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MORE THAN COLOR

APPLYING NANOTECHNOLOGIES FOR THE MULTIFUNCTIONAL CERAMIC PIGMENTS DEVELOPMENT



→ Concept

The change in automobile and construction materials requirements has led industries to the modification of bulk materials with nanoparticulate additives or to the application of later high performance coatings to obtain better, cleaner, cheaper, faster and smarter products. However, there still exist some barriers to nanotechnology-based products commercialization and use:

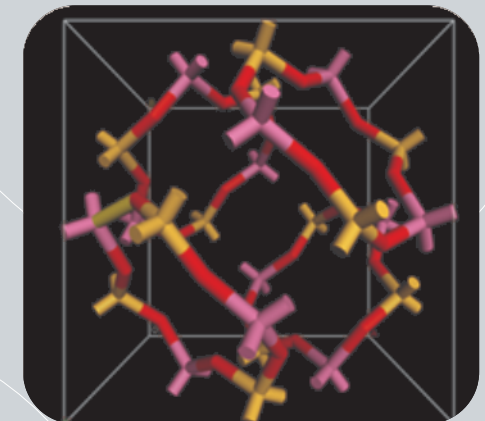
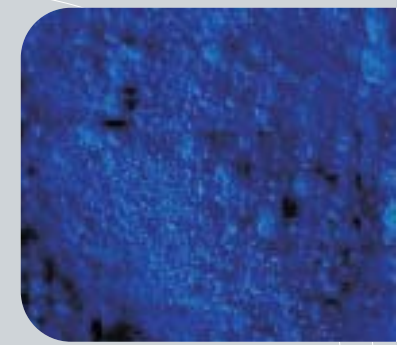
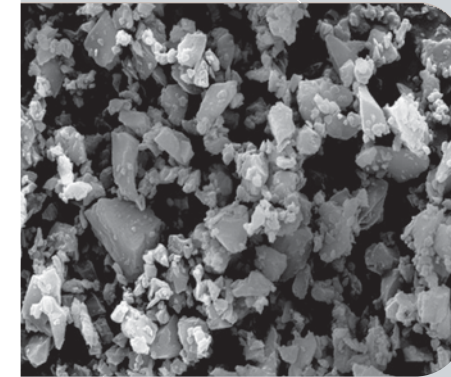
- Manufacturing processes make the processes more complex
- High processing costs for nano-materials
- Need for qualified manpower

Modification of low-cost pigments could help to introduce nanomaterials (polymers, paints and concrete) in the market. With NANOPIGMY modifications, manufacturing processes would not be altered as the pigment gives itself the pursued functionalities and there would be no need of qualified manpower.

→ Final demonstrators

Five demonstrators will be built (three for construction sector and two for automotive sector). Table shows the material to be used for each demonstrator.

PIGMENT	MATERIAL	APPLICATION	DEMONSTRATOR
PIGMENT 1	MATERIAL 1	Interior paint with antibacterial and thermal storage capability	Construction (pilot house)
PIGMENT 2	MATERIAL 2	Interior polymer with antibacterial and thermal storage capability	Construction (pilot house sandwich walls)
PIGMENT 3	MATERIAL 3	Exterior concrete with self-cleaning and thermal storage capability	Construction (pilot house-covering of concrete)
PIGMENT 4	MATERIAL 4	Exterior paint with anti-corrosive and low emissivity abilities	Automotive- pillar cover
PIGMENT 5	MATERIAL 5	Interior polymer with anti-bacterial and self-healing capability	Automotive- interior cover frame for the air-conditioning



→ Objectives

The main objective of NANOPIGMY project is to **develop multi-functional ceramic pigments by applying nanotechnologies to give a product (paint, plastic or concrete) different functionalities through the use of NANOPIGMY pigments** avoiding further surface treatments of the product or previous modification of bulk materials with nanoparticles with the final aim of **improving sustainability of construction and automotive sectors** at an efficient cost.

Table below summarizes the four pigments that will be developed in NANOPIGMY project, the sectors where they will be used and the objectives of their use.

	MODIFICATIONS		SECTOR	MATERIAL	OBJECTIVE
	Sol-gel coating	NP embedding			
PIGMENT 1	Antibacterial (with Ag+)	PCM (energy)	Construction	Paint and plastic	Energy efficiency and population health
PIGMENT 2	IR high reflection Anticorrosion		Automotive	Paint (exterior)	Energy efficiency and length materials lifetime
PIGMENT 3	Self-cleaning (TiO2)	PCM (energy)	Construction	Concrete (exterior)	Energy efficiency and reduction of hazardous products use
PIGMENT 4	Self-healing	Ag (antibacterial)	Automotive	Plastic (interior)	Population health and length materials lifetime

