

An excellence centre within an institute of micro- and nanotechnologies in Bucharest, Romania (I)

IMT-Bucharest (National Institute for Research and Development in Microtechnologies, www.imt.ro) was the first R&D organization in this field to be set-up (1993) in Eastern Europe. In 2004-2008 is active in about 20 European projects. At the national level, IMT is the coordinator of a few technological networks, and a science and technology park in micro- and nanotechnologies, MINATECH-RO (www.minatech.ro)



Contact: General manager **Professor Dan Dascalu**, E-mail: dan.dascalu@imt.ro; IMT-Bucharest, Romania

IMT is developing an existing "centre" of RF and Opto MEMS into a "European Centre of Excellence in Microwave, Millimetre Wave and Optical Devices, based on Micro-Electro-Mechanical Systems for Advanced Communication Systems and Sensors" (MIMOMEMS), according to a project financed (2008-2010) through the "Regional potential" part (REGPOT call 2007-1) of the European Framework Programme (FP7).

The overall aim of the MIMOMEMS project is to bring the research activity in Radio-Frequency (RF) and Optical-MEMS at the National Institute for R&D in Microtechnologies (IMT-Bucharest) to the highest European level and create a European Centre of Excellence in Microwave, Millimetre Wave and Optical Devices, based on Micro-Electro-Mechanical Systems (MEMS) for Advanced Communication Systems and Sensors.

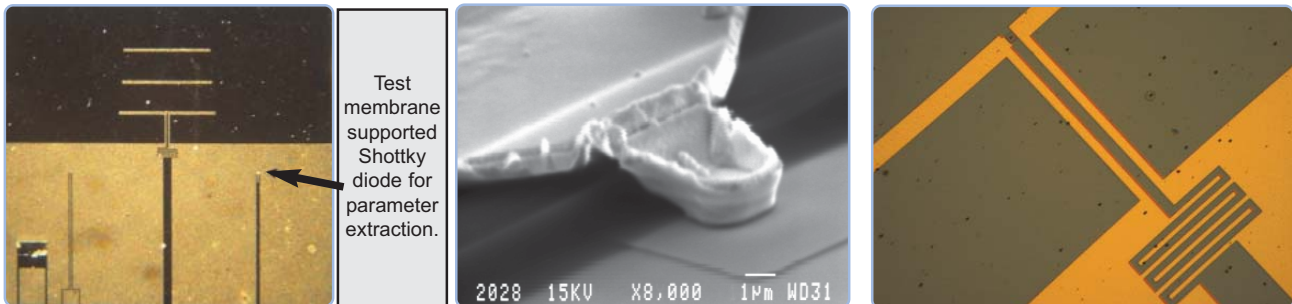


Fig. 1 Circuits are developed for advanced communication systems in the millimetre wave range. 60GHz receiver structure based on a membrane supported Yagi-Uda antenna monolithic integrated with a substrateless Schottky diode regions – common work of IMT (design, modelling, technological processes) FORTH Heraklion (processing) and LAAS/CNRS Toulouse (measurements) in the frame of FP6 NoE – AMICOM (the structure and details of the Schottky diode region).

The main concept of MIMOMEMS is to develop a European Centre of Excellence in RF and Optical-MEMS by increasing the competitiveness of our research in the most advanced topics of microsystems technology.

Consequently, we have selected new niche research topics from the areas of RF-MEMS and Optical-MEMS taking into account the latest trends in microsystems technology and priorities for long term research that have been identified by the two EU technology platforms - **ENIAC**, **Photonics21**, and **EPOSS** - and included in FP7 ICT Work Program.

Two IMT laboratories, for **RF-MEMS** and **Microphotronics**, respectively, **already active in previous European programmes, have joint their efforts to achieve this excellence centre.** The research activities of IMT's two Laboratories have been developed in the last years through strong cooperation with many European partners. **The most important research partnerships** are with **FORTH-IESL-MRG (Greece)**, **LAAS-CNRS in Toulouse (France)**, **Tor Vergata Univ. Rome (Italy)**, **VTT Helsinki (Finland)**, **ITC Trento (Italy)**, **TU Darmstadt (Germany)**, **Univ. of Athens (Greece)**, **Cambridge University (U.K.)**, **Fraunhofer Institute for Telecommunications-Heinrich-Hertz Institut, Berlin (Germany)**, and **IMT-FZK Karlsruhe (Germany)**.

These co-operations have developed in the context of EC founded projects and bilateral agreements for working on circuits manufacturing in technological labs, and characterising millimetre wave and photonic circuits.



Fig. 2 Dr. Alexandru Müller (IMT-Bucharest) and Dr. Tauno Vähä-Heikkilä (VTT- Helsinki), testing the 60 GHz receiver, used in **the first millimetre wave identification (MMID) tag developed in Europe.**