Preface

Colloids have been addressed as neglected phase. And indeed the borderline between purely dissolved molecules and particulates was for a long time not too well defined. The non-availability of powerful characterisation methods and a limited field of colloid-based daily life products may be reasons for that. This has dramatically changed during the last two decades. Engineered NanoParticles (ENP) with promising properties were tailored and produced in technical scale. They found their way as advanced materials in broad application, e. g. in surface treatment, catalysis, paints, medicine and personal care products. The impact of ENP-based products on our life style has even led to the expression of the “Nano Age”.

Unfortunately the fascination of the great possibilities of the nanoworld has not reached so far as to care about the life cycles of most of its products. That is to say, the fate of ENP after use and their function in the environment are still broadly unknown. Only air pollution by nanoparticles has found some attention, and the availability of quantification methods has even led to the enforcement of legal limits. Concerning aquatic systems, the situation is less clear.

Nanoparticles in the water cycle have been identified as timely subject for discussing the state of art, the possibilities and the needs for their sound assessment. A selected group of scientists has come together to interdisciplinarily address this issue. The result is given in this volume. The first section deals with basic aspects of nanoparticles and their function in air, water, soil and water treatment. The second part contains examples for the application of advanced instrumentation for quantification and characterisation of nanoparticles with special respect to aqueous samples. Bioeffects of nanoparticles in water are elaborated in the third section, and finally standardisation activities for the assessment of nanoparticles in the aquatic environment are presented. We thank all the authors and the reviewers for their fine work and enthusiasm they put into this project.

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