

Symposium O

Title:

Science, Engineering, and Commercialization of Next Generation of Industrial, Electronic and Biomedical Devices

Scope:

The development of the next generation of industrial components and systems, micro and nanoelectronic devices and systems, and biomedical devices require a new generation and/or adaptation of materials and integration into new structures and devices. The science and technology of the new materials and integration will result in the commercialization of a new generation of industrial components and systems, micro/nanoelectronic devices and systems that will make major impacts in the way and quality of life of people worldwide.

Novel nanoscale processing, characterization, and modeling techniques are being developed to provide enhanced diagnosis and treatment of medical conditions. This symposium will have an interdisciplinary focus, and will cover current challenges in materials science, physics, chemistry, electronics, and biology, critical to the development of advanced micro and nanoscale biomedical devices. This symposium aims to promote interdisciplinary collaboration and discussion among the many groups involved in the development and use of nanoscale materials for biomedical devices, including scientists, engineers, clinicians, and manufacturers. Advances in research and clinical trials will be discussed.

The proposed symposium is relevant to the theme "Our Planet and Its Life: Origins and Futures" because it is an interdisciplinary examination of human biological processes and modern approaches to correct or ameliorate the degradation of human functionalities (e.g. lost of sight and hearing) induced by biological degenerative processes. Early advanced diagnosis and treatment of human diseases and functional conditions is an area of scientific inquiry that will benefit mankind. New and exciting developments in nano-bio research will be discussed.

Session topics:

- Micro/Nanoelectronics
- Industrial Components and Systems
- Biomedical Devices
- Functional Nanoceramics
- How to bridge the gap between university and industry

Tentative List Invited Speakers:

Dr. C. Paz de Araujo, University of Colorado at Colorado Springs and Symetrix Corporation, USA - “Science, Technology and Commercialization of Next Generation Ferroelectric and Resistive Change Non-Volatile Memories”

Dr. D. Yoo, Samsung, Korea

Dr. Stuart Parkin ,IBM, USA – “Spintronic Technology for Memories”

Dr. J. A. Carlisle , Advanced Diamond Technologies, USA -“Science and Technology of Multifunctional Ultrananocrystalline Diamond (UNCD) Coatings and Commercialization of a New Generation of Industrial Components and Systems”

Dr. O. Auciello, University of Texas, USA - “Novel Nanostructured Materials for Advanced Biomedical Devices”

Dr. Mark Humayun, University of Southern California and Doheny Eye Institute, USA - “Devices and Clinical Approaches to Restore Human Functionality through Neural Prostheses”

Dr. R. Greenberg, Second Sight, USA - “Fabrication and Commercialization of Artificial Retina to Restore Vision to Blind People”

Dr. D. Ho, UCLA, USA - “Cancer Treatment Through Functionalized Diamond Nanoparticles”

Dr. Robert Langer, MIT, USA - "Science and Technology of Nanoparticles for Targeted Drug Delivery?"

Dr. E. Longo, Dr. J. A. Varela, Universidade Estadual Paulista "Júlio de Mesquita Filho", - "Successful Brazilian startups in nanotechnology-based products"

Nanox CEO - "Development of nanoceramics: from the Research Center to the Market."

Symposium Organizers:

R. Muccillo, Instituto de Pesquisas Energéticas e Nucleares, Brasil

Orlando Auciello, University of Texas, USA

José A. Varela, Universidade Estadual Paulista "Júlio de Mesquita Filho", Instituto de Química de Araraquara, Brasil

Scientific Committee:

Dr. Elson Longo, Universidade Estadual Paulista "Júlio de Mesquita Filho", Brasil

Dr. M. Orlandi, Universidade Estadual Paulista "Júlio de Mesquita Filho", Brasil

Dr. E. R. Leite, Universidade Federal de São Carlos, Brasil

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