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Surface affinity: Applications of a functional assay for quantifying nanoparticle transport, aggregation, transformation and biouptake in complex systems

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Environmental transformations and exposure are key elements in determining the environmental and health effects of nanomaterials. Tools for predicting the environmental behaviour include functional assays that can be used to evaluate nanomaterial properties in complex or reference systems. Simulations show that nanoparticles introduced in a complex, albeit greatly simplified environment exhibit a wide range of behaviors depending on their affinities for each other and their concentrations. The complexity of these interactions appears to be governed by the relative affinity of nanoparticles for each other (autoaggregation) and with background particles (heteroaggregation) and other native surfaces. A functional assay for determining the affinity of nanoparticles for complex mixtures of native particles will be presented. This talk addresses the use of a functional assay for surface affinity, the methods for quantifying surface affinity, and systems where surface affinity is likely to be important in predicting nanoparticle exposure and effects.

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