

International Conference on Nanotechnology: Present and Future

August 25-26, 2005

Bogota, Colombia

The Regional Interest Group (RIG) in Bogota, Colombia of the IEEE Nanotechnology Council (NTC) organized a conference 'Nanotecnología Presente y Futuro' in Bogota on August 25-26, 2005. The conference was co-sponsored by the IEEE Colombia Section, BAYER Cropscience, Galante R & A Ltda., Universidad Santo Tomás, Universidad San Buenaventura, Pontificia Universidad Javeriana, Universidad Militar Nueva Granada, and Universidad Distrital. The conference was held at the Biblioteca Publica (Public Library) auditorium and attended by about 400 people from all over Colombia. Over 60% of the participants were students from various Colombian universities.

Dr. M. Meyyappan, Director of the Center for Nanotechnology at NASA Ames Research Center and President-elect of IEEE-NTC was the Keynote Speaker. His Keynote lecture titled "Nanotechnology: Opportunities and Challenges" covered nanotechnology as an enabling technology in various sectors of the economy: electronics, computing, memory, data storage, communications, materials, manufacturing, health and medicine, energy, environment, transportation, national security, etc. Besides giving some emerging examples in each of these areas, he also provided a short, medium and long term forecast of the technologies and products which can be expected.

Dr. Meyyappan also provided two additional lectures during the two day event. The first one focused on the nanoscale properties. Aimed as a tutorial to help the students understand why the nanoscale properties are different from their bulk counterparts, this lecture focused on surface to volume ratio, interfacial properties, and quantum mechanics. Differences in properties such as melting point, specific heat, bandgap, electrical conductivity, color, magnetic properties and others when going from bulk to nanoscale were explained. The second lecture titled "Novel One Dimensional Nanostructures" focused on carbon nanotubes and inorganic nanowires. Growth and characterization of these structures along with their applications in electronics, chemical and biosensors, field emission devices and other areas were covered.

The conference had several organized sessions featuring invited speakers from Colombian organizations. Dr. Carlos Maldonado from CIPE, Externado de Colombia University spoke on the philosophy of the science and nanotechnology and focused on the epistemological status of nanotechnology. He argued a twofold thesis: on the one hand, nanotechnoscience is not just one more chapter in the history of science or technology, but a radical shift that opens new horizons. On the other hand, nanoscience can and must be seen as a new science, namely a cross disciplinary and a border-science. Thus, the question regarding the philosophy of nanotechnoscience deals with a science defined by border-problems, which can shed new lights into similar sciences, such the sciences of complex systems, for example. Whilst nanoscale research cannot be seen as reductionist, from a philosophical point of view the core subject lies on the concept of "scale." The concept of nanotechnoscience allows a real unification of engineering and science, of construction, manipulation and control of nanophenomena and, at the same time, an explanation of what is being assembled and designed. Throughout such a unity a quite new understanding of science and technology is possible.

The session on Nanotechnology and Cancer featured speakers Esperanza Castellanos (Physics-Medical at Javeriano Oncology Center), Ivan Hidalgo (CJO Radiotherapist), and Edgar Gonzalez (President of the National Council of Nanoscience and Nanotechnology, Professor-researcher at Javeriana University and Santo Tomas University). These talks covered the main techniques of conventional treatment of the cancer with their limitations and problems, as well as future possibilities offered by nanotechnology to improve the procedures of prevention, diagnostic and treatment of illness. Also discussed in detail was the creation and characterization of gold and other nanoshells for cancer diagnostics and treatments.

The conference ended with a 90 minute long panel discussion with panelists Dr. Meyyappan, Dr. Jairo Giraldo of Nacional de Colombia University, Dr. Rafael Rey of Nacional de Columbia University, and Dr. Edgar Gonzalez. The panel focused on nanotechnology as the technology of the 21st century and how developing countries like Columbia can participate in the developments and benefit from it. The panel members answered questions submitted by the audience.

The conference, first of its kind in Colombia and in Latin America, was an extraordinary success. This was evident from the large attendance, enthusiasm of the participants, especially the students and the eagerness they showed to learn more about this important emerging field. Throughout the conference, Orquesta Filarmonica de Bogota provided short renderings of Columbian classical music to keep the participants entertained in between various sessions.

Following the conference, the Presidents of the five sponsoring universities signed a memorandum of agreement on August 29, 2005, to work together in developing facilities.

The conference chair was Professor Edgar Gonzalez, Universidad Javeriana and Universidad Santo Tomas. He can be reached at egonzale@javeriana.edu.co. With a tremendously enthusiastic and capable student population but with limited resources, Dr. Gonzalez and his Columbian colleagues are looking for opportunities for collaboration, student and faculty visits (both short and year-long) and other educational exchanges with U.S., European and Asian universities.

