

# Abstract

The technical parameters for electrospinning solutions of biodegradable polymers poly( $\epsilon$ -caprolactone), poly(lactic acid) and their composites with active molecules were defined and set up. A trial-and-error approach has been employed by varying solution properties and processing parameters to obtain uniform defect-free fibers. Amoxicillin drug was intercalated in layered double hydroxide nanoparticles by coprecipitation and then the modified nanohybrid was successfully encapsulated at different concentrations into poly( $\epsilon$ -caprolactone) matrix by the electrospinning technique. Non-woven fibrous mats were fabricated and characterized in terms of morphology, *in vitro* release and antibacterial properties.

Blends of poly(lactic acid) and poly( $\epsilon$ -caprolactone), loaded with different amounts of amoxicillin were electrospun to investigate the release behaviour and obtain a controlled and tuneable release. Morphology and thermal behaviour were found dependent on the component ratio as well as on the incorporated drug amount.