Mexican student tests computer model of German composite material

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Mr. Conrado Rosales Torres is an Engineering Doctoral Student focusing on Mathematical modeling of the mechanical behavior for the material "Nanotube Reinforced Polymer" at ITESM, Dept. Mechanical Engineering in Monterrey, Mexico. He visited the Fraunhofer IWS institute in Dresden, Germany for three months beginning of 2008.

What have you worked on during your visit?

I, and three more participants, worked in laboratory facilities manufacturing CNRP´s (Carbon Nanotube Reinforced Polymer) composites. The different tasks during the process were:

- Purifying the material
- Separating the bundles of Carbon Nanotubes (CNT deagglomeration)
- Conditioning the CNT surface using different solutions.
- Mixing the CNT´s with an Epoxy Resin and hardener, making specimens for testing the tensile strength.

Why is that important for your research and for progress in nanotechnology?

Just now I am concluding my Doctorate program in the ITESM, México; I am focusing on mathematical modeling of the CNRP´s and the experimental results of that kind of material are very important in order to conclude that the modeling is ok.

Why did you come to this European research centre to do this project?

Last June I wrote a technical proposal in which I detailed the different activities that could help to continue my studies around mathematical modeling of CNRP´s; I sent this proposal to be considered by the firm Malsch TechnoValuation, and this firm sent the proposal to IWS Fraunhofer Institute. The personnel of the institute considered that the work was related with the different studies the do and they accepted to participate in the program as hosting institute to develop the program I proposed several months ago.

What are the results? How will you disseminate them?

I am in contact with Dr. Francis Avilés of the Scientific Research Centre of Yucatan (CICY) in Mexico and Dr. Patricio Toro of the University of Chile, Dept. Chemical Engineering and Biotechnology, Santiago de Chile, Chil. Together we will write one report on the different experimental results we achieved in the Fraunhofer IWS institute. We want to present those

results in the next NanoforumEULA Fact Finding Mission in Brazil (4-13 September 2008), and of course publish it in a specialized worldwide journal**.**

Is this the first contact between both organizations or is your visit part of existing collaboration?

It was the first contact between Fraunhofer IWS and ITESM.

What are the plans for future collaboration?

Firstly, we need to conclude the present experimentation we began at Fraunhofer IWS facilities; for that, Dr. Oliver Jost of the IWS will send us results of different characterization techniques employed over several samples we left there. After that we are going to look for a common area in which we can collaborate. We intend to apply for funding in the EU 7th Framework Programme for RTD.

How may your project in the long term benefit the development of your country or Latin America in general?

México is an emerging nation, in which the activities in research and development do not have the amount of resources other nations in the world give to the development of that area. Nevertheless just now, we have an important chance to begin, together with the most advanced countries, the development in the nanotechnology area without a strong delay with other countries.
With that in mind, the efforts to put to the nanotechnology in one of the main research areas in our country will pay great dividends to our nation and to Latin America.
We have very strong industries in Mexico, which will be affected in a direct way with the first applications to products from nanotechnology:

- Energy, for which demand is growing faster that the resources. The oil reserves will begin to decrease and then alternatives and more efficient energy sources will be necessary;
- Automotive is growing until now;
- Bioengineering has major potential applications for nanotechnology.

What are your plans for disseminating the results of your visit outside the research community in your country?

The Instituto Tecnológico y de Estudios Superiores de Monterrey has different communication media which reach out to a university community as large as 50,000 students and professors. The results will be published in the following media sources:

- Panorama.
- Transferencia.

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About NANOFORUMEULA

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