

Surface Optoelectronic Properties of Hybrid Silicon

Muhammad BASHOUTI - *Ben-Gurion University of the Negev, Israel*

Hybrid interfaces, a boundary between solid (such as metals or semiconductors) and molecule, play an essential role in determining the optoelectronic properties of the material. For example, it is important in electronics to control parameters such as work function and band banding, while in photonics, such as plasmonic nanostructures, it is fundamental to control field enhancement. To this end, selecting the proper molecule for a particular application and designing the interface's architecture is crucial. For the material part, i.e., fabrication of bare interfaces, we will show the fabrication of Silicon Nanowires. For the hybrid interfaces, we will show molecular doping in Silicon, and charge transfer. The interface characterization is based on on x-ray photoelectronic spectroscopy, Raman, Kelvin probe and surface photovoltage. The experimental results are supported with a simulation (done though ENEA colleagues).