



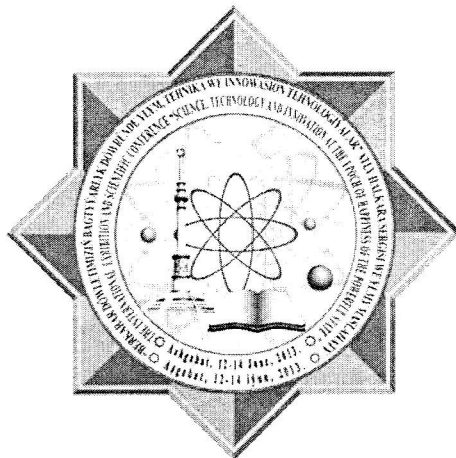
**BERKARAR DÖWLETIMIZIŇ
BAGTYÝARLYK DÖWRÜNDE YLYM, TEHNIKA
WE INNOWASION TEHNOLOGIÝALAR**

**SCIENCE, TECHNOLOGY AND INNOVATIVE
TECHNOLOGIES IN THE PROSPEROUS EPOCH
OF THE POWERFUL STATE**

**НАУКА, ТЕХНИКА
И ИННОВАЦИОННЫЕ ТЕХНОЛОГИИ
В ЭПОХУ МОГУЩЕСТВА И СЧАСТЬЯ**



TÜRKMENISTANYŇ YLYMLAR AKADEMIÝASY



**«BERKARAR DÖWLETIMIZIŇ BAGTYÝARLYK DÖWRÜNDE
YLYM, TEHNIKA WE INNOWASION TEHNOLOGIÝALAR»**

Halkara ylmy maslahatyň nutuklarynyň gysgaça beýany
(2013-njy ýylyň 12-14-nji iýuny)



**“SCIENCE, TECHNOLOGY AND INNOVATIVE TECHNOLOGIES
IN THE PROSPEROUS EPOCH OF THE POWERFUL STATE”**

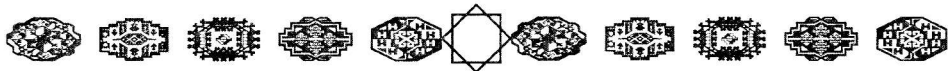
Abstracts of papers of the International Scientific Conference
(June 12-14 2013)



**“НАУКА, ТЕХНИКА И ИННОВАЦИОННЫЕ ТЕХНОЛОГИИ
В ЭПОХУ МОГУЩЕСТВА И СЧАСТЬЯ”**

Тезисы Международной научной конференции
(12-14 июня 2013 года)

Aşgabat • Ylym • 2013



UOK 001(575.4) + 323/324

B 52

B 52 «Berkarar döwletimiziň bagtyýarlyk döwründe ylym, tehnika we innowasion tehnologiýalar» atly halkara maslahatyň nutuklarynyň gysgaça beýany. – A.: Ylym, 2013.

TDKP №193

KBK 66.3 (2 Tü)

© Türkmenistanyň Ylymlar akademiýasy, 2013

© “Ylym” neşirýaty, 2013



60 patients with carcinoma of uterine cervix. Early stages (I-II) of cancer of mammary glands were established at 67,2 % (in planned routine inspections 38 %) for the first time revealed patients. This indicator at the patients with carcinoma of uterine cervix corresponded to 78,3 % (40 %). Pretumoral diseases of mammary glands were revealed at 7073 women. In the process of routine examinations pretumoral diseases of carcinoma of uterine cervix were revealed at 13952 women. All women with pretumoral diseases and malignant tumors were registered and were carried out medical-improving actions.

Thus, the spent routine examination of women of the age of 20-55 years on revealing of pretumoral diseases and malignant tumors on the basis of medical preventive establishments has appeared productive and specifies in the further development of this work.

**Diana Krumpāne, Yury Dekhtyar,
Indra Surkova, Marina Romanova**
(Latvia)

LEAD SULFIDE NANODOTS AS A TOOL FOR DETECTION OF DOSE OF ELECTRON RADIATION USED IN RADIATION THERAPY

Aim of radiation therapy is to deliver dose of ionizing radiation to the target tissue and to destroy cancer cells. Nanodosimetry is a cutting-edge technology which aim is to measure absorbed dose in nano volume of the irradiated substance. There are several reasons why nanodosimetry is gaining more and more attention: (i) biological effects caused by radiation depend on dose absorbed by nanosized DNA units; (ii) there is a trend in radiation therapy to apply high dose gradients (from Gy/ μm to Gy/nm)); it was found that survival of the cells depends on the gradient value. However, there are still no detectors that measure radiation in nanovolumes. To solve the problem, nanosized detector is required; nanodots or nano thick films can be great candidates for implementation of such dosimeter. In order to get reliable readout from the dosimeter, it must not be influenced by measurement process. Therefore, contactless technologies are preferable. One of possible contactless technologies is prethreshold photoelectron emission (PE) stimulated by ~ 5 eV photons.





ZrO₂:PbS films consisting of PbS nanoparticles embedded in ZrO₂ matrix were explored for purposes of nanodosimetry of electron radiation. ZrO₂:PbS films were irradiated with 9 MeV electrons that supplied doses 3, 7 and 10 Gy using medical linear accelerator. PE current was recorded in vacuum 10⁻⁵ Pa before (I_0) and after (I_{Gy}) irradiation.

Results demonstrate that radiation decreased intensity of PE current from ZrO₂:PbS films ($I_0 > I_{Gy}$). However, the degree of this reduction cannot provide information on the dose of received radiation because linear correlation between the dose of radiation and the degree of the reduction was not observed. To investigate dose-dependent peculiarities of the PE spectra, derivatives $dI/d(h\nu)$ of the PE current were calculated from the $I(h\nu)$ spectra. Maximums of $dI/d(h\nu)$ were found at 5.65 ± 0.03 eV and 5.75 ± 0.03 eV. Radiation decreased amplitudes of the maximums. This decrease could be due to loss of emission active centers under influence of radiation. To estimate possibility to use ZrO₂:PbS films for dosimetry, relative increments $D(dI/d(h\nu))$ of the maximums at 5.65 and 5.75 eV were correlated to the dose. Good linear correlation between the relative increments $D(dI/d(h\nu))$ and dose of electron radiation was found. This means that ZrO₂:PbS nanodots are sensitive to electron radiation and have potential to detect dose of electron radiation.

PE spectra of ZrO₂:PbS films irradiated with the dose 7 Gy were measured after one year to study preservation of the dose. The films were kept intact during this period. The results showed that the films can hold the received dose at least during a year. However, it should be noted that other mechanisms why relative increments didn't change weren't researched and thus further experiments are needed.

In order to use ZrO₂:PbS films repeatedly, i.e. to irradiate them again, the films have to be restored to their initial condition present before the irradiation. This can be done by annealing them in vacuum. Annealing can restore electron states to their initial condition. Choice of annealing temperature is important. ZrO₂:PbS films irradiated with 7 Gy were studied. Annealing during 30 min at 250 °C resulted in very high increase of PE current ($I_{5.9eV} = 12500$ a.u.) which was not plausible. Annealing at 150 °C during 15 min restored PE intensity to the initial level of $I_{5.9eV} = 2500$ a.u.. Conclusion was made that annealing at 150 °C during 15 min might restore electron states of ZrO₂:PbS films for their repeatable use as detectors of electron radiation. However, further experiments are needed to determine annealing conditions.





Diana Krumpāne, Yuri Dekhtjār,
Indra Surkowa, Marina Romanowa
(Latwiya)

GURŞUN SULFIDINIŅ NANOBÖLEKLERI RADIATION TERAPIYADA ULANYLYAN ELEKTRONLARYŅ ŞÖHLE ÝAÝRADYŞ DOZASYNYŅ DETEKTORY HÖKMÜNDE

ZrO₂ plýonkanyň (ZrO₂:PbS kysymly plýonka) matrisasyndaky PbS nanonokatlar elektronlaryň şöhle ýaýradyşynyň nanodozimetriýasynda ulanylmak üçin öwrenildi. Lukmançylykda çyzykly tizleşdiriji ulanylyp, plýonkalara 9 MeB energiýa we 0-10 gr doza möçberinde şöhle goýberildi. Dozimetrik signal foZrO₂:PbS plýonkalaryň şöhlenenmeden öňki we soňky fotoelektron emissiýasynyň (FE) spektrlerini deňşdirmek arkaly alyndy. Elektronlaryň şöhlelendirmesiniň täsiri astynda elektrik akymynyň FE-siniň peselýändigini ýüze çykaryldy. FE spektrleriniň proizwodnyalarynda 5,65 we 5,75 eW energiýa berlende, maksimum netijeler göze ildi. Şöhlenenmeden soň olaryň amplitudasy azaldy. Ýasamalaryndaky maksimumlaryň amplitudasynyň otositel azalmagy bilen şöhlenenme dozasyň arasynda çyzykly korrelýasiýanyň bardygy ýüze çykaryldy. Elektronlaryň şöhleleriniň täsiri astynda ZrO₂:PbS plýonkalarynyň FE spektrlerinde ýüze çykýan üýtgeşmelere plýonkalara elektronlaryň şöhlenişiniň radiasion dozimetriýasy üçin netijeli serişde hökmünde garap boljakdygyny görkezýär.

Диана Крумпане, Дегтярь Юрий,
Индра Суркова, Марина Романова
(Латвия)

НАНОЧАСТИЦЫ СУЛЬФИДА СВИНЦА В КАЧЕСТВЕ ДЕТЕКТОРА ДОЗЫ ИЗЛУЧЕНИЯ ЭЛЕКТРОНОВ, ИСПОЛЬЗУЕМОГО В РАДИАЦИОННОЙ ТЕРАПИИ

PbS наноточки в матрице из ZrO₂ пленки (плёнка ZrO₂:PbS) изучались для применения в нанодозиметрии излучения электронов. Пленки облучались электронами с энергией 9 МэВ и с дозой 0-10 Гр используя медицинский линейный ускоритель. Дозиметрический сигнал снимался путем сравнения спектров





фотоэлектронной эмиссии (ФЭ) из $ZrO_2:PbS$ плёнок до и после облучения. Было обнаружено, что под действием излучения электронов интенсивность ФЭ тока уменьшается. На производных ФЭ спектров были обнаружены максимумы при энергиях 5,65 и 5,75 эВ, амплитуда которых уменьшилась после облучения. Наблюдалась линейная корреляция между относительным уменьшением амплитуды максимумов на производных и дозой излучения. Наблюдаемые изменения в ФЭ спектрах $ZrO_2:PbS$ плёнок под воздействием излучения электронов показывают, что пленки могут рассматриваться как эффективный материал для радиационной дозиметрии излучения электронов.

Akmyrat Abdullaýew
(*Türkmenistan*)

REFLÝUKS-EZOFAGITIŇ WE GYZYLÖDEGIŇ PEPTIKI DARALMAGYNYŇ HIRURGIÝA BEJERGISI

Işiň maksady. Reflýuks-Ezofagitiň we gyzylödegiň peptiki daralmagynyň hirurgiiýa bejergisiniň netijelerini gowulandyrmak.

Derňewleriň serişdeleri we usullary. 1992-2013-nji ýyllar aralygynda Aşgabat şäheriniň KYKMH we FYKMH hirurgiiýa bölümlerinde reflýuks ezofagit we gyzylödegiň peptiki daralmasy bilen jemi 182 sany näsag operasiýa edildi. Olardan 104-si aýallar, 78-si erkek adam. Keseliň dowamlylygy 9 aýdan 18 ýyla çenli. Barlananlaryň arasynda 98-si agyr reflýuks ezofagitden, 84-si gyzylödegiň peptiki daralmagyndan ejir çekýärdiler.

Reflýuks-ezofagit – bu ýaş we gartaşan adamlaryň arasynda örän ýaýran we ýygý kesgitlenýän kesel.

Reflýuks-ezofagitiň iň agyr gaýrüzülmeleriniň biri-de gyzylödegiň peptiki daralmagy hasaplanylýar. Hemme ýagdaýlarda, ilki bilen, konserwatiw bejergi ýollaryny saýlasak-da, käbir näsaglara operasiýa mätäçligi ýüze çykdy. Kardial ingisindäki reflýuks-ezofagitiň gaýralmasy hökmünde dörän gyzylödegiň peptiki daralmasyny biz ilkinji peptiki daralma diýip aldyk. Ikilenji peptiki daralma diýip kardiiýada geçirilen birnäçe netijesiz amallaryň esasynda dörän daralmany kabul etdik.

Diafragmanyň gyzylödek deşiginiň ingisinde ulanylýan iň amatly operasiýa SPW. **Fundoplikasiýa** diýip kabul edilen bu operasiýa

