

NanoFASE Deliverable D8.1

Alignment between model requirements and experimental procedures

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Research Report Summary

This report presents the planned alignment of model requirements and experimental procedures specific to the transformation and transport behaviour of engineered nanomaterials (ENMs) (Fig. 1) in waters and sediments as studied in Work Package 8 (WP8).

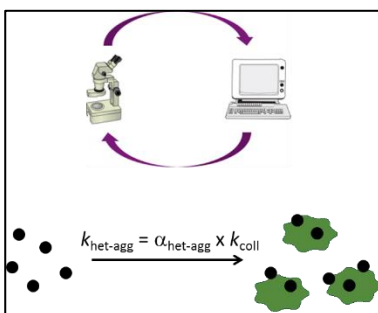


Figure 1 – Alignment between model requirements and experimental procedures on ENMs behaviour and transformations in waters and sediments.

After a general introduction into the NanoFASE modelling framework with a special emphasis on the important aspects for the water and sediment compartments, the ranges of environmental parameters relevant to European surface water systems to be represented by the NanoFASE models are described. The goal is to identify



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relevant parameters both for model parameterisation and for use as representative systems for laboratory experiments. Furthermore, we outline the main transformation and transport reactions, namely heteroaggregation of ENM with naturally occurring suspended particulate matter (SPM), dissolution reactions and chemical transformations of ENM surface and/or coatings. In all cases, the theory behind the processes is introduced, experimental approaches to study the reactions are commented and a special focus is placed on identifying adequate descriptions on the relevant processes in the NanoFASE model. Limitations in terms of data availability, numerical challenges and experimental design are discussed. A final section of this document presents the planned approach for modelling sediment transport processes in the NanoFASE model. The present document is the first deliverable in WP8 and sets the stage for the future experimental work in WP8 and the model development specific to the water and sediment compartments in WP2.

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