

# ELECTROSPINNING OF BIO-NANO-CELLULOSE (BNC) NANOFIBERS EQUIPMENT

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## Introduction

Electrospinning is a method of obtaining nanofibers from a liquid polymer or its solution, using high voltage (<10 kV). The polymer under the influence of electric current takes the shape of the so-called fiber and moves towards the electrode with the opposite charge. In our studies, we obtained homogeneous and simple fibers. The multitude of meters that we can control during the electrospinning process allows us to obtain from the same starting material nanofibres with different properties. Unusual possibilities arise through the use of additional surface treatment of nanofibres by ionic techniques.

## Materials and Methods

Electro spinning is a method of obtaining polymeric threads, both natural and synthetic. Although this method has been known for over fifty years, only the last decade has brought significant progress in this field [1,2]. This technique allows you to control the process to achieve the best results (thread thickness, pore size). Polymer threads are formed by applying high voltage to the solution. The drop thanks to the surface tension forces stays on top of the feeder needle. High voltage causes the disappearance of these forces and gradual extension of the drop. The surface of the solution at the end of the drop takes the shape of a so-called Taylor's cone. Further increase in potential causes the critical value to be exceeded and the jetty to be launched. It gradually solidifies and settles in the form of threads on grounded ground.

## Results and Discussion

We show that the specialized equipment for the electrospinning stand for nanonics is a device that gives new light in the field of industrial-scale production of modern, biodegradable materials based on BNC. The studies carried out show a varied SEM morphology and developed specific surface area. In addition, analyses were performed for antibacterial activity.

## Conclusions

Electrospinning technology makes it possible to obtain thin natural polymer fibers (e.g. collagen, nanocellulose) as well as synthetic fibers that can find numerous applications in many areas of science.