



VALUE PROPOSITION

Novel method for the manufacture of nanoparticle clusters of a pre-desired size.

The UCD technology enables the formation of monodisperse clusters with size selection without the need for cumbersome micelle formation

MARKET

Key markets for Nanoparticle Clusters includes;
Chemistry-Catalytic synthesis
Med Tech

IP STATUS

Patent granted
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OPPORTUNITY

Research Collaboration, License

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Platform process for Nanoparticle Cluster Formation

The development of novel nano-materials for biomedical, sensing, and many other applications, require control over the size, shape, and organization of matter at the nanoscale. The formation of NanoParticle Clusters, (NPCs) comprising multiple NPs, offers the possibility of dimensional control on the particle and cluster length scales, which can be used to engineer the emergence of new collective properties arising from interactions between individual NPs at close proximity.

The platform process developed allows the scalable manufacture of a range of nanoparticles with controlled size. The NPCs manufactured have long shelf life stability and can be encapsulated with polymers, lipids or surfactants as required without change of size (and hence magnetic properties).

Technology

A method that enables a growth in suspension of clusters of nanoparticles.

The clusters formed are a plurality of individual nanoparticles.

Size of the final clusters can be selected .

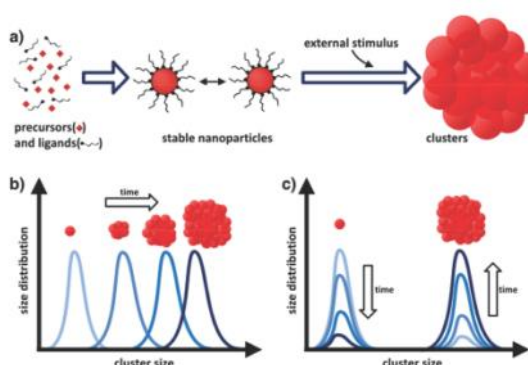
Control over size distribution.

Controlled termination of the process when the required size has been achieved.

Allows in-situ monitoring.

Key Features

- **Cost-effective:** Low cost, water based method.
- **Material Type:** Wide range from iron oxide to gold nanoparticles
- **Reproducibility:** Ability to rapidly improve and modify prototype designs
- **Larges batches:** Can be made by continuous manufacturing process.
- **Stability:** NPCs are shown to have extended shelf life with no additional cluster formation



Schematic representation of (a) the two step approach to assembly of NPCs in suspension. b) Time-dependent increase of the cluster size due to the incorporation of free monomers. c) Growth of a predefined cluster size at the expense of the free monomers through an external limitations, e.g. encapsulation, or micellisation.