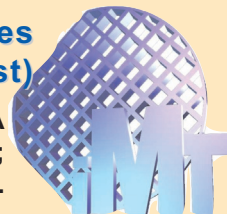


National Institute for Research and Developments in Microtechnologies (IMT-Bucharest)

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CHARACTERIZATION FACILITIES OFFER BY IMT-BUCHAREST

Microphysical characterization

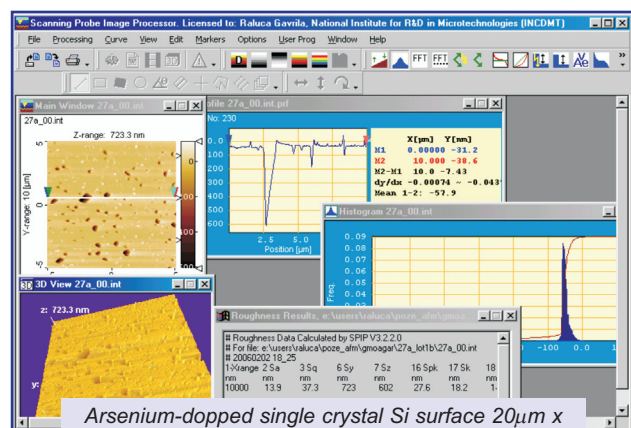
ATOMIC FORCE MICROSCOPE (AFM)

- Provides 3D measurements of surface morphology with nanometric resolution.
- Investigations are done under ambient conditions.
- Generally requires no sample preparation or coating.
- Admits both conductive and nonconductive samples.
- Imaging forces are typically three orders of magnitude smaller than for stylus profilometry (pN-nN)
 - maximum scan area: 20 x 20 microns
 - maximum measurable roughness: 5 microns
 - resolution: x, y: typical 20 nm; vertical: 2 nm

Equipment: Home-built AFM at Twente University.

In the very next future it will be replaced by a complex SPM equipment provided with additional operating modes suitable for biologic samples and nontopographic material properties.

Contact: Phys. Raluca Gavrila, e-mail: ralucag@imt.ro;



SCANNING ELECTRON MICROSCOPE (SEM)

- digital image acquisition.
- network operations, remote control and diagnostics (via TCP/IP)
- possibility of examination of non-conducting, water containing specimens in their natural state at low vacuum conditions in microscope chamber:
 - Accelerating voltage 200V-30kV
 - Resolution 3nm
 - Magnification 6 X - 1.000.000 X
 - Maximum image size 16 mega pixel;

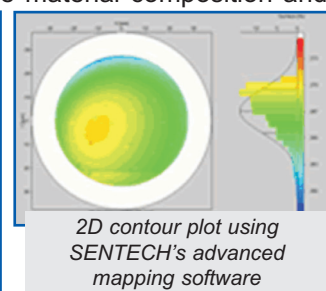
Equipment: SEM - TESCAN VEGA II LMU.

Will be up-graded with an EDX equipment for qualitative and quantitative measurements.

Contact: Phys. Adrian Dinescu, e-mail: adriand@imt.ro;

SPECTROSCOPIC Ellipsometer (SE 800 XUV)

- Analysis and characterization equipment for the nanometric thin films, interfaces, multi layer structures from different materials/dielectrics, conductive oxides, polymers, semiconductors. Measuring the index of refraction (n) and the extinction coefficient (k) for a single layer permits one to determine the material composition and modeling of optical performance.
- Spectral range (240-750) nm, with variable dimension of the spot from 4 to 0.1 mm and also of the angle (from 0 to 90°) with 0.01° accuracy.
- Operating software, SPECRRARY II /WINDOWS, enables the fast data acquisition and analysis of the measured data.
- The modular construction has the possibility of extension to IR range (until 2500 nm) and 2D- and 3D- representation of data.



2D contour plot using SENTECH's advanced mapping software

Contact: PhD. Munizer Purica, e-mail: munizerp@imt.ro;

Characterization equipments available in NANOBIO LAB
technological area (clean room) in MINATECH-RO

- ♦ **Nano-Plotter "GeneMachines OmniGrid Micro"**: allowing bio-chips development; dispersing of adhesives and liquid crystals; analysis of adherent cells or tissue slices, for nanobiotechnology projects as lab on chip, biochips.



GeneTAC UC4 Microarray Scanner

- ♦ **"GeneTAC UC4 Microarray Scanner"**: this equipment is used for reading the chips, acting as a pair of the nano-plotter, for DNA detecting and deposition.



Nano-Plotter GeneMachines OmniGrid Micro

Contact: Ph.D. Carmen Moldovan, e-mail: cmoldovan@imt.ro;

Characterization equipments available in Nanotechnologies Laboratory

- ♦ **Trace Lab-VoltaLab 50 (PST050&Volta Master 4)** – for electrochemical measurements;
- ♦ **Low noise preamplifier w.RS232** with interface, for electrical measurements;
- ♦ **Heating/ Cooling** testing system on wafers, for electrical measurements and wafer testing;
- ♦ **AMMT: wet etching** system for 4" silicon wafers with dedicated software, potentiostat MC, silicon etching power supply;
- ♦ **Transmission- reflexion- fluorescence microscope** with images acquisition and measurement system;

Contact: Ph.D. Irina Kleps, e-mail: irinak@imt.ro;



Keithley model 6487-picoammeter/voltage source- 2004, used for electrical measurements;



UV-VIS-NIR Spectrophotometer, SPECORD M42

UV- VIS-NIR Spectrophotometer

The spectrophotometer SPECORD M42 with double spot and (200 – 900)nm spectral range contains modules for transmittance and reflectance measurements and enables data acquisition by a PC in order to processing of the measured data with specific software's.

- ♦ Optical characterization of thin films by recording the transmission and absorption spectra for transparent samples and for solutions with +/- 0.3 nm precision in wavelength
- ♦ The reflectivity characterization of the texturized and porosified surfaces,
- ♦ The processing of $T(\lambda)$ and $R(\lambda)$ spectra leads to the knowledge of material properties: the absorption coefficient and the bandgap for the semiconductor and dielectric films.

Raman spectrometer by IMT through a P-CONFORM project – IV module CEEEX Competition – with the financing starting 2006 will enable the extension of possibilities for the structural characterization using optical methods at molecular and nanometric scale.

Contact: Ph.D. Munizer Purica, e-mail: munizerp@imt.ro;

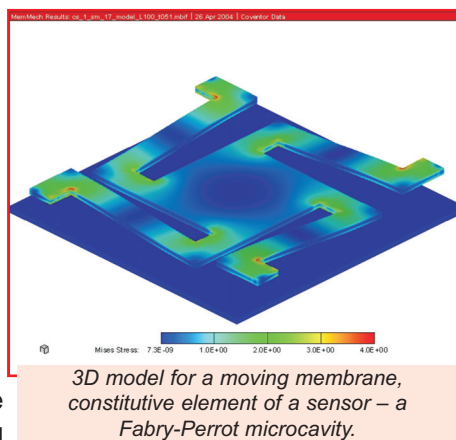
Quality & Reliability Analysis for semiconductor devices (sensors, microsystems, integrated circuits, transistors, diodes, etc.)

- ♦ **This service package contains:** InceTests (for quality certifying, mechanic-climatic ones, reliability ones); Analyses (failure & reliability ones); Assessment of reliability parameters; Reliability screening; Standardisation documents (standards, workbooks, etc.); Training courses.

♦ **...This is exactly what you need!** If you are a manufacturer of semiconductor devices or a producer of electronic systems (containing semiconductor devices). We offer you the necessary support for conquering Romanian and foreign markets, because the reliability ("the confidence in product") is the essential parameter for becoming **COMPETITIVE!**

♦ **Virtual prototyping.** A new concept, developed in IMT, meaning to simulate the reliability of the future product even from the project phase. It is based on a deep knowledge of the models for the degradation phenomena in the elements of the designed product, in the spirit of Concurrent Engineering.

Contact: Ph.D. Marius Bazu, e-mail: mbazu@imt.ro;



3D model for a moving membrane, constitutive element of a sensor – a Fabry-Perrot microcavity.

Contact data: Phone: 021 490.82.12; Fax: 021 490.82.38; <http://www.imt.ro>