single unaligned nanofibers with an average diameter of (0.37±0.14) µm that are tightly packed and heavily intertwined. The materials formed by SBS show complex dimensional structure, mostly with loosely packed bundles aligned microfibers with an average diameter of (0.54±0.20) µm. They form the beams with the size from 1, 2 to 12, 8 µm depending on their quantity.

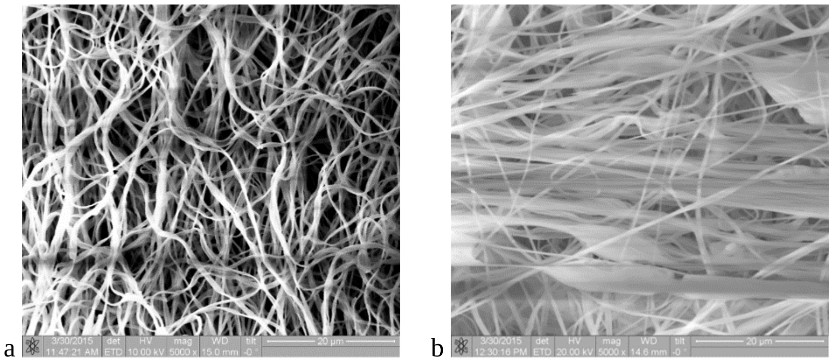

Figure 1. SEM images of nonwovens materials formed by ES (a) and SBS (b) methods at 5000× magnification

Electrospinning materials can be used as membranes and western blot as they have narrower distribution of fiber diameters. SBS nonwoven materials with their characteristics globules are suitable for certain biomedical application where the main fibers provide a large surface area and globules act as a drug reservoir for controlled release of biomolecules.

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GUIDE FOR CALIBRATION OF α-, β- AND γ-RADIATION DETECTORS USED FOR SOIL RADON MONITORING

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Investigation of the radioactive soil gas radon dynamics, basically is used for short-term forecasts of the earthquakes in many countries. Methods of measurements are differing by types of registered ionizing radiation. For continuous soil radon monitoring the methods of ionizing radiation registration by using detectors operated in counting regime, are placed straight in the boreholes. These methods are cheaper by 1-2 times as opposed to methods based on alpha spectrometry, and this fact is allows to building of the network of radon monitoring stations. The other reason is that they allow getting, processes and analyzing data in quasi-real time scale. However, reliability of obtained results and methods of direct radon measurements in boreholes by the ionizing radiation was not investigated. Transfer of pulse counting rate into units of radon volumetric activity is made with multiplication on the correction coefficient, which is determined by comparison with results of certified radiometer in short and usually single experiment. The main task of this research was checking of reliability of radon measurement methods by direct registration of ionizing radiation in soil [1, 2]. Potential problems in detector calibration procedure and determining of correction coefficients based on revealed asynchronous behavior of radon and ionizing radiation time series are examined.

The results of calibration of α -, β- and γ-radiation scintillation detectors (ATOMTEX, Republic of Belarus) mounted into boreholes at depths of 0.5 and 1 m, which are destined for soil radon monitoring, are represented. The radon isotopes radiometer based on semiconductor alpha spectrometry (SARAD GmbH, Germany) was used for the calibration aim.

On the whole, time variations of α-particles flux density (FD) at depths of 0.5-1 m badly reflect soil radon dynamics as to diurnal variations and its amplitude. Good synchronism between α-particles FD and radon volumetric activity (VA) time series measured at the same depth was observed only when positive atmosphere temperature and absence of precipitations. It was found a good synchronism in β-particles FD and radon VA changes at depth up to 1 m for daily and synoptic scales. But for certain days a little time shift between β- and radon time series was observed. Maximum in soil radon diurnal variations is usually observed at 16-18 o'clock at 0.5 m depth, and at ~ 24 o'clock at 1 m depth.

Consideration must be given to nonlinear relationship between β-particles FD and radon VA values when determination of calibration coefficients.

In more details questions of the calibration is show in the paper.

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A VACUUM ARC CATHODE MAGNETIC FIELD AND A SUBSTRATE BIAS INFLUENCE ON A MACROPARTICLE CONTENT DECREASING

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The results of an experimental study of the influence of normal and tangential to the cathode surface magnetic field and short-pulsed high-frequency negative bias applied to substrate immersed in a DC copper vacuum arc plasma are presented. It was found that the macroparticle (MP) surface density depends on the magnetic field, the bias parameters and the processing time.

The experimental data of the MP amount on the steel sample after cooper plasma deposition using normal to the cathode surface magnetic field are presented in Fig.1. Without negative bias total number of MPs on substrate surface increases gradually (Fig. 1, curve 1). Application of short-pulsed high-frequency negative bias significantly affects on MPs surface density and dynamic of their assembling on the substrate during the treatment time (Fig. 2, curve 2). Maximal amount of cooper droplets can be observed after 3 minutes of deposition then MPs surface density starts to decrease. Total reduction of MPs was 3.7 times after 30 second and almost 12 times after 6 minutes of a treatment.