3 min. The implantation conditions: the arc current I = 70 A, the bias voltage U= 1,5 kV, frequency of impulses – 100 kHz, the pressure – 0,02 Pa. The part of the samples was implanted with a plasma filter, other part without the filter. The samples were saturated with hydrogen on the installation «Gas Reaction Controller» by the Siverst method at 400^0C during 120 min. The hydrogen pressure was 1,95 atm. The glow discharge spectrometer «GD-PROFILER 2» was used for the study of the elements distribution in the modified layer.

The sorption results are shown in table 1. From this table it follows that the sorption rate of hydrogen decreases after implantation of titanium in Zr-2,5%Nb. The using of the plasma filter reduces the sorption rate of hydrogen. This may be linked with the large number of microdroplets in plasma when titanium was implanted without the filter that reduces the homogeneity of the modified layer.

Table 1. The rate of hydrogen sorption in Zr-2,5% Nb

Samples	Rate of sorption ×10-4 cm^3 H_2/(sec.·cm^2)	
Zr+Ti with the plasma filter	0,73	
Zr+Ti without the plasma filter	2,1	3,9 (t>4000 sec.)
Zr	6,8	

The depth distribution of the elements shows that the depth of the modified with the filter is ~250 nm, without the filter is ~300 nm. Also the hydrogen concentration in Zr-2,5%Nb after hydrogenation is lower for the sample with the filter than for the sample without the filter. The obtained modified layer with the filter prevents the penetration of hydrogen.

Conclusion. PIII of titanium in Zr-2,5%Nb reduces the rate of hydrogen sorption. The barrier layer is formed during the implantation of titanium with a filter which prevents the penetration of hydrogen into the sample.

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CHANGING OF TRACK MEMBRANES CONTACT WETTING ANGLE AFTER LOW-TEMPERATURE ATMOSPHERIC PLASMA TREATMENT

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There are a lot of polymer's materials with low surface energy and surface wettability. One of these materials is polyethylene terephthalate (PET), which is widely used in medicine [1]. Plasma-induced modifying the polymer's surface is the perspective and modern method of modifying the polymer's surface. This method allows changing of the surface morphology and as a result its wettability [2, 3].

This article shows results of plasma-induced modifying the PET track membrane surface, changing of its morphology and wettability. The purpose of research is to study the hydrophilic changes of the track membranes surface properties after exposure to low temperature atmospheric plasma.

Experiments were conducted using a track membrane "TOMTREK" based on PET with pores diameters 0.4 µm and 5 • 10^6 pores / cm^2 density. The pores are formed by irradiating the polymer PET 40Ar +8 ions with energy 41.5 MeV. After irradiation, the membrane was chemically treated in the alkaline solution. The surface had been processed by the plasma self-sustained volume discharge to give the surface the hydrophilic properties of the membrane.

Contact angle of wettability the surface track membrane was measured just after the chemical treatment in NaOH, on the first, third, seventh, fourteenth, twenty-first days after plasma modification.

Contact angle of wettability results are shows in table 1.

Table 1. Contact angles of wettability samples values

Treatment time	Native samples	first day	third day	seventh day	fourteenth day	twenty-first days
30 seconds	76,9±0.5	33,0±1,25	37,2±3,74	36,8±0,21	37,8±3,41	39,0±2,69
60 seconds	76,9±0.5	31,2±2,25	36,3±3,56	36,9±0,85	39,5±5,24	35,0±0,78
90 seconds	76,9±0.5	26,6±6,07	35,1±3,71	34,3±2,92	37,3±5,2	37,3±3,64

Thus, the plasma treatment of the track membranes surface can change contact surface properties. Low-temperature atmospheric plasma-induced modifying increases hydrophilic surface properties. Hydrophilic properties of the polymer after modification retains over 21 days.

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STRUCTURE OF POLYMER NONWOVENS MATERIALS OBTAINED BY ELECTROSPINNING AND SOLUTION BLOW SPINNING

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Nowadays the perspective polymer materials which can control the structural and functional state of the cells involved in regeneration process are widely researched. The special 3D nonwoven matrixes which can regulate the regeneration processes of living tissues are widely applied for these purposes. Now the method of electrospinning (ES) [1] and method of the solution blow spinning (SBS) [3] are the most effective and promising. The morphology of nonwovens materials is one of the most significant properties defining mechanical properties and further application. The objective of this work is to compare the structure of nonwoven materials obtained by electrospinning to SBS method.

Nonwoven polymer materials were produced from the solution of tetrafluoroethylene and polyvinylidene fluoride copolymer (TeFE-PVDF) in the methylethylketone and dimethylformamide mixture in a ratio of 1:2 (v/v). Nonwoven materials surface morphology was researched with Quanta 200 3D scanning electronic microscope. Fiber diameter of at least100 fibers was measured by hand with Image J software.

The surface of nonwoven polymer materials formed by electrospinning and SBS method from TeFE-PVDF is shown in Figure 1. These results demonstrate that nonwoven polymer materials obtained by electrospinning consist of