



Centre for Natural Sciences
and Technologies

J. E. Purkyně University in Ústí n. L.
Faculty of Science
Pasteurova 3632/15
400 96 Ústí nad Labem

prof. RNDr. Pavla Čapková, DrSc
E-mail: pavla.capkova@ujep.cz
Tel.: +420 475 286 625
Room: 2.07

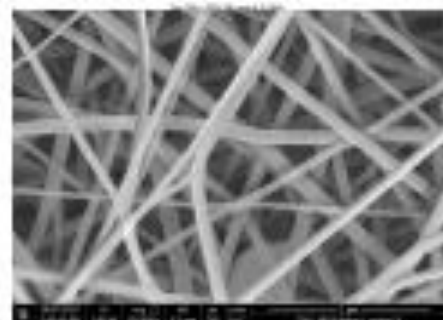
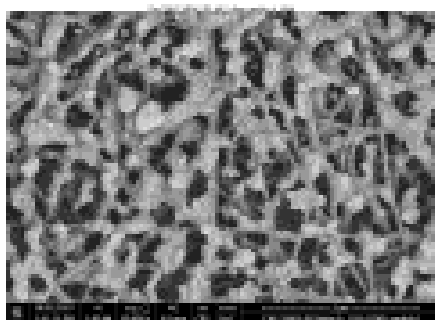
Mgr. Petr Ryšánek Ph.D..
E-mail: petr.rysanek@ujep.cz
Tel.: +420 475 286 644, +420 608 627 053
Room: 2.20

POLYMER NANOFIBER MEMBRANES FOR SPECIFIC FUNCTIONS

RESEARCH/TECHNOLOGY INTRODUCTION

Electrostatic needle spinning polymer nanofiber membranes are chemically modified with mixed transition metal oxides nanoparticles and selected chemicals for specific functions such as:

1. degradation of pollutants especially difficult to degrade such as pesticides, nerve gases, cytostatics and
2. for separation, capture and reuse gases (methane, CO₂, hydrogen in waste gases). We use computer design of polymer/modifier nanocomposite, which determines the interaction energy of polymer/modifier and predicts the stability of the composition and stability of membrane performance.



POTENTIAL USERS

These membranes are suitable as: (1) protective masks for persons working with the above-mentioned hazardous toxic substances and (2) as membranes reducing emissions in industrial processes.

ADVANCEMENT OF TECHNOLOGY AND MARKET APPLICATION

Products of this type are not yet on the market.

ADDITIONAL INFORMATION

The nanofiber laboratory at the Faculty of Science UJEP is equipped with a spinning machine air and liquid permeability equipment and testers. In addition to common analytical techniques, we use specific characterization techniques: XPS spectroscopy for mapping surface chemistry and XRD diffraction analysis to study the structure and phase composition of polymeric nanofiber membranes.

