

Functional composite-nanofibers by coelectrospinning: functional nanoobjects for life science (extension)

Initiative: Komplexe Materialien (beendet)

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Co-electrospinning provides a novel highly versatile approach towards composite fibers with diameters ranging from a few 100 nm down to a few 10 nm. A strong electric field is applied for this purpose to two solutions of different chemical composition emerging from two concentric dies. Depending on the composition of the solution, polymer/polymer core shell fibers, hollow fibers or compartment fibers become accessible. One major aim of the project is to investigate in which way the morphology of the composite fibers depends on the design of the co-electrospinning set-up, on solution parameters such as viscosity, surface tension and conductivity and to model the co-electrospinning process as a function of such parameters. Co-electrospinning of polymers and functional materials such as drugs, pheromones, proteins, chromophores etc. will be considered in detail. The potential applications of such fibers are the growth of cells and release of drugs in the case of tissue engineering, the inclusion of biological objects for biosensing, as well as the inclusion and release of pheromones for crop protection.

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