Materic

PiezoYarn

With industry's need for continual advancement in materials performance, nanofibers are the next frontier in meeting this demand across a range of applications.

At Materic, our team of experts is on the cutting edge of developing custom advanced materials by electrospinning nanofibers.

Sensing | Electrospun Nanofibers

For the technical textiles and smart garment industry, we have created PiezoYarn. PiezoYarn behaves much like a nylon yarn, but it generates electricity when stretched or twisted. This makes it ideal for battery-free motion detectors in smart garments.

Through our piezoelectric polymer nanofibers, we're creating the next generation of functional fibers, technical textiles and smart garments.

PiezoYarn Method

To create our PiezoYarn, we electrospin nanofibers containing aligned dipoles, that are inherently piezoelectric as produced, and twist them into various size yarns.
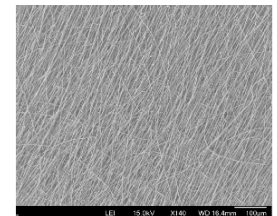
Formats:

• Electrospun fiber mat twisted to yarn
  - Randomly oriented fibers
  - Aligned fibers
• Direct-to-yarn electrospun fibers

Polymer options:

• PVDF - polyvinylidene fluoride
• PVDF-TrFE - polyvinylidene fluoride-trifluoroethylene (promotes formation of the piezo-active phase, β-PVDF)
• PBLG - poly(γ-benzyl-L-glutamate)
• Polymer-inorganic composite – PZT (lead zirconia titanate), graphene oxide, silver nanowires, carbon nanotubes
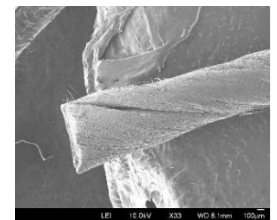
Nanofiber Twisted Into Yarn

Aligned Fiber Mat