

## Characterization of a CMOS based Hydrogen Sensors

We are looking for students, who like to work in an interdisciplinary team and intend to realize their master thesis within our group **Silicon Technologies and Devices at Fraunhofer EMFT**.

### Topic

In our daily life, sensors play an increasing role. Nowadays, hydrogen sensors are required in clean and renewable technologies using hydrogen fuel as a key energy carrier of the future instead of fossil fuels. Unlimited efforts are dedicated by the scientific community to the development of H<sub>2</sub> sensors based on various working principles.

Within this Master Work, the idea is to electrically characterize the **hydrogen sensing of our innovative CMOS based gas sensor**, realized in our clean room facility. Sensor devices and electronic circuitry are available.

Different parameters must be characterized while developing sensors such as: **Sensitivity, Selectivity, Stability** and response-recovery **Speed** of a H<sub>2</sub> Sensor.

The main challenge of this masterwork is to develop an understanding of the performance of **our innovative CMOS based H<sub>2</sub> sensor**.

### Work packages

- Topic familiarization and literature survey
- Deposition of a hydrogen sensing materials
- Electrical Characterization of the H<sub>2</sub> sensor
- Performance of the H<sub>2</sub> sensor
- Documentation and presentation of obtained results

### Requirements:

background in one of the following fields:

- Physics, OR
- Material science of Physics, OR
- Electrical Engineering, OR
- Materials Science, OR
- Chemistry /Chemical engineering.

### Timetable

The thesis can be started immediately.

### Contact

For further information and application, please contact:

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The university supervision of the thesis will be done by the chair of circuit design at TUM

**Fraunhofer Institute for Electronic Microsystems and Solid State Technologies EMFT**