

RECENT ACTIVITIES OF THE NANOTECHNOLOGY TECHNICAL COUNCIL (NTC)

Prepared by Dr. Alfonso Centuori

The Nanotechnology Council (NTC) is going through growing organizational stages that will drive it to a fully active and professional entity, following the IEEE directives.

The vast majority of recent activities of the NTC are reported here:

- NTC to establish a *PIONEER AWARD IN NANO TECHNOLOGY*
- NTC to establish an *EARLY CAREER AWARD IN NANO TECHNOLOGY*
- NTC to establish an *NTC Distinguished Service Award*
- NTC AdCom approved the 2005 budget as presented by VP Finance.
- NTC AdCom approved in principle the concept of publishing an IEEE Nanotechnology Magazine.
- Creation of Regional Interest Groups.
- IEEE Press Book on Nanotechnology (Meyyappan & Porod)
- Review of Publications Activities
- Review of TNT Performance
- Increased Page Numbers for 2004 (400 to 500 due to significant growth and to minimize delay in publication of accepted papers)
- 2005 TNT Page Count: 600 (Budgeted), Quarterly to Bimonthly
- Nanotechnology Magazine – Committee Chaired by Prof. Kent Choquette to Review Pros and Cons.
- Excellent Citation Ranking – Thanks to Excellent Efforts of Prof. Sandip Tiwari, EIC and the Editorial Team of TNT
- IEEE Transactions on NanoBioScience (jointly with EMB Society) –EIC Prof. Carmelina Ruggiero, Univ. of Genoa, Italy
- Electronic Newsletter – EIC- Prof. Gary Bernstein, Univ. of Notre Dame
- Transactions on Nanotechnology
Impact Factor: 2.088, Immediacy Index: 0.5, Cited Half Life: ???
- Nanotechnology, The Institute of Physics, UK
Impact Factor: 2.304, Immediacy Index: 0.494, Cited Half Life: 3.3
- NanoLetters, American Chemical Society
Impact Factor: 6.144, Immediacy Index: 1.288, Cited Half Life: 1.7
- Journal of NanoScience and Nanotechnology, Amer.Scientific Pub.
Impact Factor: 1.987, Immediacy Index: 0.275, Cited Half Life: 1.9
- Physica E: Low Dimensional Systems and Nanostructures, Elsevier
Impact Factor: 0.93, Immediacy Index: 0.494, Cited Half Life: 0.204
- Journal of Nanoparticle Research, Kluwer
Impact Factor: 1.333, Immediacy Index: 0.111, Cited Half Life: 2.9
- Publications Activities are on Track

- Transactions on Nanotechnology is growing and quality is high based on impact factor
- New Nanotechnology Magazine approved !!
- In an effort to increase awareness of the NTC and IEEE nanotechnology standards initiatives we organized the following activities:
 - IEEE Nanotechnology Standards Roadmap held in November 2003 to identify critical areas for nanotechnology standards.
http: <http://grouper.ieee.org/groups/nano/>
 - IEEE Nanoscale Devices and Systems Integration in Miami in February, 2004
 - Nanotechnology Standards Session, “Standardizing Routes to Commercialization of Nanotechnology: Materials, Tools, Manufacturing Platforms” at Nanotech 2004 in Boston in March.
 - Nanotechnology Standards Session at Trends in Nanotechnology (TNT) in Segovia, Spain, September 2004.
- To create stronger linkage to other SDOs developing nanotechnology standards a Memorandum of Understanding between IEEE-SA and SEMI was executed to:
 - Develop internationally accepted nanotechnology standards within each organization that are identified by the industry as needed, and which are timely and reflect leading-edge technology developments.
 - Gain traction for both groups in the nanotechnology and MEMS areas.
 - Learn how SEMI and IEEE can work together to benefit the disparate interests of their members.
 - Formed the IEEE Nanotechnology Council P6520 Standard Working Group to develop standard for characterization of nanotubes.
 - Executed Memorandum of Understanding between IEEE-SA and SEMI to create stronger linkage to other SDOs developing nanotechnology standards.
 - Actively working with IEEE Standards Association, industry and government (e.g., NIST).
- The IEEE Nanotechnology webpage was designed and officially launched <http://grouper.ieee.org/groups/nano/>
 - Separate pages for materials, devices, and interoperability standards efforts were created.
- Several P1650TM Working Group Meetings were held to continue draft . “Draft Standard Test Methods for Measurement of Electrical Properties of Carbon Nanotubes”. The WG is on target to deliver a draft on time.

- Presented at 2nd New England International Nanomanufacturing Workshop June 29-30, 2004.
- Presented at 2004 National Conference of Standards Laboratories International (NCSLI) Workshop and Symposium in Salt Lake City, Utah on July 14.
- Two articles published by Journal of Nanoparticle Research (Kluwer), “Nanotechnology Standards Initiatives” in May 2004.
- The manuscript titled, “Standards In Nanotechnology” was written for publication in 2004 in Nanotechnology Law & Business.
- At present there are six (6) Technical Committees (TCs). Their technical scopes and code numbers are:

TC-1 Nanorobotics and Nanomanufacturing

TC chair: Metin Sitti, Carnegie Mellon University

TC-2 Micro- and Nano-manipulation for Biomedical Applications

TC chair: Arianna Menciassi, CRIM - Center for Research in Microengineering, Scuola Superiore Sant’ Anna

TC-3 Nanofabrication

TC chair: Gary H. Bernstein, Dept. of Electrical Engineering, Univ. of Notre Dame

TC-4 Nano-Optoelectronics and Nano-photonics

TC chair: Chennupati Jagadish, Dept. of Electrical Materials Engineering, Research School of Physical Sciences and Engineering, Australian National Univ.

TC-5 Spintronics

TC Chair: Supriyo Bandyopadhyay, Virginia Commonwealth University

TC-6 Nanoelectronics

TC Chair: Stephen M. Goodnick, Arizona State University

- Established a meetings proposal procedure in 2004:
“Proposal & Sponsorship Request Procedure for Sponsorship, Co-Sponsorship, or Technical Co-Sponsorship of a Conference or Workshop by the IEEE Nanotechnology Technology Council (NTC)”

2006 Eastern North America

(IEEE Regions 1, 2, 3 & 4 and eastern Region 7)

2007 Asia , Australia or South/Central America

(IEEE Regions 9 & 10)

2008 Western North America

(IEEE Regions 5 & 6 and western Region 7)

2009 Europe, Africa & Middle East

(IEEE Region 8)

2010 Eastern North America
2011 Asia , Australia or South/Central America
2012 Western North America
2013 Europe, Africa & Middle East
IEEE-NANO 2006 -- Eastern North America
 Initial Proposal for Cincinnati, OH, USA from Supriyo Bandyopadhyay
IEEE-NANO 2007 -- Asia , Australia or South/Central America
 Expecting Full Proposal for Hong Kong, China from Wen J. Li
IEEE-NANO 2008 -- Western North America
 Expecting Initial Proposal for Anchorage, AK, USA from IEEE Alaska
 Section
IEEE-NANO 2009 -- Europe, Africa & Middle East

Proposals are evaluated and the final selection is taken by a vote of the Council Executive Committee or at the Annual IEEE Nanotechnology Council Administrative Committee

- A series of nanotechnology workshops are being considered by the IEEE Nanotechnology Council Meetings Committee. Ideas for workshops are being accepted by the IEEE NTC VP for Conferences. Each NTC Technical Committee will be encouraged by the VP for Conferences to host a workshop in 2005 in their technical area of interest. So far no proposals have been received.

- IEEE Nanotechnology Council has a financial interest:

Proposals request for NTC sole-sponsored conferences or workshops should be submitted at least three years before the actual date of conference.

Proposals request for NTC co-sponsored conferences or workshops should be submitted at least two years before the actual date of conference.

Reviewed Current Proposal process.

- NTC Co-Sponsorship approved – Requirements Completed
2004 IEEE NTC Quantum Device Technology Workshop -- May 17-21, 2004

- NTC Co-Sponsorship approved pending completion of requirements:

NanoWorld 2004

IEEE Conference on Nanoscale Devices and System Integration (NDSI) 2005
International Association of Science and Technology for Development
(IASTED) BioMED 2005

- Nomination to IEEE Fellow from IEEE NTC:

Bandyopadhyay, Supriyo, Prof. Purdue Univ., NTC TC Chair, Spintronics
- President Elect (2005, will be President 2006-2007)
Meyya Meyyappan
- VP for conferences (2005-2006)
 - Evelyn Hirt
 - Paolo Lugli
- VP for Finances (2005-2006)
 - Xiaoping Yun
- Approved the Reimbursement for Council Officer's Travel to Munich ExCom and AdCom up to max \$1,500.
- Defined codes for research areas (4200 NANO-A, Nanotechnology Council):
 - 1. nanoelectronics
 - 2. nanophotonics
 - 3. nanomagnetism
 - 4. nanotubes
 - 5. spintronics
 - 6. molecular electronics
 - 7. nanorobotics
 - 8. nanomaterials
 - 9. nanobiological technology
 - 10. atomic manipulation
 - 11. nanocomposites
 - 12. quantum computing
 - 13. single electron device
 - 14. quantum devices
 - 15. nanocrystal materials
 - 16. nanobio sensors
 - 17. Nanoelectro-Mechanical Systems (NEMS)

- Defined the Vision of IEEE Nanotechnology Technical Council:

To Advance Global Prosperity By

- Fostering Technological Innovation
- Promoting IEEE Communities, World-Wide
- Enabling Members' Careers Mission:

The IEEE promotes the engineering process of creating, developing, integrating, sharing, & applying knowledge about electro- and information-technologies & sciences for the benefit of humanity & the profession.

The field of interest of the IEEE Nanotechnology Council shall be the theory, design, and development of nanotechnology and its scientific, engineering, and industrial applications.

The Council will provide a focus for cooperative activities, both internally and externally, including the promotion, consolidation, and coordination of nanotechnology activities among IEEE entities.

Personal comment:

I strongly ask a major interaction and support from AESS to NTC. Nanotechnology will have an enormous impact on military, aerospace and electronics systems areas.

A better focus from us of the AES Society on this area would be suggested and requested, also in financial terms and resources given to its representatives.

With the excuse of the bad economical situation of many Societies in the IEEE, I have never been placed in condition to go to conferences since they were never sponsored by AESS and my efforts to communicate with any AESS members, except Evelyn Hirt (always very kind and ready to help to grow AESS) were unsuccessful.

Given my experience, I hope that Deb Newberry, the next NTC representative elected for the year 2004/2005, will receive a better support from us in order to let her work in a good environment.

I thank again our past president Russell Lefevre for the opportunity that gave me with AESS and I'm looking forward to work again as NTC representative in the future and/or in other areas of our great AES Society.

Sincerely,

Alfonso Centuori