SAPIENZA
UNIVERSITÀ DI ROMA

SEMINARIO DIDATTICO-SCIENTIFICO

LE NANOTECNOLOGIE E L'INDUSTRIA AUTOMOTIVE

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CRF CENTRO RICERCHE FIAT

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Facoltà di Ingegneria - Via Eudossiana - Aula del Chiostro

ABSTRACT - The automotive industry is one of the most demanding markets for innovative materials and technologies. Nanotechnologies are expected to give a large contribution on safety, on-board well-being, environment compatibility and fuel saving. The evolution of the car in the last 5 years has shown a great increase of micro systems integration. Nowadays electronic systems represent 15-20% of the overall cost of the car with more than 60 actuators and 80 sensors installed and with an expected growth of 25-30% in the next 3 years. The miniaturisation of existing components made the development of new applications possible and allowed the replacement of traditional devices; currently different technologies are available to produce such devices in large volumes at low costs. The direct and indirect involvement of nanotechnologies in the automotive industry is expected to be considerable in the development of new products with increased electrical, mechanical, thermal and optical properties, and with great impact in safety, comfort, fuel economy and environmental impact. Though nanomaterials already exist in their natural form the real challenge for materials scientists is to synthesize nanomaterials and nano-related structures and devices in efficient and cost-effective ways. Many commercial and technological limitations for nanomaterials and nanodevices are currently significant; to overcome them many new needs arises ranging from better nanotechnology tools for design, analysis and fabrication. A deeper knowledge is necessary to expand the fundamental sciences of chemistry, physics, and biology in order to improve the understanding of nanomaterials' properties and to scale up the manufacture of nanomaterials according to product specific requirements. CRF maintains a continuous focus on emerging technologies and new materials, targeting to their potential application in automotive sector.

Gianfranco Innocenti graduated in Physics at the University "La Sapienza" in Rome. He is responsible for the New Materials Scouting & Nanomaterials Department at CRF, the FIAT Research Centre. He has begun his research activity at CRF in 1988 developing electro-optical systems for automotive application (anti-collision systems, adaptive cruise control, vehicle dynamic control, etc.) within Prometheus project. Part of his activity was focused on new technological approaches in manufacturing of electro-optical sensors (optical fibres), actuation systems (piezoelectric materials, SMA, magnetorheological fluids) and their integration inside miniaturized configuration with control systems. For a short period of time (1998-2000) he was at Magneti Marelli where he was involved in the commercialising process of systems such as adaptive lighting and active safe systems. In this period he has developed, in the context of the Product Department strategy, the evolutionary scenario of Magneti Marelli.
He participated to the creation of the national initiative "Nanotec IT" for the promotion and the development of nanotechnologies in the industrial and research fields.
He has authored over 30 publications and holds many patents that have originated large business in electro-optical sensor, lighting equipment, and actuators based on functional materials.
His 1987 work has been published on the Physical Review concerning the study of micro-cavities that are considered the basis for the OLED systems.
He is a member of the steering committee for reviewing and orienting the Nanotechnology Programs at national level.

Tutti gli interessati sono invitati a partecipare.

Il seminario è organizzato dal CdA di Ingegneria delle Nanotecnologie nell'ambito delle attività integrative previste per il Corso di Laurea Magistrale in Ingegneria delle Nanotecnologie

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