

MINATECH-RO: the first non-software science and technology park in Romania

National networks and common laboratories.

The Romanian R&D programme CEEEX, or “Research for Excellence” (2005-2008) is financing “science and/or technological networks”, facilitating European cooperation and especially participation to European Technological Platforms (ETP).

IMT is coordinating three such networks. The first one, called RO-NANOMED (Integrated Research Network Devoted to Nanobiotechnology for Health: Romanian Nanomedicine Network) is targeting the ETP of Nanomedicine. The partners in this network are carrying on exploratory research in 14 small projects grouped in three clusters, focusing on the thematic areas of the above mentioned European platform. Moreover, this network supports the set-up of the **NanoBioLab common laboratory**, equipped with a nanoplotter and a nanoscanner for testing microarrays and located in the “clean-room” area inside IMT (Fig.5). IMT has the capability to design and fabricate microarrays and biochips (as shown by its participation to FP6), a specific target of convergent technologies. The other partners are also providing access to some of their equipments.



Fig.5

Another network is NANOSCALE-CONV (Network for scientific Services for Structuring and Characterization at the Nanoscale, with Applications in the Development of Convergent Technologies), again with a common laboratory installed in IMT, providing the **electron-beam lithography at the nanoscale** (Fig. 6). The third network coordinated by IMT, called RTN-NANOEL (Romanian Technological Network for Integration in the European Platform for Nanoelectronics) will consolidate the above laboratory. Again, in these two networks the partners are sharing access to their equipment and they are performing common exploratory research.



Fig.6

A technological pole located in the MINATECH-RO Park.

The focal points of the above networks – *the common laboratories* - represent a key feature of the science and technology park for micro-and nanotechnologies MINATECH-RO, created by IMT together with the University “Politehnica” of Bucharest. A new “clean-room” area was created and new equipments have been installed (fig. 7 shows a computer controlled Reactive Ion Etching equipment). This area is open for industrial companies, which may install their own equipments. A package of technological, training and business services is provided within a network of providers and users of knowledge and technologies supported by a centre of technology transfer (CTT-Baneasa). A number of companies are located in the park; whereas three research institutes have here working points.



Fig.7



Fig.8

The partnership with University “Politehnica” of Bucharest focuses on the education and training aspects. This “pole” is also facilitating access of the Ph. D. students to new equipments (fig. 8 shows a spectroellipsometer in the micro- and nano-optics laboratory).

The main role of the new “centre for converging technologies” in the above picture is **exploiting the existing potential in international co-operation**. Short and medium term targets are:

- bringing foreign companies into the science and technology park;
- providing services and training at the regional level;
- facilitating participation to FP7.

Infrastructures for Technology Transfer and Innovation (TTI) MINATECH-Ro The first scientific park, non-software from Romania - Technologic facilities **COVER PHOTO**: The figure on the first cover (page1) shows a picture obtained with the SEM-EBL equipment presented in Fig. 6, above. The research was done in IMT-Bucharest (www.imt.ro), within the project **Development of new complex tools for protecting health: laboratory-on-a-chip system “TOOPROLAB”** - CEEEX 2005 Programme (2005-2008). Project Director: Dr. Irina Kleps (irink@imt.ro), Laboratory of Nanotechnology, National Institute for R&D in Microtechnologies.

A new miniaturized device on silicon, bio-laboratory on a chip, to be use for a variety of cellular responses monitoring was designed. It consists of a microfluidic system connected to an electrical circuit which is useful to study the electrical properties of cells. Besides the common advantages of the lab-on-a-chip, related to the reducing of the sample volumes and to a shorter analysis time, the proposed device allows significant improvement of electrophysiological measurements quality: integratation of nanoelectrode-nanotip in microdevice reaction chamber improves the spatial resolution in recordings and reduces the measurement noise, which are often dominant.