



SET NanoMetro

Project ID: 604577

Funded under: FP7-NMP

Shape-engineered TiO₂ nanoparticles for metrology of functional properties: setting design rules from material synthesis to nanostructured devices

From 2013-12-01 **to** 2017-03-31, closed project

Project details

Total cost: EUR 5 668 729	Topic(s): NMP.2013.1.4-2 - Metrology research for the development and validation of design rules for engineering of nanostructured and nano-enabled materials and devices
EU contribution: EUR 4 349 462	Call for proposal: FP7-NMP-2013-LARGE-7 See other projects for this call
Coordinated in: Italy	Funding scheme: CP-IP - Large-scale integrating project

Objective

According to European Commission [EC, COM (2012) 572, 3.10.2012] important challenges at European level are related to the establishment of validated method and instrumentation for detection, characterization and analysis of nanoparticles.

In the framework of the SETNanometro project, the use of various measurement techniques for the determination of the NPs properties will allow to move from the currently used "trial and error" approach toward the development of well defined and controlled protocols for the production of TiO₂ NPs. A particular care will be devoted to the establishment of correct metrological traceability chain in order to ensure the reliability of the results.

The lack of international measurement standards for calibration is an aspect of particular relevance in nanotechnologies as it is difficult to select a universal calibration artefact to achieve repeatability at nanoscale. The materials produced according to such procedures, will be hence sufficiently characterised and homogeneous in their properties to become candidate Certified Reference Materials to be used in various applications where the lack of metrological traceability is encountered.

The project results are expected to lead to fundamental impacts on the following areas:

Environment: the increased knowledge of TiO₂ NPs will improve the photocatalytic properties for the treatment of pollutants in air and water

Energy: the better knowledge of dimension and electronic structure of TiO₂ will allow to improve the traceability of DSSC measurements.

Health: the engineering of topographic and surface composition of TiO₂ nanostructured coatings of orthopaedic and dental prostheses will support the design of rules for the production of devices exhibiting optimized interfacial properties for a better and quicker integration of the implants in the hosting bone tissues.

Related information

Report Summaries	Periodic Report Summary 1 - SETNANOMETRO (Shape-engineered TiO₂ nanoparticles for metrology of functional properties: setting design rules from
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Subjects

[Scientific Research](#)

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