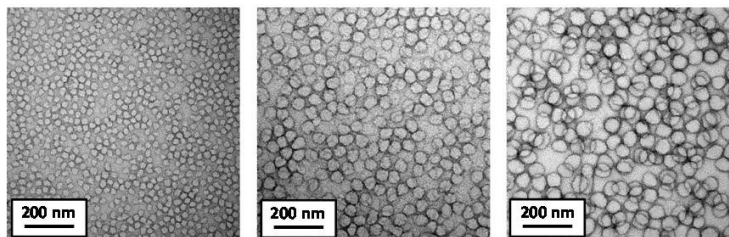


## 29004 Tunable organic nanoparticles

### The Technology

Polymer scientists at Sheffield University can produce a new class of polymer nanoparticles (see Figure 1) whose dimensions can be readily tuned over the 25 to 100 nm range by varying the synthesis conditions (see Y. T. Li and S. P. Armes, *Angewandte Chem.*, 2010, 49, 4042). These particle syntheses are very efficient and can be conveniently conducted in aqueous solution at 10-20 % solids in the absence of any surfactant using inexpensive vinyl monomers. Chemical functionality can also be easily introduced to confer either cationic or anionic surface charge on these nanoparticles (see Figure 2).



**Figure 1.** Transmission electron micrographs for three organic polymer nanoparticle formulations, confirming excellent uniformity and size control in the sub-100 nm size range in the absence of any added surfactant.

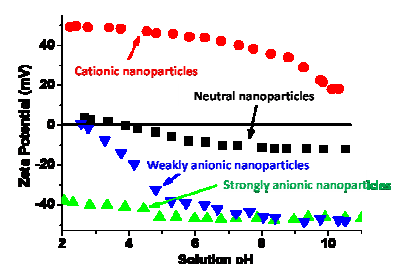
### Intellectual Property

A patent application has been filed that covers various aspects of this technology and likely applications.

### The Opportunity

We are currently seeking commercial partners and licensees to collaborate on the technical development of the utility of these particles. Based on initial data, we anticipate that these materials will be useful for:

- Deposition of inorganic materials on their surface to form (for example) Anti-reflective coatings
- New Pickering emulsifiers for oil-in-water emulsions
- Vesicles for biomedical research applications
- Novel ink, paint and dye formulations



**Figure 2.** Aqueous electrophoresis data obtained for organic nanoparticles possessing cationic, anionic and near-neutral surface charge.

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### FOR MORE INFORMATION CONTACT:

Dr. Andrew Tingey

andrewtingey@fusionip.co.uk

+44(0) 114 275 5569

Fusion IP Licensing

The Sheffield Biocubator

40 Leavygreave Road

Sheffield

S3 7RD

**For commercial enquiries on this technology, please contact Andrew Tingey, quoting reference 29004.**

