

**Advanced Functional Nanomaterials School**  
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Introduction to electrospinning and their potential applications  
Christian Narváez  
La Universidad de las Fuerzas Armadas – ESPE  
cpnarvaez1@espe.edu.ec

**Abstract**

The Electrohydrodynamic [EHD] of liquids is a transport phenomenon that describes the form that a liquid set in motion assumes when it is subjected to strong electric field. Depending on the properties of the fluid a jet can be emitted from the apex of the Taylor cone, this jet can be of micro or nano-meter dimensions. Tailoring the liquid properties enables the production of nanoparticles or nanofibers. If the viscosity of the liquid is sufficiently high this capillary jet remains intact and can be deposited on a substrate forming a nanofiber mesh, this phenomenon is known as electrospinning. On the other hand, solutions with lower viscosity results in uniform jet break up and the production of micro or nanometer sized particles known as electrospray. The electrospinning/electrospraying processes are highly versatile and low-cost methods of producing nanofibres and nanoparticles with a wide range of properties depending on the liquid solutions. Additionally it is possible to functionalize nanofibres by incorporating suitable materials in the liquid solutions use to generate the fibres. The electrospinning method has been previously demonstrated for use in advanced materials generation. The meshes generated by the electrospinning process can be tailored to have a high surface area-to-volume ratio and high porosity to mimic the features of the collector matrix.