





Sectoral Operational Programme "Increase of Economic Competitiveness"



### Centre of Advanced Research and Technology for Alternative Energies (CETATEA)





National Institute of Research and Development for Isotopic and Molecular Technologies, Cluj-Napoca, ROMANIA

#### CETATEA

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### ELECTRON MICROSCOPY INTEGRATED LABORATORY

Existent infrastructure: TEM, SEM, EDX, EELS, EBSD and adjacent equipment



Scanning electron microscope (SEM)

SEM images









TEM image

Laboratories: a microbiology laboratory used for cell culture and integration of nanostructures into cells and a sample preparation lab for electron microscopy measurements.





# HIGH PERFORMANCE RECHARGEABLE BATTERIES FOR AUTOMOTIVE AND ELECTRONICS

Laboratory for the fabrication and characterization of lead-acid prototype batteries

Electrochemical testing of batteries - by impedance spectroscopy





### POWERGENERATION THROUGH DIRECT CONVERSION OF SOLAR AND THERMO-ENERGY

Materials for the conversion of solar and thermo-energy are designed using a Pulsed Laser Deposition system (PLD).





There are dedicated laboratories for the deposition of thin films, as well as characterization, assembling and testing of photo-voltaic thermo-electric devices.



Samples of thin films deposited with PLD:



### ENERGY RECOVERY FROM ELECTROMAGNETIC POLLUTION (ELECTROSMOG)



Experimental board for the recovery of the energy from the ambiental pollution and DC conversion







Experimental board for energy DC conversion from ambiental electromagnetic waves



# CONCENTRATED SOLAR ENERGY CONVERSION THROUGH THERMO-ENERGETIC MACHINE TOOLS

Stirling engine prototype and a high efficiency solar concentrator prototype



Open space for testing solar concentrators and solar panels





# ENERGY RECOVERY FROM VIBRATIONS AND AMBIENTAL NOISES

Vibrations and noise measurements equipment



#### CONTRIBUTION IN ATLAS EXPERIMENT FROM LHC- CERN GENEVA

Research and Development for the new electronics of the TileCalorimeter Production of mechanical mini-drawers



#### LABORATORY FOR THE SYNTHESIS OF CATALYSTS AND POROUS MATERIALS FOR HYDROGEN PRODUCTION AND STORAGE



#### **CETATEA - GUESTS**

After inauguration, political personalities visited the research center CETATEA, as following:

March 4, 2016, the Prime Minister of Romania, Mr. Dacian Cioloş and the Vice Prime Minister, Mr. Vasile Dâncu





June 23, 2016, members of the European Commission:

- Mr. Markku Markkula, President of the European Committee of the Regions(CoR)
- Mr. Bror Salmelin, adviser for Innovation Systems at the European Commission











#### Centre of Advanced Research and Technology for Alternative Energies (CETATEA)

Sectoral Operational Programme 2007-2013: Increase of Economic Competitiveness Co-financed by thr EUROPEAN REGIONAL DEVELOPMENT FUND Priority Axis 2: Research, Technological Development and Innovation for Competitiveness Investments in RDI infrastructure and related administrative capacity

Beneficiary: National Institute of Research and Development for Isotopic and Molecular Technologies

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