iemn
Institut d'Electronique, de Microélectronique et de Nanotechnologie
UMR CNRS 8520

Master and Engineer Internship: 2019-2020

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Title : On wafer HEMT characterization up to 750GHz

Abstract :

Next generation of mobile network (6G), and increasing bit rates in the 10-100Gbit/sec range require the development of millimeter and THz wireless communications. Recently, IEMN demonstrated the potentiality of its technologies for high bit rate wireless communication at 300GHz. Other demand concerns the development of passive millimeter wave camera for control access area (stadium, concert, check-in airport…). To keep potential weapons out public spaces, a rapid control system is needed. The main example is check-in passengers in airport. For high communication and security sensors, high frequency devices are needed. IEMN develops advanced devices in its micro-nano-fabrication platform (1500m^2 cleanroom) and has all the equipment for the electrical characterization of advanced devices and circuits. ANODE group is currently developing High Electron Mobility Transistor (HEMT) with maximum frequency beyond 1THz. We proposed to explore the potentiality of these technologies for low noise and high sensitivity receptors. For confirming high frequency capabilities of our devices, microwave characterization up to 750GHz is needed.

The master or Engineering student will perform on-wafer characterization of HEMT fabricated at IEMN, using commercial on-wafer microwave equipment of IEMN's platform. He will establish the electrical model of the HEMT.