Mr. Ezio Andreta (see page 10) also participated to the **workshop** dedicated to the launch of the **"Romanian initiative in nanoscience and nanotechnology"**, giving the talk "The future of manufacturing in Europe and the role of nanotechnologies" (see below). Venue: headquarters of the **Chamber of Commerce and Industry of Romania and Bucharest** (14 may 2004).

A **panel discussion** was also organized. Part of the panel is shown in the photo (from left to right: Prof. Dan Dascalu from IMT-Bucharest, Prof. Ezio Andreta, Prof. Gheorghe Popa, Secretary of State for Research, Prof. Laura Tugulea from the University of Bucharest).

The message of the Ministry of Education and Research Alexandru Athanasiu was delivered by **Mrs. Iulia Mihail**, *Director for European Programmes in the Ministry of Education and Research* (photo right).

"Romanian initiative in nanoscience and nanotechnology", elaborated by consulting **Mr. Renzo Tomellini**, Head of Unit, Directorate of Industrial Technologies, European Commission is presented by Prof. Dan Dascalu, General Manager IMT-Bucharest (the full text was published in the "Micro and NanoTechnologies Bulletin", March 2004 issue and is available on web at: **www.imt.ro/mnt**). The first scientific and technological in Micro and Nanotechnologies (MINATECH-RO), founded by IMT-Bucharest, University "Politehnica" of Bucharest, ROMES S.A., in a network with other Romanian and organisations (*see page 10*) as well as the joint programme for master in nanoscience and nanotechnologies (*see below*) are relevant for this initiative. Prof. Dascalu was also stressing the importance of evaluating resources through the European project ROMNET-ERA (**www.romnet.net**).

Prof. Laura Tugulea *(Photo left)* , *Professor of Biophysics at the Faculty of Physics-University of Bucharest* is presenting a proposal for the ***"National Joint Master Programme in Nano Science and Nanotechnology"***

The National Joint Master programme will be jointly developed by cooperation between 4-6 Romanian universities and 6-8 Research & Development institutes from Bucharest, Iassi, Cluj-Napoca and Timisoara. This will allow exploiting the synergy of resources of best equipped didactic and research laboratories and high qualified personnel. The universities and research institutes will cooperate for: *(a) planning the programme of studies; (b) curriculum design and development; (c) the accomplishment of all activities*

The Master programme will be based on modules: intensive teaching periods (theoretical and laboratory courses, seminars - mainly in universities) and practical stages (of minimum 3 months) in specialized laboratories from universities and research institutes. The length of studies: 2 years. The number of students/year will be around 20. The candidates should be graduates, at least of the first university cycle: in basic science (physics, chemistry, biology, mathematics-informatics), or in engineering sciences. All students will obtain governmental scholarships or grants from the places of practical stage. Private companies will be also invited to participate to the Master programme with: specialists (lectures or tutorial activities) and by hosting laboratories for students' practice.

Mr. Ezio ANDRETA, *Director "Industrial Technologies"*, *Research Directorate-general European Commission* is giving the talk: ***"The future of manufacturing in Europe and the role of nanotechnologies"*** (for full presentation see: http://www.romnet.net/ro/vizitaAndreta/program.htm)

Mr. Andreta was presenting a vision about the economic development. He was explaining the transition from a " traditional economy " based on traditional resources to a new economy based on knowledge. The triplet " land-labour-capital " is replaced by knowledge-capital. "This implies moving from an economy of 'quantity' to an economy of 'quality', from an economy of 'use and waste' to a sustainable economy" he explains. Six main changes are considered : From linearity to complexity; From individual to system competitiveness; From resources-based to knowledge-based economy; From macro to micro; From top-down to bottom-up production systems; From mono-disciplinarity to trans-disciplinarity.

Novel activities and the new generation of high-tech industries are showing up on the market. The shift from labour-intensive to brain-intensive operations modifies jobs and skills required.

Mr. Andreta: **Why is nanotechnology important for European society and industry?**

Analysts estimate that the market for products based on nanotechnology could rise to hundreds of billion by 2010 and exceed one trillion after 2015.

European Activities in Nanotechnology R&D have been characterized as follows:

- Several countries started national nanotechnology between the mid-1980's and mid-1990's
- Overall investment of around 200 million € in 1997 has risen to around 1,000 million € in 2003
- Levels of public investment vary considerably between 0.05 and 5.6 € per citizen
- Transnational projects in the EU's 4th (~30M€/year) and 5th (~45M€/year) Framework Programmes
- Nanotechnology identified as a main priority area in the 6th Framework Programme (~250M€/year)

Dr. Andreta is explaining *(see also page 12)*: **Building the Momentum of R&D**.

- European public investment in nanotechnology R&D should increase by a factor of 3 by 2010
- Focus upon transforming our knowledge into wealth generating products and processes
- Reinforce the next FP for added-value via critical mass, transnational collaboration and competition
- Effective coordination of national programmes with both OMC and ERA-NET mechanisms
- Bring public and private stakeholders together to strengthen roadmap and fore sighting activities