

## **Nano Education: OIC Essential Need Of Today And Tomorrow: Formation of an Nanotechnology Advisory Group (NAG) of I A S.**

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Nanotechnology is the new technology of great socio-economic and strategic importance for any country across the globe. It is highly applicable in almost all kinds of industries; may be Water Purification Industry, Oil and Gas Exploration, Mineral Development, Clean drinking water, pharmaceuticals, the healthcare industry, environment or any consumer goods industry or what ever. It is the technology where the industries use the materials of very small sizes, the sizes of atoms and molecules or the sizes at nanoscale, which greatly add value to the relevant industrial products both in terms of quality and the efficacy of the products.

The nanoscale range of materials used for nanotechnology is usually regarded as 1-100 nanometers. One nanometer(nm) is one billionth of a meter and to visualize the smallness of "one nm size" we would refer to the thickness of the human hair or that of a sheet of paper which is some 80,000nm.

Nanotechnology is seen with such a high potential for value addition to the products of almost all types of industries that it is being regarded as another INDUSTRIAL REVOLUTION in the offing. This aspect is reflected in the fact that advanced countries like USA, Japan, EU etc are investing billions of dollars annually in a race to have a socio-economic power or the defense power dominance over other countries. USA for example from 2001 to 2010, has invested over 12 billion dollars on nanotechnology during the past ten years. Russia, remaining some what behind USA and Europe, allocated a budget of 7.7 billion \$ to be spent on nanotechnology till 2015. Therefore the political leaders of such countries have taken Nanotechnology programs on national level to give it serious considerations.

Regarded as an other **Industrial Revolution** the applications of nanotechnology to various industries is expected to last for several decades in future. Therefore there is a need to cater for a human resource for future which is specifically qualified and trained in nanoscience and technology so that optimum benefits could be obtained by the employment of such human resource in the relevant industries or in organizations requiring the knowledge of nanotechnology such as patent offices or legal offices which need to be familiar with nano based products.

To produce such human resource the educational institutions need to adopt the curriculum in education and training of nanotechnology at all levels of education i-e school level, the college and the university levels.

It is therefore time that OIC countries pay special attention on national levels to pursue the nano education on priority so as to reduce the dependence on the advanced countries for the purchase of the nano products from the advanced countries. Among OIC countries Iran is pursuing nanotechnology in a serious manner and the President of Iran has since several years an Advisor on Nanotechnology in the President Office which results in an efficient development of nanotechnology in Iran.

*It is therefore proposed that the Islamic Academy of Sciences, as an important science organ of OIC, should come forward and form a Nanotechnology Advisory Group(NAG) consisting of a few relevant scientists of IAS member countries which may plan programmes and strategies to draw optimum benefits from this powerful technology.*

## **Energy Focus Group, Prof. M. Nayfeh FIAS (USA)**

Prof. Munir Nayfeh  
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*Urbana, USA*

As a follow up to the discussions we had in the formal sessions, Dr. Butt, and Dr. Maaza approached me concerning the area of nanotechnology and applications.

Based on these discussions, I would like to present to you the following ideas for IAS consideration, suggestions, and improvements. With my best regards. Munir Nayfeh

### **Energy Focus Group**

- Create an energy focus group within IAS. (If this model is successful, it may be extended or other focus groups may be recommended on water security, health security, etc.)
- Size: 6 to 12 members consisting of members who have expertise in nuclear, renewable, petroleum, advanced technology and nanotechnology, and education / training fields
- Communications: the group may use for communication teleconferencing using telephone network, online video conferencing using the internet, meetings or workshops
- Members: The group will be open to interested members. The following members have expressed interest in being part of the group: Noor Butt, Malik Maaza, Mehmit Ergin, Nesreen Ghaddar, Syed Qaim, Munir Nayfeh

### **Activities of the energy focus group may include:**

- Advisory role to IAS on nanotechnology and energy related activities.
- Provide a space to discuss ideas, seek experts, create and implement public awareness and inspire Muslim countries to invest in energy research, development and innovation.
- Organize a symposium at the next IAS meeting on the subject of energy security & nanotech role.
- Prepare a report/manuscript for publication on the state of nano activities in the Muslim world.
- Prepare a white paper proposal on energy security for the benefit of the OIC .