



Contribution ID: 178

Type: **Poster**

A UV photodetector based on ordered free standing MWCNT

Wednesday 10 July 2019 16:55 (2 minutes)

Multiple wall carbon nanotubes (MWCNT) present advantages for optoelectronic applications such as the large effective photo-collector surface as well as the possibility to tune their band gap and absorbance through the growth parameters. The use of ordered free-standing MWCNTs for photodevices[1] presents advantages, since they have a tunable absorbance depending on their height while their dense ordering results in a large effective area sensor. Additionally the bandgap depends on their thickness, thus it is tunable by changing the formation conditions. In this work we demonstrate a hybrid MWCNT/Si₃N₄/n-Si photodetector based on ordered MWCNTs and evaluate its performance in the UV, visual and near IR spectrum (200-1000nm). Depending on the application the absorbing nanotube layer can be made thick enough (e.g. several millimetres) to enhance radiation absorption and electron-hole pair generation. The best result obtained so far as a UV detector is a 90% Equivalent Quantum Efficiency @ 275nm[2] for a 20µm CNT layer thickness.

Author: KYRIAKIS, Aristoteles (Nat. Cent. for Sci. Res. Demokritos (GR))

Co-authors: STEFANO, Akis (National Technical University of Athens, Iroon Polytechniou 9, 157 80 Athens, Greece); VELESOTIS, Dimitrios (Institute of Nanoscience and Nanotechnology, NCSR Demokritos, AghiaParaskevi, Athens 15310, Greece); GLEZOS, Nikolaos (Institute of Nanoscience and Nanotechnology, NCSR Demokritos, AghiaParaskevi, Athens 15310, Greece)

Presenter: KYRIAKIS, Aristoteles (Nat. Cent. for Sci. Res. Demokritos (GR))

Session Classification: Poster Exhibition 2, Posters ID 81 - 182, chair: Christer Frojdh

Track Classification: general