

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

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Coelectrospinning 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. Coelectrospinning of polymers and functional materials such as drugs, pheromones, proteins, chromophores etc. will be considered in particular detail. One major aim of the project is to investigate in which way the morphology of the composite fibers depends on solution parameters such as viscosity, surface tension and conductivity and to model the co-electrospinning process as a function of such parameters. A further aim of the project is to design compartment fibers in such a way that they can be used in life science a) for the inclusion and release of pheromones for crop protection ("artificial functionalized spider webs") and b) for the growth of cells and release of drugs in the case of tissue engineering of bones.

Projektbeteiligte

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