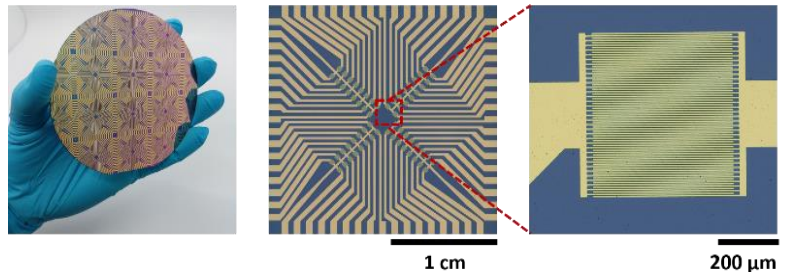# Master Thesis

Gas sensors based on modified carbon nanomaterials for the detection of industrial gases and breath analysis applications

Optimization of multichannel gas sensing platform

1 cm   200 µm

Integration of carbon based nanomaterials as active elements of chemiresistive sensors is an efficient approach to achieve extremely high sensitivities and low power consumption due to their high surface-to-volume ration, high carrier mobility and low current noise. In addition, their ability to be easily functionalized to target specific gases make them ideal for their integration in different fields like industrial safety and exhaled breath analysis. The aim of this thesis is the optimization of a recently developed multichannel gas sensing platform in three main aspects: Nanomaterial deposition, metallic nanoparticle functionalization and gas sensing data processing.

The **research plan** will include:

1. Electrode fabrication and nanomaterial deposition optimization.
2. Nanomaterial functionalization according to target gas.
3. Optical and electrical characterization.
4. Investigation on gas sensing performance and data analysis.

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