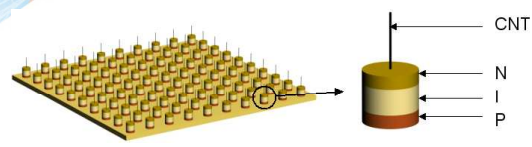


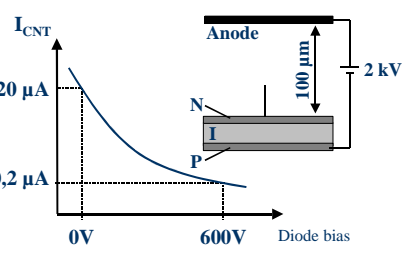
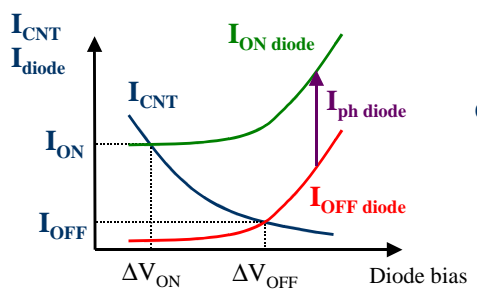
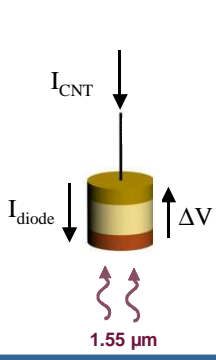
PHOTOCAT High frequency Photocathode based on carbon nanotubes



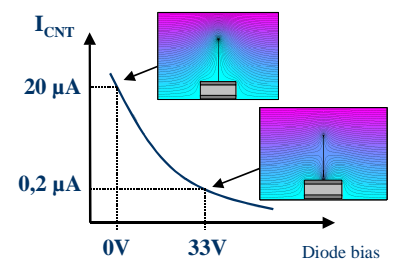
Contact: pierre.legagneux@thalesgroup.com



Operating principle of photocathode

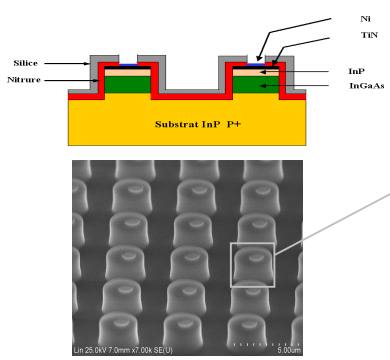


$I_{CNT} = f(V_{pin})$ for a CNT on a continuous pin diode
OFF state $\Rightarrow \Delta V = 600$ Volts !

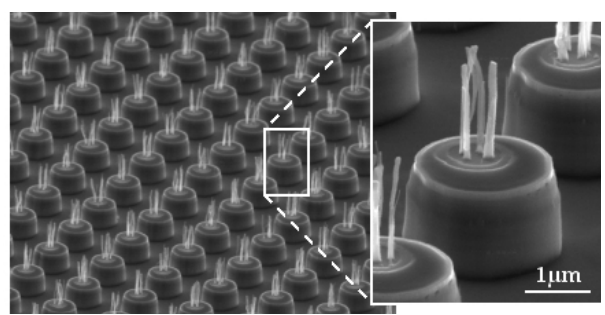
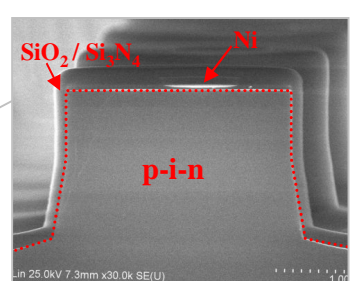


$I_{CNT} = f(V_{pin})$ for a CNT on a localised pin diode
OFF state $\Rightarrow \Delta V = 33$ Volts

Photocathode fabrication

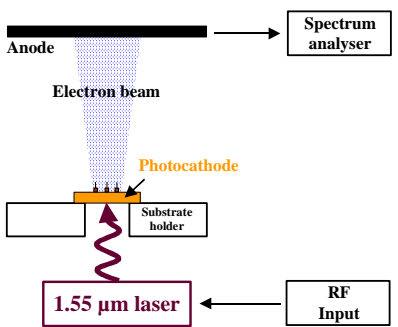


Array of GaInAs photodiodes

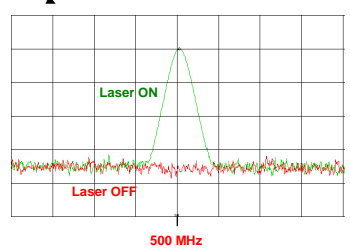


CNT photocathodes

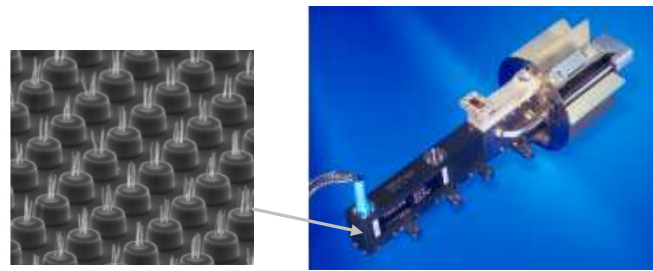
CNT photocathodes for microwave amplifiers



Experimental setup



First result: beam modulation at 500 MHz
Next step: beam modulation in the GHz range



Application:

Highly compact and efficient microwave vacuum amplifier for satellite telecommunication