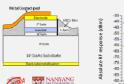
OPTOELECTRONIC GROUP

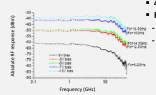
Permanent staff:

D. BERNARD, D. DECOSTER, E. DOGHECHE, S.DUPONT, J.GAZALET, M. HALBWAX, J. HARARI, J.C. KASTELIK, V. MAGNIN, S. MARICOT, M. POMMERAY, C. SION, J.P. VILCOT

Microwave-photonic components

GaAsSbN 1300nm waveguide photodetectors

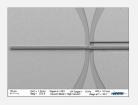




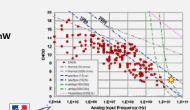
- 4μm wide ridge waveguide
- Responsivity up to:
- For 16,50mg 0.7 A/W @ 1300nm
 - 0.25A/W @ 1550 nm



LT GaAs nano-photoswitch



- Tapered microwave coplanar waveguide illuminating a high resistivity, ps carrier lifetime LT-GaAs photoconductor
- Submicrometer-sized photoconductor gap
- Very small capacitance
- Dielectric optical nanowaveguide

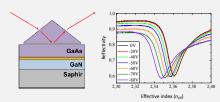


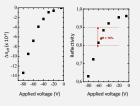
- Mean switching optical power = 0.6 mW $(\lambda = 0.8 \mu m)$
- Microwave signal frequency = 20 GHz
- Sampling frequency = 320 MHz
- FNOB = 3.15 effective bits
- SFDR = 40dB

LES THALES

Surface plasmon resonance based optical modulator

GaAs transfer onto GaN using gold wafer bonding





 10% reflectivity change for ≈ 15V bias



Microwave-photonic systems

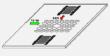
Consumer electronics demonstrator

- Ultimate demonstration of Radio over Fiber potentialities
- Optical distribution of DVB-S IF signals for home applications
- 4 DVB-S bands simultaneously distributed onto
- 4 receivers jointly with IP connectivity
- Use of low-cost TOSA-ROSA transceivers and MMF



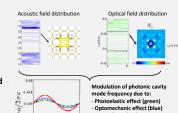
Acousto-optic components

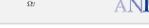
Photonic & phononic crystal structures



- Design and investigation of periodic nanostructures exhibiting both photonic and phononic bandgaps
- Study of acousto-optical interactions in periodic nanostructured crystals







Surface Plasmon Resonance based biosensors

■ Graphene coated (dry transfer technique) SPR surface

Prism-free coupling using embedded grating couplers









using Atomic Layer Deposition technique

Photovoltaic cells

1st generation

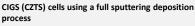


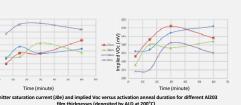
P-type Si surface passivation by Al₂O₃ films deposited

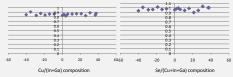
2nd generation









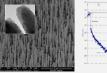


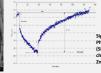
3rd generation



Demonstration of n type Zinc Oxide (ZnO) NWs deposited by PLD

and Attachment of p type Lead Sulfide (PbS) on ZnO NWs





Selection of metallic top electrode (MoO₃/ITO, graphene)

Toront Implication, Educacy
King Abdullah University of Science and Technology























