Chiara Gambardella

Post- doc

Department of Earth, Environment and Life Sciences (DISTAV) – University of Genova, Italy

chiara.gambardella@unige.it

**Effect of nanoparticles in freshwater and marine organisms**

**Abstract**

Nanoparticles (NPs) are emerging products of nanotechnology characterized by a small size. The growing demand and use of NPs in a wide variety of commercial products (such as cosmetics, detergents, biocidal coatings, wound dressings, toothpaste, food packaging, etc.) raises concerns about the potential impact that NPs can have on the environment. Indeed, at the end of their life cycle, some NPs are inevitably released into waste water and can reach water ecosystem, affecting the living organisms. The aim of this talk is to examine the potential toxicity of selected engineered NPs (cobalt, titanium dioxide, silver NPs) in fresh and sea water by using different model organisms. In sea water, cobalt, titanium dioxide and silver NPs alter the morphology and the biochemistry of the first developmental stages of sea urchins, but not the sperm functionality (Gambardella et al. *Accepted*). Short term exposure of algae, jellyfish, echinoderms and crustaceans to silver NPs induces algal growth inhibition, sea urchin sperm motility reduction, jellyfish and crustaceans’ mortality.

In freshwater, long term exposure of the aquatic plant *Lemna minor* to silver NPs induces a decrease of chloroplast size and a reduction in chlorophyll intensity. In addition, short term exposure of *Danio rerio* to nanosilver NPs causes an incomplete development (Falugi et al. 2012).

References:

Gambardella et al. *Accepted*. Developmental abnormalities and changes in cholinesterase activity in sea urchin embryos and larvae from sperm exposed to engineered nanoparticles. *Aquat. Toxicol. Accepted.* Doi:10.1016/j.aquatox.2012.12.025

Falugi et al. 2012. Dose dependent effects of silver nanoparticles on the reproduction and development of different biological models. *EQA*, 8:61-65.