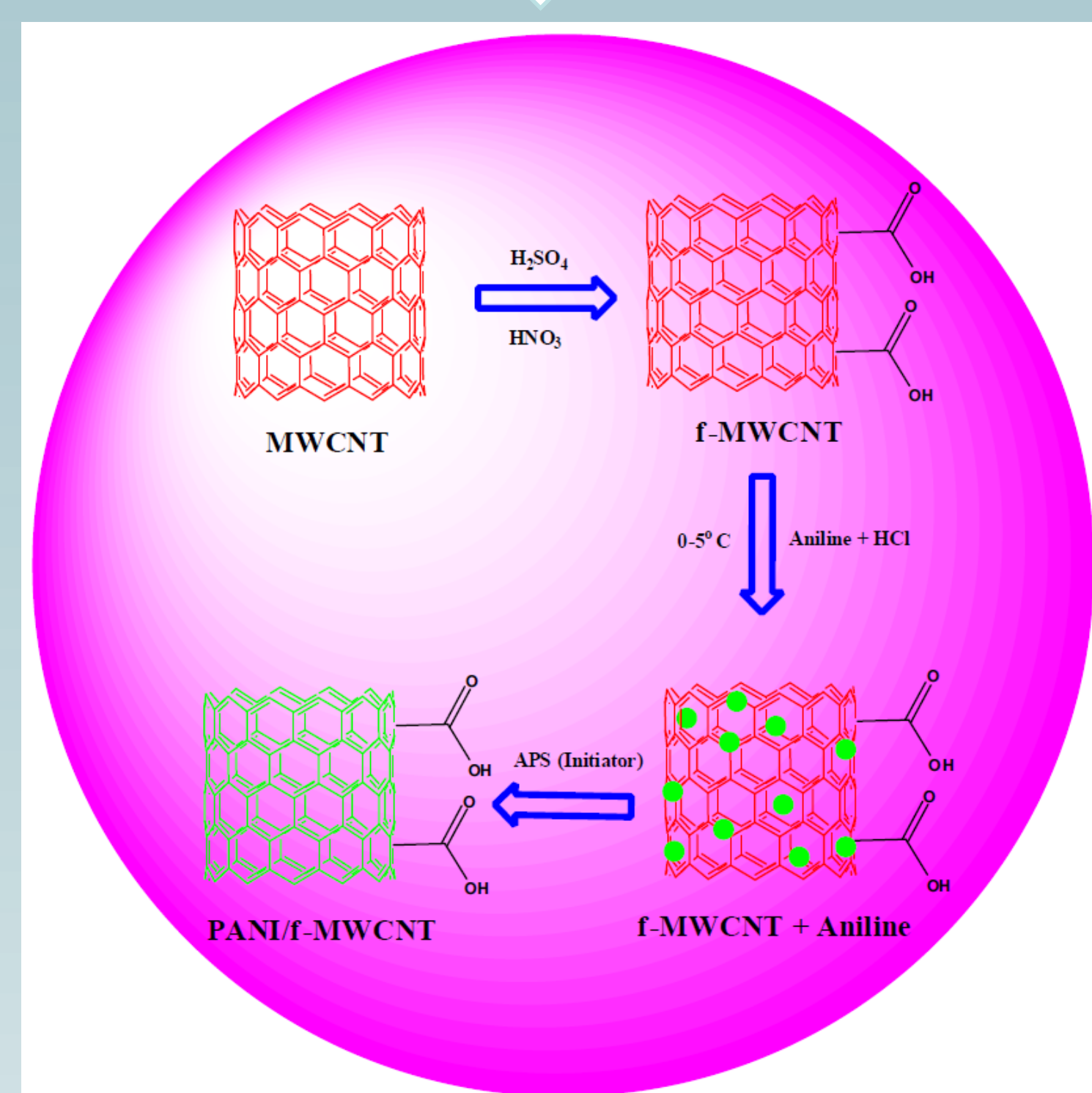
(1) Polyaniline



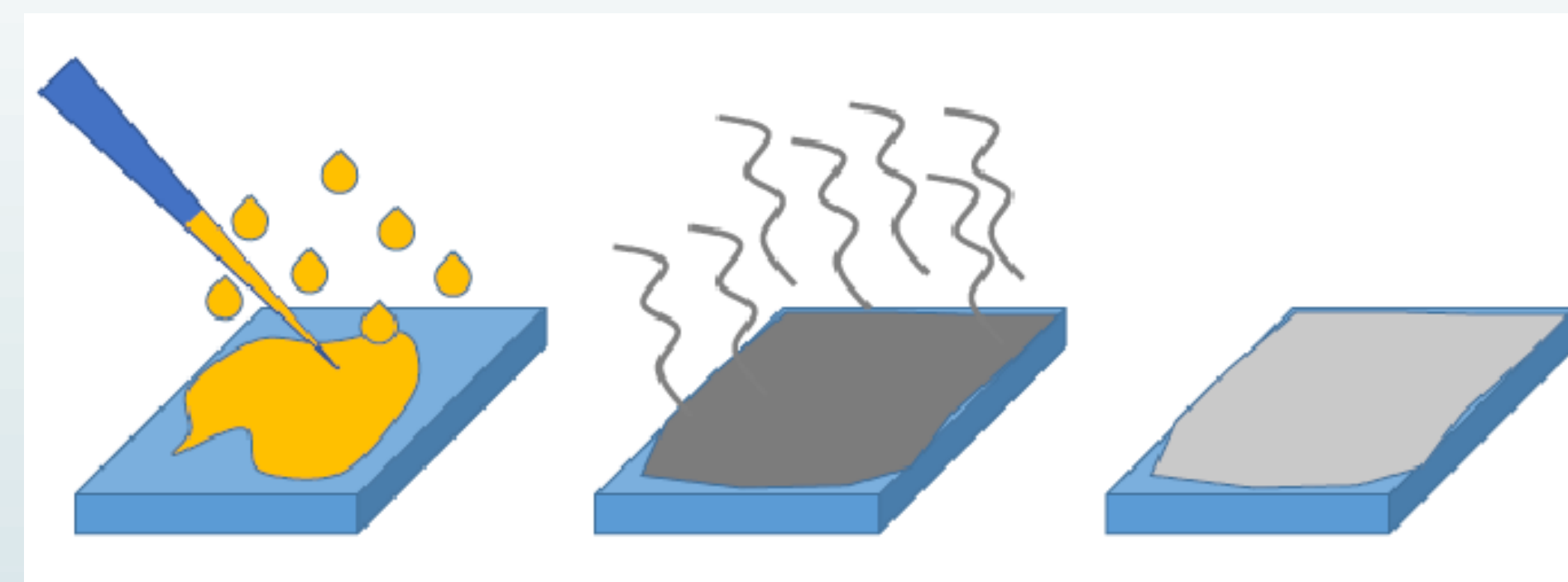
(2) Carbon Nanotubes



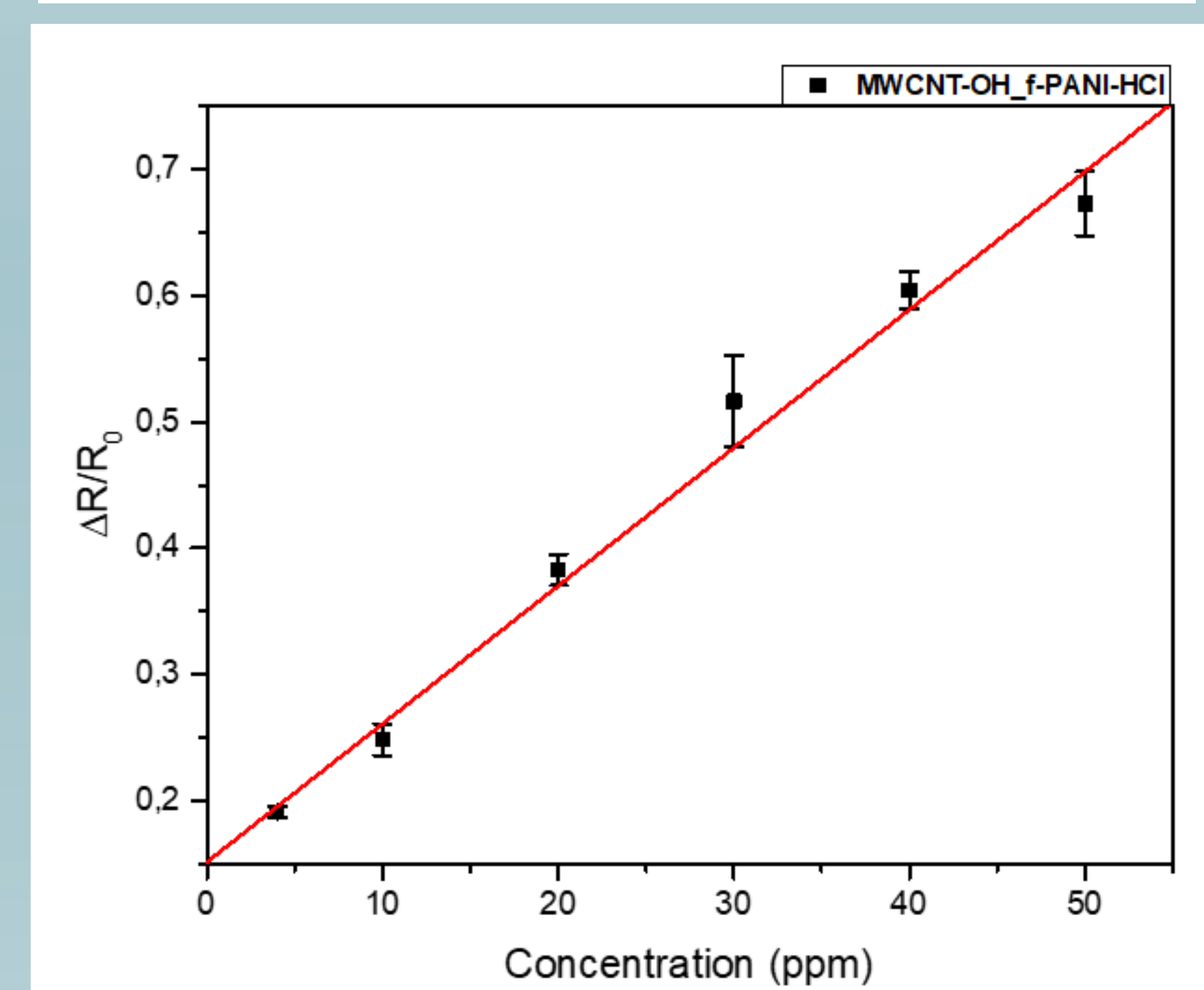
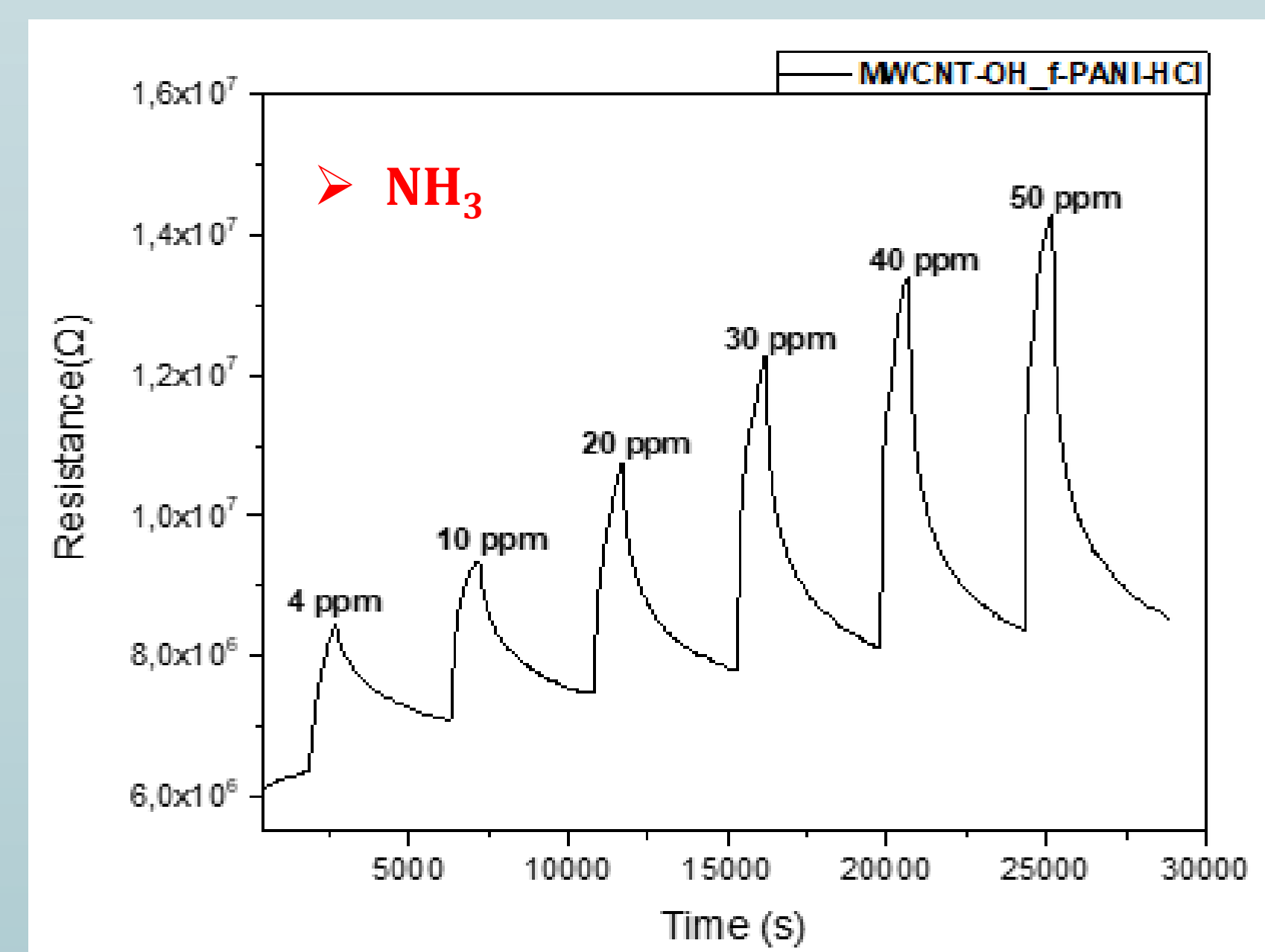
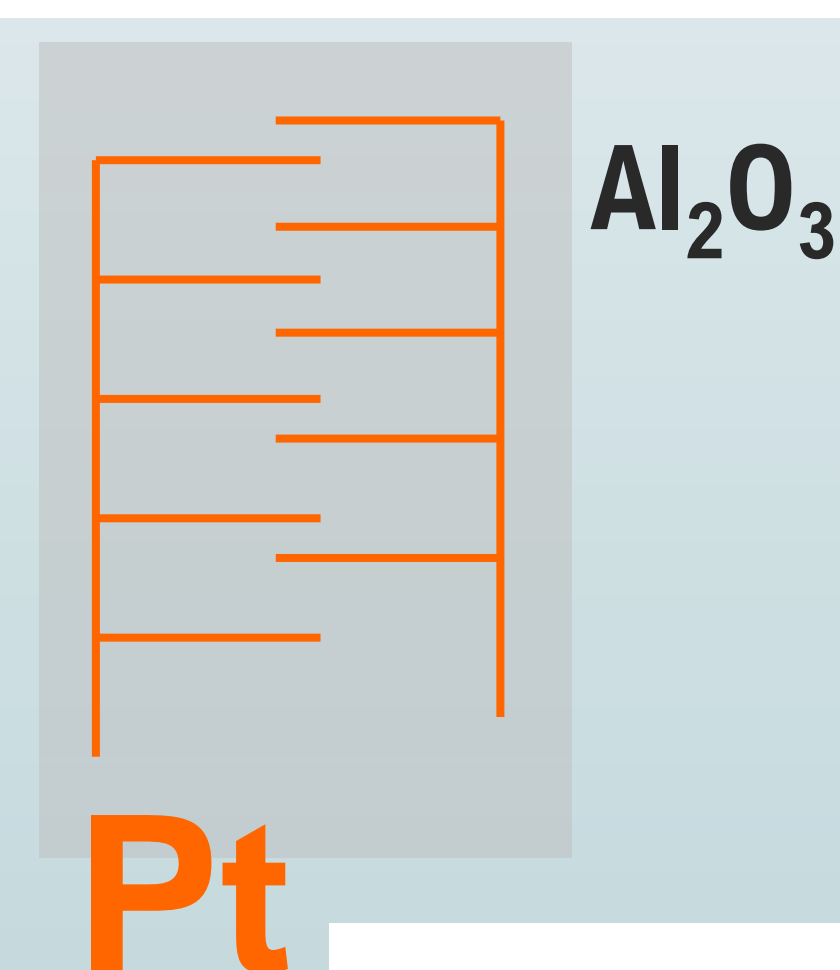
**Functionalization**



## Results



**Deposition  
process**



## Conclusions

- ✓ Functionalization PANI with MWCNT-OH  $\rightarrow$  Increased performance of sensor (**sensitivity**, stability, reproducibility)
- ✓ Interaction between PANI and MWCNT-OH  $\rightarrow$  Facilites electron delocalisation in the composites
- ✓ Real test condition, in air and room temperature

## Acknowledgement

This work was carried out within the **framework** of LABEX IMobS3 (Innovative Mobility: Smart and Sustainable Solutions) supported by the National Centre for Scientific Research (CNRS), the Regional Council Auvergne, the European Regional Development Funds (ERDF/FEDER) and the National Research Agency (ANR) (Grant No. [ANR-10-LABX-16-01](#)).