

# NANOSCIENCES, NANOTECHNOLOGIES, MATERIALS AND NEW PRODUCTION TECHNOLOGIES

**Budget: € 3.5 billion (2007 - 2013)**

The activity of Nanotechnologies, Materials and Production Technologies has a strong socio-economic relevance. Nanotechnologies enable novel solutions and could result in improved performance in the entire production sector as well as in the health/medicine/agriculture domains.

## *What's the benefit for citizens:*

The design of new production processes could signal a reduction of pollutant emissions and a more rational use of natural resources. At the same time product innovation, with safer and more reliable consumer products, and cleaner vehicles, combined with innovation in the construction industry aim to meet people's needs and improve their quality of life, by lowering risks and bettering health and welfare. Promotion of more sustainable consumption patterns leads to improvements in health, personal awareness and behavioural change of citizens.

The introduction of nanotechnology results also present a new spectrum of risks and issues of an ethical nature, which are being tackled. Ethical issues refer to human integrity and dignity (e.g. "chips" to monitor or control behaviour of humans), risks linked to health and environmental hazards.

## *What's the benefit for researchers:*

### **Nanosciences and Nanotechnologies**

The objective is to create materials and systems with predefined properties and behaviour, based on increased knowledge and experience at the nano scale. This will lead to a new generation of products and services across a range of applications, while minimising any potential adverse environmental and health impacts.

### **Materials**

Research will focus on developing new multifunctional surfaces and materials with tailored properties and predictable performance for new products and processes as well as for their repair.

### **New production**

The basis for innovation in this area will be new knowledge and its application towards sustainable production and consumption patterns. This entails the appropriate conditions for continuous innovation (in industrial activities and production systems, including design, construction, devices, and services) and for developing generic production "assets" (technologies, organisation and production facilities as well as human resources) while also meeting safety and environmental requirements.

### **Integration of technologies for industrial applications**

The integration of knowledge and technologies of the three areas of research above is essential in order to speed up the transformation of the European industry and economy, while adopting a safe, socially responsible and sustainable approach. The research will focus on new applications and novel solutions responding to major challenges as well as to the RTD needs identified by different European Technology Platforms mentioned above.

## *What's the benefit for industry and SMEs:*

Increased industrial competitiveness and high quality products would protect European jobs and therefore promote social and economic cohesion. Emerging Technological Platforms will also emphasize social aspects through their pan-European strategies. The overall aim will be to maximise added value for Europe. New regulations and standards have always been a by-product of industrial technology progress and these "platforms" will now certainly modernise and consolidate them in several areas of human activity.