Sensors for monitoring polluting gases in the air

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Pillar Environment – Spoke 2/WP2

SAMOTHRACE 2nd Year: Experimental Prototypes Demo Showcase

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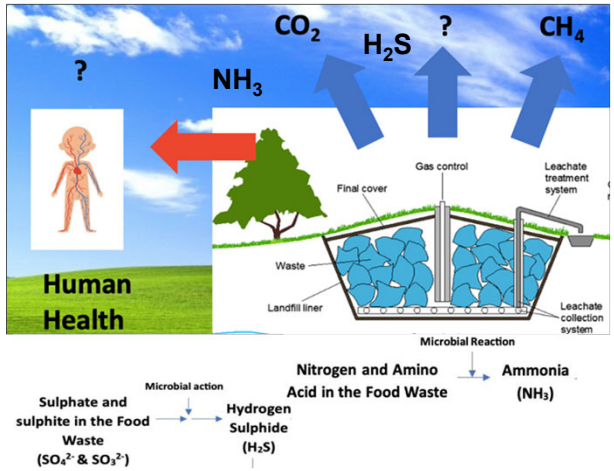
THE PROBLEM TO BE SOLVED

- People living around them suffers of unpleasant odors and/or hazardous gases.

Ammonia and **hydrogen sulfide** are the main odor gases emitted by the landfill.



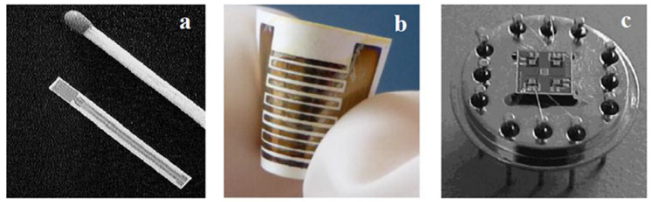
CONVENTIONAL ANALYTICAL TECHNIQUES

- Precise
- Accurate

but

- Time consuming
- Expensive
- Needed of expert personal

- Monitoring of toxic gases from landfill/industries.



Planar-type gas sensor | Flexible gas sensor | Micromachined gas sensor

GAS SENSORS

- Simple
- Low cost
- Mass production)
- Small (easy integration)
- Fast (responses in-field)
- User friendly

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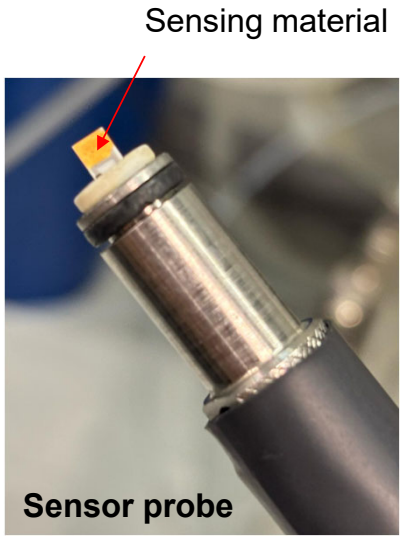
OUR SOLUTION

- Develop high performance sensors for monitoring toxic gases and engineered to optimize costs, size and energy consumption.

- The device consists of a resistive probe



- The sensing materials is the key component of the sensor, determining the gas to be detected, the sensibility, the selectivity to target gas in a gas mixture and the operating temperature.
- Sensing materials based on organic, inorganic, non oxidic formulation have been synthesized and tested for developing sensors for NH_3 and H_2S gas.

Patentability evaluation of most suitable sensing materials is currently underway!!

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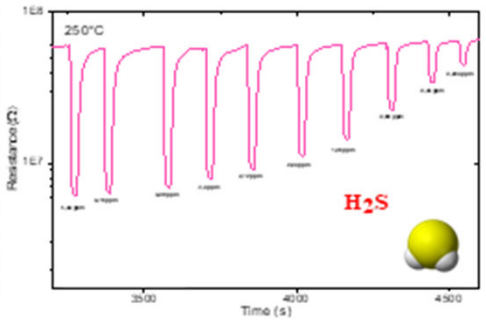
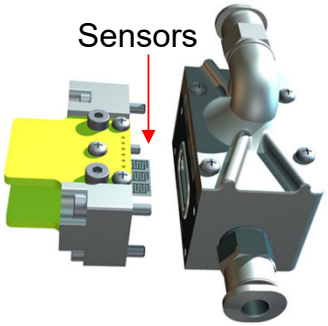
DEVELOPMENT PLAN UNDER SAMOTHRACE ECOSYSTEM

- Synthesis of new sensing materials with specific sensing performances towards the target gases (**TRL 3**).

- Design and fabrication of the sensor probes and validation in the lab (current **TRL 4**).

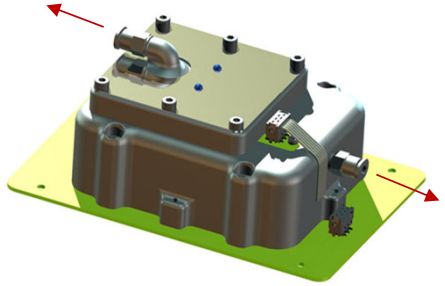


- The sensor probe shown has been implemented with a sensor chamber and an automatic micropump for atmosphere sampling* (current TRL 4).



Open view of the sensor chamber with the mounted sensors.

- Designed in collaboration with BioAge srl



Sensor chamber*

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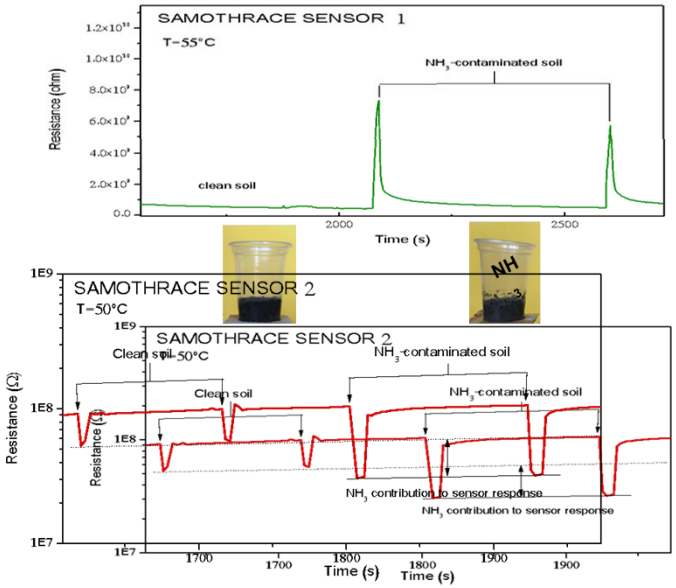
NEXT STEP UNDER SAMOTHRACE ECOSYSTEM

- Actual point



- End project point

Integrate the chamber sensor with hardware and software components for sensors control, data acquisition and wireless transmission.

In-field use of the developed sensors will be demonstrated (**TRL 5 - 6**).

From lab to field

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THANK YOU

NH_3

H_2S

VISIT OUR DEMO AT BOOTH N. 49

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