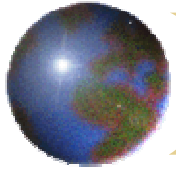


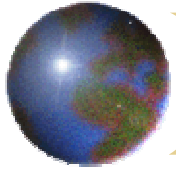
***TECHNOLOGY TRANSFER IN ADVANCED  
MATERIALS FROM ROMANIA:  
RESULTS AND EXPECTATIONS FOR FP7***

Radu Robert Piticescu-National Institute for Non-ferrous and Rare Metals/Centre for Technology Transfer in Advanced Materials CTT AVANMAT



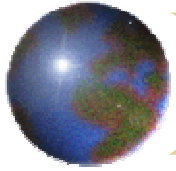
## *General problems of TT in the field of nanomaterials*

- ✦ **Research at frontiers Ó high potential expected now!**
- ✦ **High expectations Ó dissipated and slow rhythm due to different fields and new knowledge involved**
- ✦ **Limited competences Ó interdisciplinary at superlative and communication (science – society, science-business)**
- ✦ **Development directions “pushed” by academic media and not enough “pulled” by industry**
- ✦ **Lack of qualified personnel and students**
- ✦ **Materials research required but the “cream” belongs to those making final device**



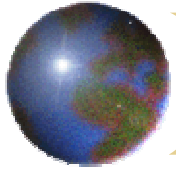
## *Other problems:*

- ❖ Lack of simple to be applied processes for industry
- ❖ Lack of standard characterisation methods (nano-metrology):  
Committee ISO TC 229 Nanotech launched on 11 Nov.2005 in London
- ❖ Toxicology problems of Nanomaterials
- ❖ At the limits of imaginable—big differences related to conventional materials



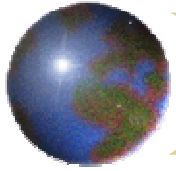
## *Ideal Conditions for TT*

- ✦ Universities, institutes and companies under one roof  
(Modern characterisation facilities, inter and multidisciplinary)
- ✦ “Non-conventional meeting rooms”
- ✦ Different types of SMEs: bio, nano, chemistry, medicine, equipments, soft....
- ✦ Formal integration:
  - ✦ Joint projects
  - ✦ Mixed financing: R&D, infrastructure, public / private
  - ✦ Access of end-users at joint laboratories
  - ✦ Entrepreneurial education, consultancy



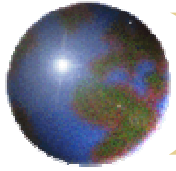
## ***STRONG for ROMANIA***

- ✚ The role of high added values materials (biomaterials, intelligent materials...) in the National Development Strategy for 2007-2013
- ✚ Still high educated people in Materials field in Education and Research
- ✚ Portfolio of projects ready to be transferred
- ✚ Increased number of high annual development rate of SMEs profit: more than 35%
- ✚ Infrastructure-structural funds



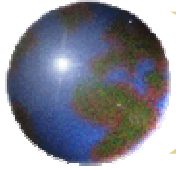
## *WEAK for ROMANIA*

- ⊕ Slight own investments in the field
- ⊕ Management not enough oriented toward innovation
- ⊕ Lack of high qualified personnel
- ⊕ Incipient stage of innovation and TT infrastructure;
- ⊕ Lack of managerial education;
- ⊕ The slow recovery in high tech field due to not enough request for valorisation of R&D results in SMEs and enterprises



## *OPPORTUNITIES for ROMANIA*

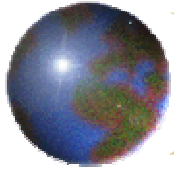
- ✦ New market niches for advanced materials
- ✦ Increasing the productivity
- ✦ Increasing profit by diversification offered by new materials and shorter production cycles
- ✦ Increase export of biocompatible and intelligent materials on a market still in formation
- ✦ Small scale production with high added value;
- ✦ Pressure from increasing quality products requirements and life quality;
- ✦ Requirements to implement European standards;
- ✦ Reduce the negative impact over environment



## *THREATENS*

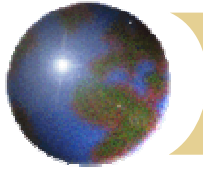
- ❖ Difficulty to enter on the global market for Romanian SMEs due to high investment required and managerial drawbacks
- ❖ Expected reaction of concurrent companies: import may exceed export and own production level





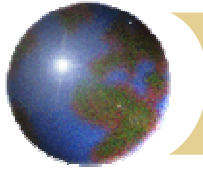
## ***What we offer: NANOSTRUCTURED MATERIALS LAB FROM IMNR***

- ❖ **Original chemical synthesis (hydrothermal, electrochemical, sol-gel colloidal)**
- ❖ **High purity or controlled doped nanomaterials (ZnO, ZrO<sub>2</sub>, TiO<sub>2</sub>, SiO<sub>2</sub>, PT, PZ, PZT, BT, BST.....)**
- ❖ **New inorganic-organic hybrid materials with strong chemical bonding, not existing yet on the market**
- ❖ **Any form: powders, thin films, bulk**



## *What we can do at CTT AVANMAT*

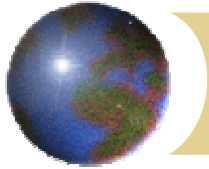
- ✿ Fast technological transfer towards SME's of the R&D results in the field of advanced biocompatible and intelligent materials (metallic, ceramic, composite);
- ✿ Identify the market need technologies, services and products in the target field;
- ✿ Assure a continuous qualified training in the target field for the and students specialists acting in SME's
- ✿ Consultancy for SME's to submit project proposals in national and international R&D competitions in the target field ;
- ✿ Consolidate and develop a specific market for the target domain;
- ✿ Forecast the market demand for medium and long term in order to align applied R&D activities to the market trend;
- ✿ Dissemination of knowledge related to the target filed, especially for SME's;
- ✿ Support SME's and other enterprises in the target field to implement European standards for the characterization of advanced materials:
- ✿ Establish networks that will facilitate the contact between the R&D specialists and SME's in this field and to encourage the national and international partnerships;
- ✿ Activities linked with intellectual property rights;



## *PARTNERSHIP REQUEST*

### **FP7 – REGIONS – 2007 – 1 Analysis, mentoring and integration of research actors**

- ✦ **Building a consortium to write a proposal focusing on valorisation of research results and knowledge creation in the field of intelligent materials**
- ✦ **The consortium will focus on how to professionalise the path from existing research results to successful market results with an ensured return on investment.**
- ✦ **The region from Romania involves IMNR-CTT AVANMAT, Development Agency Bucharest-IIfov and one SME active involved in the TT of advanced materials**
- ✦ **Request: similar consortium from EU with tradition in the field for mentoring activities with expected probability to create new joint ventures**



## CONTACTS

National R&D Institute for Non-ferrous and Rare Metals (IMNRP- Centre for Technology Transfer in Advanced Materials (CTT AVANMAT)

102 Biruintei Blvd, 077145 Pantelimon, judet Ifov, ROMANIA

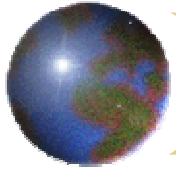
Tel/fax +40 21 3522046; +40 21 3522048

Contact person: Dr. Robert Piticescu, director CTT AVANMAT

Dr. Teodor Velea, director IMNR

Web page: [www.imnr.ro/avanmat](http://www.imnr.ro/avanmat)

E-mail: [rpiticescu@imnr.ro](mailto:rpiticescu@imnr.ro)



## Acknowledgement

- ✦ National Agency for Scientific Research-INFRATECH Programme
- ✦ National Centre for Programmes Management of the National Agency for Scientific Research for support in the frame of Research for Excellence Module III Project 217/2006 VIZGRAF

**Thank you for your attention**