



Contribution ID: 58

Type: Poster

## Resonant Raman spectroscopy of GaN/graphene nanostructures: On the way to ultra-violet photodetectors

The development of light detectors is focused on high performance, fast response and simple fabrication. These parameters are affected by the charge carrier mobility, which is sensitive to perturbations in the crystal lattice, namely defects and phonons. Gallium nitride is a polar III-V semiconductor, where a strong interaction between free electrons and phonons is observed. The interaction lowers the efficiency of charge carrier collection upon light illumination, as well as it reflects on the presence of defects. The substrate for GaN growth is graphene, a two-dimensional material which exhibits ideal properties to form a conducting channel in photodetectors. The structure of GaN nanocrystals grown on graphene substrate thus takes advantage of the sensitivity of GaN to ultra-violet light, thanks to the broad bandgap of 3.4 eV, alongside with the high electron mobility of graphene, which collects the photogenerated charge carriers.

**Primary author:** KOSTKA, Marek (VUT Brno)

**Co-authors:** MACH, Jindřich (VUT Brno); KONEČNÝ, Martin (VUT Brno); BARTOŠÍK, Miroslav (VUT Brno); ŠIKOLA, Tomáš (VUT Brno); MIKERÁSEK, Vojtěch (VUT Brno)

**Presenter:** KOSTKA, Marek (VUT Brno)

**Session Classification:** Posters

**Track Classification:** Topics: Optoelectronics and nanophotonics