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**Catalytic Chemical Vapour Deposition synthesis of Carbon Nanotubes  
for electronic and bio-electronic applications**

**Ing. Alberto Ansaldo**

Dipartimento di Ingegneria Biofisica ed Elettronica,  
Università di Genova, Via Opera Pia 11a, 16145 Genova  
Max-Planck-Institut fuer Festkoerperforschung,  
Heisenbergstrasse 1 d-70569 Stuttgart

**ABSTRACT OF THE TALK**

Since their discovery in 1992, Carbon Nanotubes (CNT) are considered one of the most interesting materials coming from nanotechnology research. Mechanical and electrical properties of CNTs have excited the imagination of scientists throughout the world, giving birth to a common vision of a completely new carbon-based nanoelectronics and creating the expectation of significant improvement in essentially all technological applications. In fact, the very same wide spectrum of properties that excited scientists have become the limit to their applicability, inasmuch as up to now we do not possess the ability neither to control them by design or even to foresee them fully.

Notwithstanding such limitations, a variety of interesting CNTs applications are rising, not yet a technological revolution, but very promising for many fields, including biotechnology research.

In this lecture, we shall present experimental results that show how different catalyst preparations and thermodynamical conditions in Catalytic Chemical Vapour Deposition synthesis of CNT can be used to tailor different kinds of nanotubes and control their density on surfaces. Applications of these materials will be presented: transparent conductive layers, transparent flexible electronic devices, transparent conductive composites, high performances fibres. Moreover, application that are still at the proof of principle stage, but may have significant impact on bio-technology and robotics, such as improved electrical contacts for in vitro and in vivo applications and nano-actuators, will be presented.