Nanoparticles and Microplastics: Harvesting Recent Findings to Fertilize a New Pressing Topic

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May 10, 8:30 - 18:30, Exhibition Hall (Poster Corner session)

Nanoparticles and micro-nanoplastics are both particulate materials which are being introduced into the environment by human activities. Both material types have already been detected in various environmental compartments and biological systems and both may have adverse effects on the ecosystem. Furthermore, the identification and quantification of both material types is very challenging and requires a chemical and a particle size information. Extensive research in the field of engineered nanoparticles have greatly increased our analytical capabilities to detect the respective materials in complex environmental matrices and thus contributed to an increased understanding of the environmental fate and effects. Although our understanding of nanoparticle behavior, fate and effects is still far from being complete, there is a great chance that experience and knowledge gained in nanoparticle research can help to better understand the behavior and effects of microplastics in the environment. A cross-fertilization might help to reduce the remaining uncertainties regarding to the risks associated with the increasing use and related release of both materials. In this session we critically address similarities and differences in the two research fields. We aim at identifying lessons that we already learned in one field and to what extend this knowledge can be transferred to the other field and where we need to develop new approaches and concepts. Contributions addressing the fundamental behavior of either of the two material types in the environment, promising analytical approaches to identify the materials in complex environmental matrices, persistence and transformation of the materials in the environment and in biological systems are equally welcome as modeling studies addressing the flow of the respective materials in and through different environmental compartment and biological systems. If the session format permits, we aim to have a concluding panel discussion with approx. 6 panelists recruited from the presentations given in the session and external invited experts. With this session proposal we are aiming at the new SETAC track that specifically calls for fundamentally new concepts and novel or even controversial ideas. We emphasize novel and controversial ideas.