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iemn

Institute of Electronics, Microelectronics
and Nanotechnology

UMR CNRS 8520

Institute of Electronics, Microelectronics and Nanotechnology

See better • Understand better • Capitalize better

The Laboratory



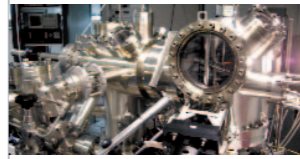
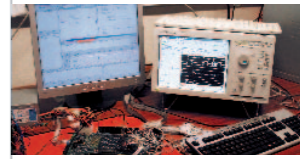

IEMN stands for Institute of Electronics, Microelectronics and Nanotechnology, a laboratory created in 1992 by four academic institutions: Lille1 University, University of Valenciennes and Hainaut Cambrésis, ISEN-Lille and CNRS. Around 500 people work in the fields of Information Communication Technology and Nanotechnology. IEMN hosts PhD and graduate students coming from more than 30 countries.

The scientific policy of the Institute is declined in five research Departments:

- Materials and nanostructures
- Micro and nano-systems
- Micro, nano and optoelectronics
- Circuits and communication systems
- Acoustics

IEMN devices find applications in Electronics, Energy, Biotechnologies, Sensors and Instrumentation fields. IEMN research activity relies strongly on its 5 technical facilities where cutting-edge equipment are operated by highly qualified technical staff.

Technological Facilities

<p>Micro and NanoFabrication clean-room</p> <p>1600 square meters clean room devoted to micro and nanotechnology Staff: 20 Ing/Tech</p>  <p>EQUIPMENT:</p> <ul style="list-style-type: none"> • Two e-beam machine EBPG 5000+ 100kV • Focused ion beam • 3 Solid source MBE machines, MBE 32 • Ion Implanter GA3204 • 6 Oxidation/diffusion furnaces. • Nanowire furnace • Several deposition equipments (evaporation, sputtering) • Several etching and plasma deposition machines (RIE, ICP, PECVD) • Organic material platform 	<p>HF Measurement facilities</p> <p>Devoted to high speed-high frequency device characterization Staff : 4 Ing/Tech</p>  <p>EQUIPMENT:</p> <ul style="list-style-type: none"> • 45 MHz -220 GHz (325 GHz soon) networks analyzers • THz measurements using electro-optic sampling • Noise measurements • Low temperature Microwave measurements • High temperatures microwave measurements • Nonlinear measurements • MEMS and NEMS characterization 	<p>Near field microscopy platform</p> <p>Staff : 3 Ing/Tech</p>  <p>EQUIPMENT:</p> <ul style="list-style-type: none"> • Ultra high vacuum STM, ambient T° • Ultra high vacuum AFM/STM at variable T° • LT-STM, (4K) • 3 open air AFM • Open air STM • Four probes STM 	<p>Telecom platform</p> <p>Staff : 3 Ing/Tech</p>  <p>EQUIPMENT:</p> <ul style="list-style-type: none"> • Complex signal generators • Complex modulation schemes • High data rate systems characterization • WLAN • UWB 	<p>Electro Magnetic Compatibility platform</p> <p>Staff : 2 Ing/Tech</p>  <p>EQUIPMENT:</p> <ul style="list-style-type: none"> • Study of the coupling phenomenon of electromagnetic (EM) fields to wires assembly • Validation of predictive numerical models • Testing of electronic equipments for compliance to EMC standards
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Materials and Nanostructures

EPIPHY: EPItaxy and PHYsics of heterostructures

NCM: Nanostructures, nanoComponents & Molecules

PHYSICS: Nano materials physical properties

ANODE: Advanced Nanometer DEvices

CARBON: Graphene based devices

DOME: Dispositifs Opto et Micro Electronique quantiques

TeraHertz Photonics

SILPHYDE : SIMuLation PHYsique de Dispositifs Electroniques et optoelectroniques

OPTOelectronics

PUISSANCE: Microwave Power Devices

Silicon Microelectronics

Micro Nano and Optoelectronics

Research Departments

Micro and Nanosystems

NanoBiointerface

MITEC: Microtechnology and Instrumentation for Thermal and Electromagnetic Characterization

NAM6: The Micro and Nano Systems group

MAMINA: Matériaux et Acoustique pour les Micro et NANO systèmes intégrés

AIMAN-FILMS: Magnéto-Nano-Electronique - Structures actives, MEMS et flexibles Théragnostique ultrasonore - Micro-Fluidique

BioMEMS

Telecommunication Circuits and Systems

Silicon Microelectronics

TPIA: Transduction, Propagation et Imagerie Acoustique

MITEC: Microtechnology and Instrumentation for Thermal

TELICE: Telecommunication, Interference and Electromagnetic Compatibility

CSAM: Circuits systems and Application of Microwaves

COMNUM: Digital Communications

Acoustics

TPIA: Transduction, Propagation et Imagerie Acoustique

AIMAN-FILMS: Magnéto-Nano-Electronique Structures actives, MEMS et flexibles Théragnostique ultrasonore - Micro-Fluidique

MAMINA: Matériaux et Acoustique pour les Micro et NANO systèmes intégrés

ACOUSTICS

TECHNOLOGICAL FACILITIES

The main part of IEMN research activity is performed thanks to common resources consisting in technological and characterization facilities as well as near field microscopy, electromagnetic compatibility and telecom platforms and allowing the fabrication as well as the physical and electrical characterization of state-of-the-art components, devices and microsystems. During the period 2004-2007, the quality of the facilities and platforms were significantly improved thanks to three important national and regional programs: the Basic Technology Research (BTR RENATECH) network, the research reinforcement plan in the Nord-Pas de Calais Region and finally the State Region Project Contract (CPER). About 4 M€ were invested each year to make IEMN one of the best equipped micro and nanotechnology centre in Europe. Over the next period, 2008-2013, CPER and BTR RENATECH funding sources allowed to pursue the development of our platforms. The main mission of the technological facilities staff consists in supporting researchers for their technological projects. In addition, within the National Technological Network for Basic Technological Research (BTR) programme, IEMN became in 2003 a National Platform, opened to the academic laboratories as well as to national and international industrial partners.

