



Iran Advancing Nanotechnology in Solar Energy and Biomedical Applications

Highlight of 3rd International Conference on Nanostructures, Mar.10-12, 2010, Kish Island, Iran

Abstract:

This article highlights a recent nanostructures conference held in Iran where most of the Iran nanotech scientists gathered plus 15% international participants. The conference was organized by the top university Sharif University of Technology and sponsored by the Iranian Nanotechnology Initiative. Hot research topics presented in the conference include energy/environment, nanocomposites, and nanomedicine. Female scientists are about half of the nanotech workforce, in graduate degree level, it is even over 50%.

I was invited to speak about the Nanotechnology R&D and commercialization updates in Asia at the 3rd International Conference on Nanostructures (for detailed program, please contact us and the event site is no longer working) held in Kish island of Iran during March 10-12, 2010. This is an academic conference and covered research topics including nanostructured composite materials (from synthesis, characterization to application); nanostructured materials for energy and environment; nanomaterials for biomedical applications; carbon based nanomaterials (CNT, fullerenes. And grapheme); Nanostructured materials for electronics and photonics applications; nanomaterials for catalytic and photocatalytic applications; computation and modelling in nanoscale; mechanics and nanomaterials; magnetism in nanostructures; and nanomaterials based sensors. Popular sessions include Energy/Environment, NanoBiotechnology, Nanocomposites, Nanocarbon, Sensors and Optics and Electronics. Two additional workshops were organized in parallel to the technical sessions on SPM Technology and Instrumentation given by an Omicron representative and Dye Sensitized Solar Cells given by a Dyesol representative. The conference was organized by the Sharif University of Technology and hosted at its International campus located at the beautiful coral island- Kish Island (visa free for all visitors) located on the other side of the gulf opposite to Dubai. The main conference hall is equipped with state of the art facilities, one of the best international conference venues I have ever been to. The main sponsor of the conference is the Iranian Nanotechnology Initiative (INI) which I discussed in my earlier report appeared end of the last year.

Apart from having to learn dressing according to local requirement for women especially when in and out of the Iranian custom, I enjoyed the conference networking and learning some of the exciting research efforts in nanostructured dye sensitised solar cells (DDSC), nanocarbon, nanomedicine and other frontier of nanotechnology from other overseas invited speakers as well as from distinguished Iranian scientists. I was particularly impressed by the motivated and progressive young scientists who



are passionate about nanotechnology and the leadership of a lady scientist Prof. Azam Irajizad who is the founding director of the Institute for Nano Science & Nanotechnology (INST) at Sharif University of Technology (A top university in Iran) whom I met back in 2005 at the Nanotrend 2005 conference in Munich. Prof. Azam established the 1st PhD program in Nanotechnology in Iran at INST in 2005 and today attracted 34 PhD students in the program. “More than half of my students and faculties are females and our graduates are very competitive worldwide and they are known to be at the top universities in the US”, Prof. Azam explained during our discussion about Iran nanotechnology education.

It is interesting to see how much the nanoscience and technology has grown in Iran over the past 5 years. “This conference has grown from 80 accepted papers to this year about 450 papers presented at this event”, Prof. Nima Taghavinia, chairman of the conference shared with us. This is the largest nanotech technical conference in Iran and attracted 500 registered participants including 15% foreign participants. The event brought together main players in Iran nanotechnology work force (mainly university faculty members, researchers and graduate students) and prominent international scientists to share their nanoscience and technology achievements and discuss the frontier of nanotechnology advancement as well as exploring international collaborations. The organizer also aims to establish an event that is influential in nanotechnology in the region attracting more the middle east and scientists taking advantage of the free economic zone of Kish Island where entry visa is not required. This event attracted distinguished scientists from Germany, India, Italy, Korea, Japan, Singapore, Sweden, Switzerland, Taiwan and UK to give invited talks on scientific advancements in the areas of nanostructured materials synthesis and design and functionalization for application in energy/environment, nanomedicine, composites and devices.

Due to the limited access to world class equipment, a lot of research efforts in Iran have been focusing on nanomaterials synthesis, functionalisation and application to produce smarter materials. nanomaterials research is a naturally strong and relative weak in device fabrication compared with developed countries. Nanocomposites seem to be a very popular research focus covering 25% of the total accepted papers. Energy and environment application of nanomaterials and sensors are new in this year conference. “The embargo has forced us to develop our own R&D and industry capability. We see nanotechnology will enable further advancement of our industry and improve our quality of life as well as pushing the scientific frontier forward”, Dr Saeed Sarkar, Secretary General of Iran Nanotechnology Initiative commented during our interview.



Opening of the conference at 20:30 March 10th 2010.



Dr Lerwen Liu visiting undergraduate teaching laboratories at the Sharif University International Campus at Kish Island.



Dr Lerwen Liu delivery her invited talks and being introduced by Prof. HanJo Lim, former and the 1st President of Korean Nanotechnology Researchers Society.



Prof. Azam Irajizad, Director of the Institute of Nanoscience and Nanotechnology at the Sharif University of Technology, introducing INST PhD program (started 2005) and research activities.

