Development of AlGaN MSM photodetectors

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AlGaN photodetectors with the widely tuneable responsivity ranging from VUV to UV-B are compact devices with various applications, like solar or corona discharge observation and monitoring of all kinds of UV emitters e.g. in air and water disinfection. The quantum efficiency of the investigated MSM (metal-semiconductor-metal) photodetectors with a lateral current flow near to the surface is known to be quite sensitive to the crystalline quality of the photoactive absorber layer. Due to the high lattice mismatch between the AlGaN absorber layer and the usually used sapphire substrates, a relatively high defect density is present in the MOVPE grown material. In this talk we present the advantage of using defect reduced, patterned AlN/Sapphire templates (compared to planar templates) for Al$_{x}$Ga$_{1-x}$N MSM photodetectors with $x = 0.4 \ldots 1$ and cut-off wavelength between 280 nm and 200 nm.