

**“Toxicology screening of nanomaterials. From *in vitro* testing to SARs” Joan M. Llobet**

Relative high-throughput, inexpensive methods are needed to assess the safety of new and existing nanomaterials. *In vitro* techniques, however, must be adapted to this kind of compounds.

Aggregation state, internalization and intra-cellular distribution are relevant issues to be taken into account. The extensive gathering of *in vitro* toxicity data may eventually lead to the establishment of SARs systems, enabling the intelligent design of future nanomaterials.

As an example of these issues, we present a study carried out on cerium oxide nanoparticles. Cerium nanoparticles (CeO<sub>2</sub>) are raising great interest in fields such as catalysis in diesel cars, solar panels, gas sensors, biotechnology or medicine.

Cytotoxicity studies (acute exposure, 24 h; chronic exposure, 10 days) and genotoxicity (alkaline Comet Assay, ASTM 2816) in 3 cell lines (A549, CaCo2 and HepG2) were performed. The Comet Assay was also used to test the protective capacity of cerium nanoparticles against the action of an oxidizing agent.

The results suggest that CeO<sub>2</sub> nanoparticles cause growth inhibition in chronic exposure while in the short exposure growth is hardly affected. Of the three cell lines tested were the HepG2 cells that had higher overall sensitivity.