ANTIMICROBIAL NANOFIBER MEMBRANES

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RESEARCH/TECHNOLOGY INTRODUCTION

Electrospinning polymer nanofiber membranes prepared by electrospinning are chemically modified with various antimicrobial agents. The membranes development includes the measurements of air and liquid permeability and tests of antimicrobial efficiency. We also test the stability of the membrane composition and the stability of their efficiency in air purifiers. The production technology is so-called "one-step technology", which means that modifying antimicrobial substances are introduced directly into the spinning solutions.

POTENTIAL USERS

Antimicrobial nanofibrous textile are suitable for an air purifier as well as a face mask.

ADVANCEMENT OF TECHNOLOGY AND MARKET APPLICATION

The main advantage of this technology is its price, the spinning process takes place simultaneously with the chemical modification of nanofibers. The nanotextiles prepared in this way show reliable antibacterial activity against 7 types of bacterial strains and, in addition, stability of functionality (antimicrobial activity was maintained after 3 weeks of operation in the air purifier simulator).

ADDITIONAL INFORMATION

Nanofiber laboratory at the Faculty of Science UJEP (see picture) is equipped with electrospinning device, air and liquid permeability testers. Other characterization techniques are: XPS spectroscopy for surface chemistry mapping, XRD diffraction analysis for the study of the structure and phase composition of polymeric nanofiber membranes.

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Fugure 1: Nanofiber laboratory at the Faculty of Science of J. E. Purkyně Univerzity in Ústí nad Labem.