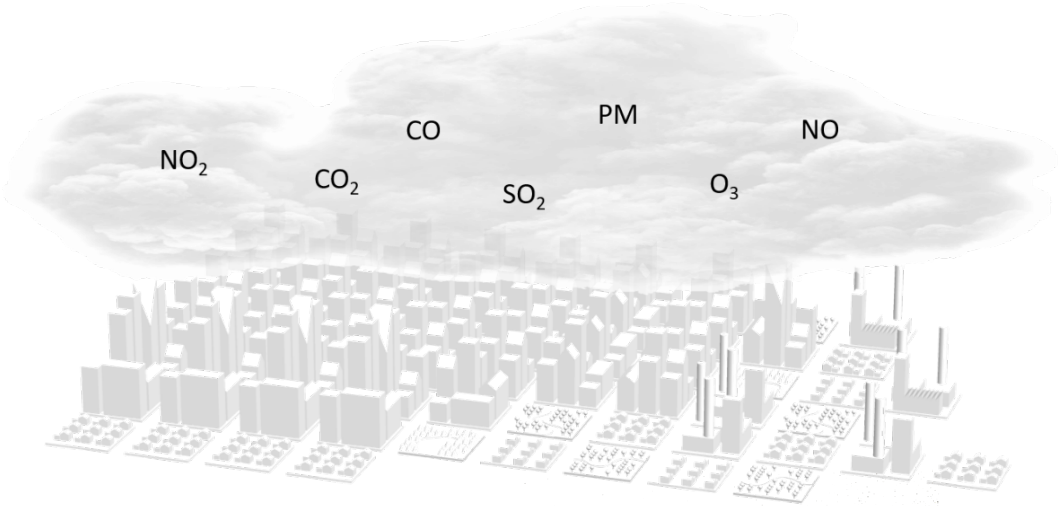
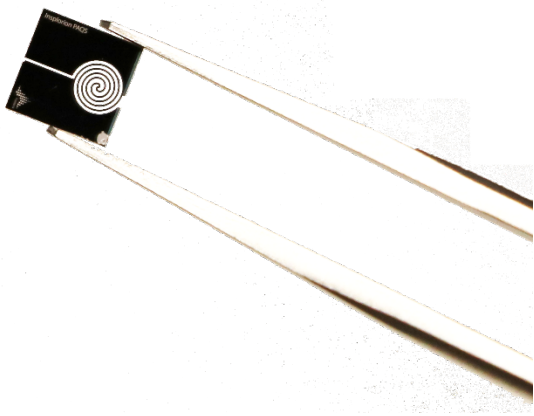
Air Quality Sensor





Multiplexed gas sensing on a microchip

Insplorion's technology platform, Nanoplasmonic Sensing (NPS), for gas sensing on a microchip allows for miniaturization, high sensitivity, and low cost.

Insplorion's optical sensor chip is a completely passive component but comes with an embedded microheater.
Readout of the sensor signal is accomplished with a LED lightsource and a photodetector packaged in a small device.

The NPS gas sensor is suitable for air quality monitoring in smart city grids as well as for wearable and automotive applications.

The concentration of several gases can be individually measured using the same sensor chip through multiple measurement areas.

- High sensitivity with detection limit in the ppb-range.
- Small size (Sensor chip: 4x4x1 mm^3).
- Optical readout using LED and photodetector.
- Continuous data collection enables monitoring over time.
- Low cost enables large grid networks with high spatial resolution.
- Response time in the order of minutes.

HIGH SENSITIVITY

Insplorion's optical NPS transducer technology allow for very good resolution (ppb-level detection).

SMALL SIZE

Thanks to its small size, the sensor can be easily integrated into a larger device, or with a custom design.

LOW COST

The miniaturized optical sensor element can be mass produced at a low cost.

STABILITY

The thin layer of gas sensing material combined with Insplorion's robust optical transducer allows for long-term stability.

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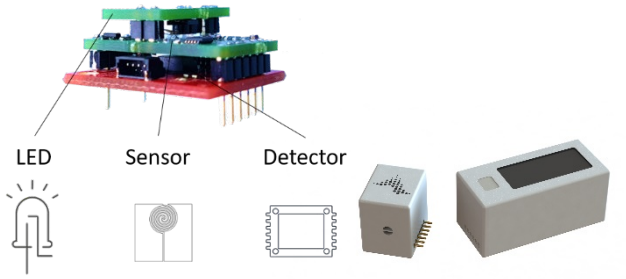
Insplorion NPS sensor for NO_2

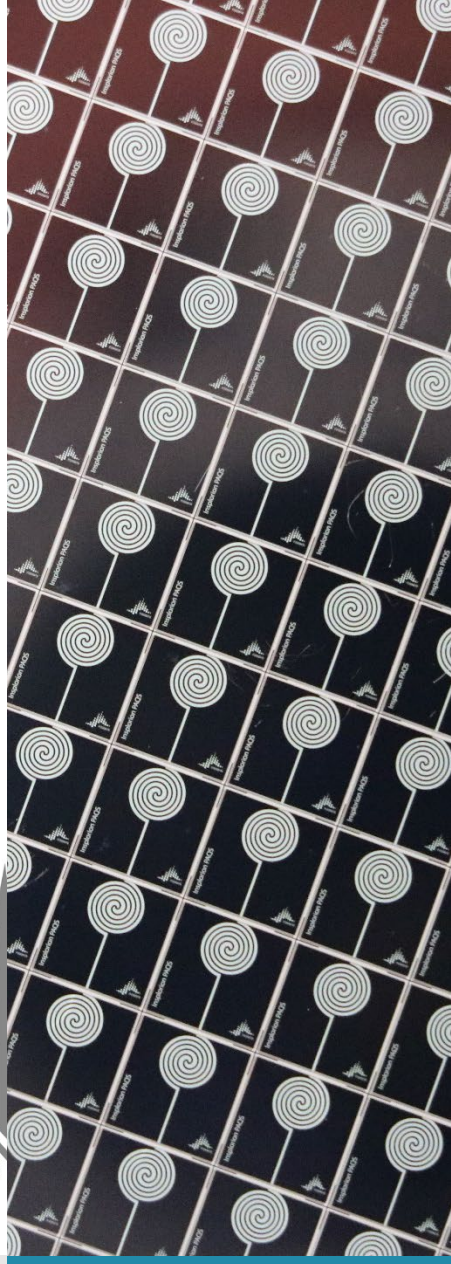
The NPS NO_2 sensor exhibits low cross-reactivity to NO, CO, and CO_2 and works well under humid conditions. Detection resolution is in the order of 10 ppb (19 $\mu g/m^3$) with a response time of 3 min making it ideal for use in outdoor air pollution measurements.

Specificity towards more gases can be added to the same sensor chip.

The sensor can be used in wearables, smart city networks, streetlights, traffic monitoring systems and for other gas sensor applications.



Specification	NO_2
Range	10 ppb – 10 ppm
Resolution	10 ppb
Response Time	3 min
Size (Sensor chip)	4x4x1 mm^3
Size (Device)	30x30x20 mm^3
Cross-reactive	Not observed for NO, CO, CO_2
Interface	Serial or USB



Insplorion is currently commercializing the sensor platforms in collaboration with partners. We are looking for new partnerships where we can solve specific measurement problems together. For the gas sensor we are currently aiming for partnerships within the following main application areas; contact us if you are interested in integrating our sensor with your personal air quality monitor, cabin air control system, city-wide air quality monitoring and its associated data, or in developing a “filter efficiency” feature for your indoor air quality system.

Wearables
Small size and low power consumption make our sensor wearable.

Automotive cabin air
Integrated into the car or truck’s control system, the sensor signals the opening or closure of air vents. Our sensors offer high sensitivity and selectivity, with a small size.

Smart Cities
Monitoring air quality throughout the city with high spatial resolution is beneficial to city administration, residents, and businesses. Our sensors offer high sensitivity, low maintenance, and an extended lifetime. We have partnered with both municipal and commercial entities to develop a sensor network.

Indoor air
Used independently or in conjunction with a filtration system, the sensor alerts the user to take action (i.e. open a window, or change the filter). Ideal for buildings aiming to comply with the recent EU Energy Performance in Buildings Directive and those implementing MVHR systems.

We are looking for collaborators within smart city solutions and wearables

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