

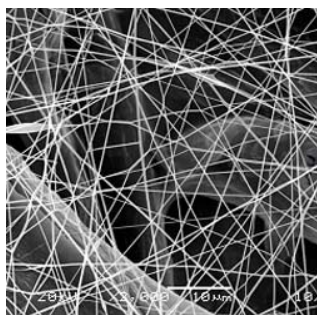


Nanofibres

The MNTC are also active in nanofibre production using electrospinning techniques with expertise in scaling operations for industrial use of nanofibres in composites, energy storage solutions and other applications.

Electrospinning has the unique ability to produce nanofibres of different materials. Almost any soluble polymer with sufficiently high molecular weight can be electrospun. Nanofibres made of natural polymers, polymer blends, nanoparticle- or drug impregnated polymers have been successfully demonstrated. Different fibre morphologies have also been shown, e.g. porous, coaxial as well as surface-functionalised fibres. These are used to build high surface area to volume ratio 3-D structures which open up a range of application possibilities.

Electrospinning equipment and expertise are available for research into conventional nanofibre-related applications through the STFC spin out, The Electrospinning Co. Ltd. In addition, building on silicon processing expertise at RAL's Micro and Nanotechnology Centre (MNTC), the Electrospinning Co Ltd is developing MEMs-based electrospinning nozzle arrays and scale up systems. These innovations are designed to extend current electrospinning capabilities so that novel nanofibre platforms can be reproducibly made in volume. This provision is expected to improve existing nanofibre solutions and also create new application opportunities.



Spun
nanofibres



The
Electrospinning rig
at the Micro and
Nanotechnology
Centre

Applications currently being investigated by organisations worldwide lie within Healthcare, Environmental, Energy and Security markets and include:

- Tissue regeneration and wound care
- Drug delivery
- Filter and affinity membranes
- Membranes for polymer batteries, fuel cells
- Protective clothing e.g. battlefield.
- Coatings

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