

## Funkcinių medžiagų ir elektronikos skyriaus

# SEMINARAS

įvyks 2023 m. kovo 8 d. (trečiadienį)  
salėje D401, Saulėtekio al. 3, Vilnius  
Pradžia 15:00 val.

**Pranešėjas Dr. Tom Yager**

Institute of Solid State Physics, University of Latvia

## Towards a Universal Lab-on-Chip Graphene Sensor

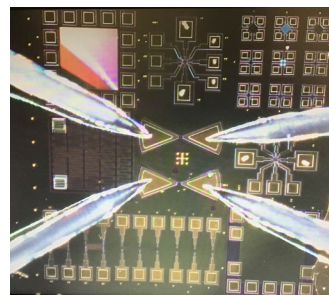
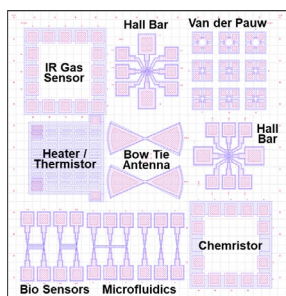
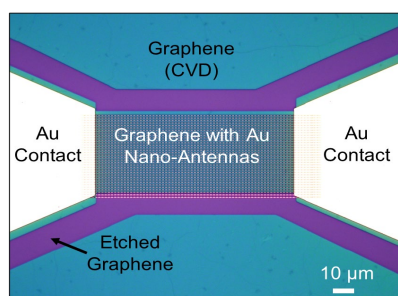
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Ubiquitous sensing promises to revolutionise how devices interact with and respond to their surroundings including smart home automation, environmental monitoring, and point-of-care medical diagnostics. The simultaneous combination of sensing systems are greater than the sum of their parts, as machine learning algorithms can discern correlations between parallel measurements. However, integrating multiple sensor functionalities within the same chip is a challenge for device integration. Graphene represents a uniquely versatile nanomaterial sensing platform which reduces cost and

complexity of lab-on-chip systems whilst providing functionalities beyond silicon. Here, we will report the latest progress towards realisation of a 'Universal' graphene sensor: from photodetection to biosensing. This significant nanoengineering challenge comprises a combination of device design, nanofabrication, selective functionalisation and passivation. The development of novel nanoengineering methods and demonstration of multiple coexisting and parallel sensor functionalities can pave the way for the next generation of smart sensors and lab-on-chip technologies.



[www.cfi.lu.lv/en/research/projects/postdoctoralprojects/towards-a-universal-lab-on-chip-sensor-from-a-single-graphene-sheet-from-photodetection-to-biosensing/](http://www.cfi.lu.lv/en/research/projects/postdoctoralprojects/towards-a-universal-lab-on-chip-sensor-from-a-single-graphene-sheet-from-photodetection-to-biosensing/)



### Researcher Profile

**Dr. Tom Yager** is a Leading Researcher at the Micro and Nanodevices Laboratory of the Institute of Solid-State Physics, University of Latvia. His main areas of interest are in nanoelectronics, nanophotonics, plasmonic metasurfaces, and macroscopic quantum phenomena. After graduating with an MSci in Physics from Royal Holloway, University of London, he completed a doctorate in Nanoscience at Chalmers University of Technology, Sweden. Working at the Quantum Device Physics Laboratory, MC2, he developed epitaxial graphene technology for quantum metrology,

before pursuing post-doctoral research in Latvia at Riga Technical University and ISSP UL.

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