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ADVANCES IN MICROELECTRONICS, NANOELECTRONICS & OPTOELECTRONICS

Proceedings of the 8th WSEAS International Conference on
MICROELECTRONICS, NANOELECTRONICS, OPTOELECTRONICS
(MINO '09)

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Preface

This year the 8th WSEAS international conference on Microelectronics, Nanoelectronics, Optoelectronics (MINO '09) was held in Istanbul, Turkey. The Conference remains faithful to its original idea of providing a platform to discuss device characterization and modelling, device physics and novel structures, materials and characterization techniques, reliability and failure analysis, radiation effects, packaging, surface mount technology etc. with participants from all over the world, both from academia and from industry.

Its success is reflected in the papers received, with participants coming from several countries, allowing a real multinational multicultural exchange of experiences and ideas.

The accepted papers of this conference are published in this Book that will be indexed by ISI. Please, check it: www.worldses.org/indexes as well as in the CD-ROM Proceedings. They will be also available in the E-Library of the WSEAS. The best papers will be also promoted in many Journals for further evaluation.

A Conference such as this can only succeed as a team effort, so the Editors want to thank the International Scientific Committee and the Reviewers for their excellent work in reviewing the papers as well as their invaluable input and advice.

The Editors

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Plenary Lecture 1

Nanotechnology & Nanomaterials in Architecture

Associate Professor Pelin Yildiz
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Abstract: Architecture and building technology on the basis of nanobiobuilding structure and nanomaterials are going through some significant changes and developments. Nanotechnology is one of the most important symptom in between twenty-first century's key technologies while its economic impact is another subject to be recognized. New materials are being discovered and developed everyday as a result of investigating ways to achieve molecular and atomic precision in engineering of materials. These new materials present new opportunities to solve problems like heat absorbing windows, energy coatings etc.
Smart buildings concerning biodegradable features and nanobiobuilding facilities are current architectural aspects of space design. Designers should be capable of new innovations of architecture as nanomaterials during design process. The Nanohouse is a new type of ultra-energy efficient house exploiting the new materials being developed by nanotechnology. HydroHouse uses natural airflow and seawater to cool and humidify the greenhouse. Seawater is evaporated at the facades of the greenhouse; as air passes into the greenhouse it increases in humidity. But the smart part is in the structural columns, which also serve as supports for the growing racks. When it rains, fresh rainwater is allowed to trickle down from the roof, within the cylindrical columns.
In architecture and the construction industry it it is capable of leading the building structure and architecture to an optimum level, for instance the coating of surfaces to lend them functional characteristics such as increased tensile strength, self-cleaning capacity, fire resistance, and many other capacities. The future of the nanotechnology field depends on our ability to assemble nanoparticles into 3D structures we can use to develop new technologies.
Nanomaterials are not only useful for some partial requirements like roofs and facades; they also expand some design possibilities for interior and exterior spaces. Nano-insulating materials open up new possibilities both for sustainable design strategies and architects.
Nanotechnology on the near horizon, may take building enclosure materials (coatings, panels and insulation) to a maximum capacity of performance in terms of energy, light, security and intelligence. Even these first steps into the world of nanotechnology could significantly improve the nature of building structure and efficiency and the way our buildings relate to environment. The development of carbon nanotubes and other breakthrough materials could affect building design and performance. Brief definitions of nanotechnology, nanobiobuildings, smart buildings, nanomaterials are the main approaches of this Plenary Speech identifying technology based design.

Brief Biography of the Speaker: Pelin Yildiz is an interior architect working as an Associate Professor in Hacettepe University. She's graduated from the Department of Interior Architecture and Environmental Design in Hacettepe University, Turkey. She's finished MA. & PhD. at the same department. The subject of PhD. is about the variable and flexible approaches of television studios. She's focusing on technology and space design in a wider aspect. She's attended several conferences by presentations and workshops; in many countries dealing with artificial intelligence, computational intelligence, multimedia, systematical integration of technology based design etc. and. She has nearly forty publications focusing on AI in architectural design. Some of her researches are concerning the subjects, artificial intelligence as a supplier of virtual reality in performance areas by application samples from Turkey; and also virtual film stages regarding computational intelligence as a communication medium. She has project works concerning with the affect of technology. The subject of this project work is; artificial intelligence in interior architecture and a comprehensive analysis of samples regarding spatial organization from Turkey. She also has publications and conference presentations with the international indexes like ISI, Thomson Scientific and EI etc. She's concentrating on studies concerning the relation of architectural design with technological developments. Smart buildings and nanotechnology on the basis of nanomaterials are her latest researches concerning energy conserving buildings.

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