Helping nano-entities discover their nano-identity

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Our mission at SOLVE Research and Consultancy AB is to provide comprehensive characterization of nanoparticles and to explain their behavior in solution. We provide information on structure, size, molar mass, apparent density etc. across the entire sample distribution from single nanoparticles to large micron-sized aggregates. For this purpose, we use the state-of-the-art separation method asymmetrical field-flow fractionation. We can identify changes in the physicochemical properties and performance of nanoparticles; aspects that are of importance for health, safety considerations, and manufacturing parameters such as processing, storage, and packaging.

Field-flow fractionation allows separation of particles in multiple environments such as high and low pH, presence of different salts at different concentrations, and even conditions that mimic, for instance, the human body. The gentle conditions used during fractionation allow us to preserve intact fragile aggregate species for analysis, and to achieve high sample recovery. After separation in the system we can easily collect the resulting fractions for additional off-line characterization or to provide monodisperse nanoparticle samples.

We have experience working with noble metal nanoparticles; core-shell nanoparticles; silica, zinc, and iron oxide nanoparticles; polysaccharide-based nanoparticles etc. We are part of the FP7 EU-project NanoMag which goal is to standardize, improve, and redefine analysis methods of magnetic nanoparticles for biomedical applications. In this project, field-flow fraction has been chosen as one of the standard characterization methods.