

## **Obtaining Starch-Based Biodegradable Fibers Aiming the Thickness and Porosity Control**

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In recent years the development of biodegradable fibers has been increasingly studied due to different applications such as, materials immobilization, and slow/controlled release of active compounds. In this way, many active substances in various areas such as, agrochemicals, fertilizers and drugs can be immobilized on fibers considering the foreseeability of obtaining biodegradable and biocompatible compositions. Among the biodegradable polymers, starch is the most abundant and inexpensive, being found in plant tissues, such as tubers. Starch present a characteristic of low moldability, since that its solution does not form fibers, but granules. Thus, it is necessary to use external components such as plasticizers, which provides the feature of thermoplastic material. Several methods have been developed for manufacturing fibers of polymeric materials, among which stands out for the electrospinning that is a method easy to handle, capable of controlling various parameters, such as flow, pressure and operating distance, which allows the control of the diameter, porosity and surface area of the final material. In this study, biodegradable fibers were prepared from different ratios of starch:PLA with a constant weight of PLA and the successive addition of starch. The proportion of them varied from 1:10 to 2:1 (%w/w). The fibers were obtained by electrospinning process in the presence of a suitable solvent. As a result, the obtained fibers presented a mean diameter ranging from 170 nm to 1550 nm. It was also observed the formation of fibers presenting a gradual increase in diameter and obtaining starch-based biodegradable fibers aiming control the thickness and porosity porosity by increasing the percentage of starch.

1- Kong L., Ziegler G.R., Fabrication of pure starch fibers by electrospinning. Elsevier Ltd. 2013.