Fate and effects of nanoparticles under environmentally realistic conditions

CHAIRS: Claus Svendsen, Catherine Mouneyrac, Susana Loureiro, Laure Giamberini

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In the last five years, there has been a rapid increase in efforts to assess the fate and effects of engineered nanoparticles in the environment. These efforts have largely focused on nanoparticles in water, but have also recently included soils and sediments where characterization is a challenge. Typical for the majority of work presented in SETAC sessions and in most papers, the focus is mainly on assessing nanoparticle behavior and effects in fairly well-standardized short-term test systems (one biological model in very simple media). Evidence is growing, however, that nanoparticles behave differently compared to their related non-nano materials and that non-standard test knowledge will be needed to understand 1) how results from standard testing should be interpreted for environmental risk assessment use, and 2) if these differences in behavior will require new assessment approaches. This session therefore invites abstracts that deal with the detection and characterisation, fate, bioavailability, exposure, and effects of nanomaterials in the environment under realistic exposure scenarios (media, concentrations and time scales). This session will focus on interdisciplinary studies (combining physical chemistry, biology, ecology, ecotoxicology) that contribute (or attempt) to show the link between nanoparticle distribution and fate in the environment and exposure of and effects on organisms. This may involve more targeted and non-standard approaches, involving e.g. studies on the fate and effects under environmentally realistic conditions, taking into account long-term exposures. It is hoped this session will address the issue of environmental realism in nano studies through bringing specific studies addressing fundamental key aspects of nano ecotoxicology together with long-term studies addressing aspects like ageing of nanoparticles, fate and effects in model ecosystem or semi-field experiments, behaviour in complex media (e.g. sewage treatment plants, sediments and soils), and validation of environmental fate-and distribution models.

SESSION TYPE: Platform, Poster Spotlight and Poster

ADVISORY GROUP: Nanotechnology Advisory Group (Global)