



Topic for Master thesis

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Course of Studies:	Nanoelectronic Systems
Topic:	Chiral metal-organic framework materials based gas sensors for enantiomer discrimination

Objectives of work

The aim of this thesis is to investigate the development and application of chiral metal-organic framework (MOF) materials for application in gas sensors capable of enantiomer discrimination. Enantiomers, which are molecules that are mirror images of each other, play crucial roles in various industries, particularly in pharmaceuticals, where one enantiomer can be beneficial while the other may be harmful. This research work will focus on the development of chiral MOFs-based gas sensors, which exhibit high selectivity and sensitivity to enantiomeric molecules in gaseous form. The candidate will explore various chiral MOFs to develop sensor devices, characterize these materials on sensor device using morphology characterization techniques such as SEM, TEM, and evaluate their performance as gas sensors. A comparative analysis of the developed sensors with existing technologies for enantiomer discrimination will also be conducted to highlight their advantages and potential applications. This research aims to contribute to the advancement of MOF-based sensing technologies and provide innovative solutions for enantiomeric separation and identification in various industrial processes.

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