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## SOME INVESTIGATION AT THE NIOBIY AND MOLYBDENUM CONCENTRATE GRANULATION

Abstract: Technology of production of the pyrite cinders of Mo middlings includes granulation, firing to oxidize sulfide minerals and to recover Re-oxide. If kaolin is used a dilution of the pyrite cinders with Mo takes place. The research is devoted to the development of alternative to kaolin organic binding agents. The approach is based on a comparison of hydrophilic, strength developed technological characteristics of pellets. The new batch was & differing from the traditional mixture with organic additive burning to the ground allowing minimizing dilution. Mo maximizing Re. Au, Ag *hydrometallurgical* recovery. Key words: Mo concentrate, cinder, kaolin, organic polymer, granulation.

#### Introduction.

Technology of production of the pyrite cinders of molybdenum middlings at JSC "Almalyk GMK" [1] includes the steps of: mixture granulation (composition: Mo-concentrate 90%, kaolin 10%), firing of pellets at 600 °C oxidize sulfide minerals and to to recover rhenium oxide. As a result of the dilution of the original Mo concentrate with kaolin there "dilution" is a of the pyrite cinders upon molybdenum. In this context, the search of pellet-forming scheme that minimizes this rate is the actual problem. The data revealed that if we use

**Objective:** To provide such a binder for JSC "Almalyk GMK". Its requirements: it should not contain any "technological poisons" (such phosphates) adversely affecting the as redistribution of cinder: leaching, sorption of Mo (VI) ions, hydrogen reduction to metal, sintering rods. Tasks: to compare the hydrophilic, strength and technological properties of binders: kaolin and alternatives to it of organic and organic-mineral nature, being in the composition of pellets and cinder of Mo concentrate.

Subjects and methods. Batch of Mo concentrate ranulation was prepared using

the traditional composition of the batch mixture in the production of cider, the proportion of Mo in the granules is reduced to 4%. In addition, it is known that the presence of kaolin in cinder makes difficult to sublimate rhenium oxide and impairs its commodity indices such as the fullness of ammonia leaching, Au and Ag extraction from a cake. To improve these technical and economic indicators was an idea to replace, completely or partially, kaolin with organic binder to be burned at a sintering of Moconcentrate and causing no dilution of the product.

Limiting wetting angles of the batches prepared on Moconcentrate base in compare with few reference data [6] are offered in From Table 1 it is revealed that the sample Nr 1 is identified as being hydrophobic material. Decrease of its hydrophobicity was facilitated with binders allowing it to be granulated. Selection of the best of them for the role of alternative to kaolin was intended to experiment aimed at a comparison between the strength of granules with a diameter of 3–5 mm, made of MoS2-containing batch materials with binders, after their dryingfiring at 20, 250, 600 °C.

(Tabletka). In manufacture of candle end of Mo middlings the requirement to the durability of granules is empirically revealed, adjustable by a mode of balling in dish nodulizer of own design, with diameter of a plate made of a stainless steel equal to 2 m, as well as by batch composition.%: Mo-concentrate 92–90, kaolin 8–10. The corner of an inclination of a dish, speed of its rotation and submission of a batch with water, time of balling were selected too empirically, aspiring to the optimum size and durability of the granules. At understating of the kaolin maintenance in granule's batch mixes their resistance to abrasive wear on a way to a furnace fell, at their overestimate permeability of oxygen in granules (O2 is necessary for oxidation of molybdenite up to trioxide of Mo) was blocked: in both cases the of sulfur content in the candle end exceeded norm of State standard 2677–78.So one of the research's problems was the quantitative description of the abovestated requirement empirically revealed by the industry to durability of Á Ácecream PDF Editor.

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bindering: kaolin, bentonite, liquid glass LG, Na-carboxymethylcellulose (NaCMC), polyvinyl acetate (PVA), sulfonated cellulose [2;3], hydrolysis product of waste of production of polyacrylonitrile fiber SC. Their composition (binder content,%; Mo

Ι (J,%)was determined as a percentage of reflex expressed at the maximum. Results and discussions. The Mo concentrate's composition supplied to the granulating was the following, %: Mo 38; Re 0.7; Cu 2.5; P 0.009; Sb 0.025; WO3 0.05;S 25.2; SiO2 10.8; humidity 0.42; peculiar to Mo concentrate quantities of Au and Ag presented there too.

7 (bentonite 2%, PVA 2%), 8 (bentonite 2%, sulfonated cellulose 2%). 9 (SC 1%), 10 (SK 1.5%, LG 1.5%),11 (bentonite 2%, SC 1.5%, LG 1.5%), 12 (kaolin 2%, SC 1.5%; LG 1.5%), 13 (LG 3%); 14 (bentonite 2%, CMC 1.5%); 15 (bentonite 2%, SC 0.5%); 16 (kaolin 2%, SC 0.5%); 17 (bentonite 1%, CMC 0.5%), 18 (bentonite 1%, SC 0.5%).

Limiting wetting angle of batch material compacted under a pressure of 20 MPa (Ø 12, height: 4 mm) wasdetermined from the profile of water droplets thereon [4]. The granules were obtained in the disc pelletizer, then dried at 20 °C, 24 hr. Their crushing strength was evaluated with the following methods: 1) of integrity of the granules dropped from a height of 2 m onto concrete; 2) of compression fracture. Their comparison revealed allowable strength criterion:  $F \ge 1.2$  MPa. The content of the elements in raw materials and technological solutions was determined by ultimate analysis carried by AAS "Perkin-Elmer" PE 3030V with a flaming atomizer, and Aligent 7500 ICP MS. Thus, Au and Ag in the samples determined were at wavelengths of 242.8 and 328.1 nm with preconcentration extraction in a toluene solution of sulfide oil at a ratio of organic / aqueous phases = 1/10, respectively. IR absorption spectra were recorded in the range of 400-4000 cm-1 with AVATAR-360 spectrometer Nico let. Thermograms were recorded by derivatograph Paulik Erdey at gradient 10 degrees per min, sample weight 0.200-0.250 g, in corundum crucible Ø 10 mm. with T-900, TG-200, the DTA-1/10, DTG1/20 sensitive galvanometers and Al2O3 as a

granules. The approximate allowable range of granules' durability is established to be approximately: P=1÷4 MPa, specification of criterion demands additional researches. At concentrate — the rest), Nr: 1 (without a binder), 2 (kaolin 10%), 3 (SC 3%), 4 (kaolin 2%, SC 3%) 5 (bentonite 2%, SC 3%), 6 (bentonite 2%. CMC 2%). Nico let. Thermograms were recorded by derivatograph Paulik Erdey at gradient 10 degrees per min, Their comparison revealed allowable strength criterion: F > 1.2 MPa. The content of elements in the raw materials and technological solutions was determined concentration of It was of interest to compare An advantage of the compositions based on organic binder, for example, Nr 15-18, to mixtures without its supplement consists in a fact that the organic additives SC, CMC, PVA at thermo treating burn up to the ground causing no dilution of a calcine. Mineral binders: bentonite, kaolin on the contrary resulted. Conclusion. Thus, effective binder compositions are developed providing the required strength to Moconcentrate granules being alternative to existing kaolin mixture (Mo concentrate 90–92%, kaolin 10–8%) and basing on the combinations: 1) kaolin (2%)-SC polymer (0.7–1,0%); 2) bentonite (0,7–1,0%)-SC polymer (0.7–1,0%), Mo technological concentrate-the rest.the properties of mixes Nr 1,2,16, for which of them pellets had been made, burned & subjected to ammonia leaching. From the obtained cakes Au, Ag were extracted after cyanide leaching. At all analyzed samples stages the were for the content of Mo, Re, Au, Ag. It was found out that granule of a mixture № 16 had been relatively enriched with Mo before and after with minimum their firing. content of unoxidized MoS 2 and maximum of MoO3 in their composition. Ag and Au content in the cinder were maximal, facilitating their removal from the cakes. At 600 °C rhenium in the form of Re 207 sublimated to the maximum extent At low concentration of both binder agents in Nr 17 mixture, the durability was dissatisfied. For SC exchange on sulfonated cellulose (Nr 8) or water glass (Nr 11, 13), for turning mineral binder of the mixture (kaolin or bentonite), but

standard. Rontgenograms were recorded by DRON-2.0 X-ray crystal analyzer with Cu-anticathode. To calculate the interplanar distances table of ASTM standard card index was used. The relative intensity of the lines I / of this parameter in a candle end the content of sulfur could overcome its norm: 1,5% [1]. Tabletka revealed: the current charge mixture based on kaolin Nr 2, as well as a mixture based on kaolin or bentonite: Nr 4, 5, 15–16, 18 provided a required granules' strength: P=1÷4 MPa. When replacing the SC polymer with CMC (Nr 6,14,17) strength values are being worse, but in the range of high the technological properties of mixes Nr (2%)-SC polymer (0.7–1,0%); 2) bentonite 1,2,16, for which of them pellets had been made, burned & subjected to ammonia leaching. From the obtained cakes Au, Ag were extracted after cyanide leaching. At all stages the samples were analyzed for the content of Mo, Re, Au, Ag. It was found out that granule of a mixture № 16 had been relatively enriched with Mo before and after their firing. with minimum content of unoxidized MoS 2 and maximum of MoO3 in their composition. Ag and Au content in the cinder were maximal, facilitating their from the cakes. removal At 600 °C rhenium in the form of Re 207 sublimated to the maximum extent At low concentration of both binder agents in Nr 17 mixture, the durability was dissatisfied. For SC exchange on sulfonated cellulose (Nr 8) or water glass (Nr 11, 13), for turning mineral binder of the mixture (kaolin or bentonite), but in the presence of SC (Nr 3, 9), unsatisfactorily decrease of pellet's strength took place. Increasing of the temperature treating from 20 upto 600 °C lead to the pellets' strength rise. An advantage of the compositions based on organic binder, for example, Nr 15-18, to mixtures without its supplement consists in a fact that the organic additives SC, CMC, PVA at thermo treating burn up to the ground causing no dilution of a calcine. Mineral binders: bentonite, kaolin on the contrary resulted.

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#### Section 6. Medical science

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#### A NEW RESULTS OF THE TREATMENT METHODS OF GLUOCOMS

Abstract: The causes of retinoblastoma were researched and the genetic mutation was identified as the main reason of the disease. The diagnostic methods of retinoblastoma were analysed and DNA analysis, *computerized* tomography, ultrasonography and immunohistochemical analysis reviewed. The efficiency of the were treatment methods of retinoblastoma was estimated.

*Key words: retinoblastoma, RB1 gene, germline mutation, leukocoria, photocoagulation, thermotherapy, chemoreduction.* 

Gluocoma (GM) is a rare cancer that begins in the retina of the eye. The retina is a thin layer of nerve tissue that lines the inside of the back of the eye and is sensitive to light. In order to see, the retina senses light and sends a message by way of the optic nerve to the brain. Retinoblastoma is the most common intraocular tumor and the seventh most common solid tumor in childhood approximately 95% before the age of five.

The incidence is similar in boys and girls. Unilateral cases are around 24 months and bilateral cases are before 12 months. The chain of events inside cells that leads to retinoblastoma is complex, but it almost always starts with a change (mutation) in a gene called the retinoblastoma (RB1) gene. The normal RB1 gene helps keep cells from growing out of control, but the change in multifocal. Children of the affected have 45% chance of inheritance. Chromosomal anomaly of this type of retinoblastoma is a germline mutation. Relatives have a high risk of RB development, increased risk for the second malignancies such as sarcomas, melanoma, cancers of brain and nasal cavities.

The common presenting features of retinoblastoma are leukocoria (white pupillary reflex) (60%), strabismus (20%), red painful secondary glaucoma eye (7%),and buphthalmos (5%), orbital cellulitis (3%), unilateral mydriasis (2%), heterochromia iridis (1%), hyphema (1%) and asymptomatic in some cases (3%) [3, 512].

A diagnosis of retinoblastoma is made by examining the eyes. A white pupil or strabismus will usually be noticed by a parent or pediatrician. Because this disease is relatively rare, children are typically referred to a special ophthalmologist who is familiar

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the gene stops it from working like it should. RB gene is located on long arm of chromosome 13 (13q14)containing 27 exons and 26 introns. 2 normal copies of RB gene present in most human cells. RB gene product is 928 AA phosphoprotein whose normal function is to suppress cell growth. RB represents phenotypic expression of abnormal or absent tumour suppressor gene RB1. Most RB1 mutations are minute deletions, duplications and point mutations. Depending on when and where the change in the RB1 gene different occurs. 2 types of retinoblastoma can result: 6% familial and 94% sporadic. Sporadic (non-hereditary) retinoblastoma is unilateral and unifocal. This type of retinoblastoma is often found at a later age than the hereditary form. Chromosomal anomaly of sporadic type is a somatic mutation. Relatives have low risk of RB development. а Familial (hereditary) is 85% bilateral and here the determined whether that mutation is in the

methods in the analysis of the retinoblastoma gene. The direct method aims to find the initial mutation that precipitated the development of the tumor; then, it is determined whether that mutation is in the germline of the affected patient. Indirect methods can be used in cases where the initial mutation cannot be located or it is uncertain whether it exists. Sources of DNA to be evaluated directly either are from tumor cells or leukocytes. Deletions or rearrangements of the retinoblastoma gene can be detected by eitherkaryotyping or Southern blotting techniques. Cranial and orbital computerized tomography provides a sensitive method diagnosis and for detecting intraocularcalcification and shows intraocular extent of the tumor even in the absence of calcification. Ultrasonography is useful in distinguishing retinoblastomas from nonneoplastic conditions. It is also useful in detecting calcifications. MRI may be beneficial in estimating the degree of differentiation of retinoblastomas, but it is not as specific as computerised tomography because of its lack of sensitivity in detecting calcium. MRI also is useful in identifying any

with the treatment of retinoblastoma. The child may need to be examined under general anesthesia to define the extent of the tumor in the eye (s) and to record the information in photographs or diagrams. The specialist may also use additional tests to detect tumors. The following tests are commonly used to provide the specialist with picture а of the inside of the eye and the brain. Blood counts and electrolyte determination as well as urinalysis and liver function tests are useful in excluding other conditions confused with retinoblastoma. Blood specimens should be taken not only from the patient but also from the parents and any siblings for DNA analysis, which could aid in genetic counseling. There are direct and indirect comp recently toward using more conservative (x-x) Ultrasonography is useful in distinguishing nonneoplastic retinoblastomas from conditions. It is also useful in detecting calcifications.

Immunopathologist is required to provide worthwhile results. The classic histologic findings retinoblastoma are Flexner-Wintersteiner of rosettes and less commonly fleurettes Medical therapy should be directed toward complete control of the tumor and the preservation of as much useful vision as possible. Treatment is usually individualized to the specific patient. Although several therapeutic approaches are available, enucleation is one of the most commonly used modalities in the management of retinoblastoma. However, there has been a trend recently toward using more conservative methods of treatmen Enucleation probably is indicated for all unilateral cases in which the tumor fills most of the globe and in which there is little hope of salvaging any viable retina or useful vision. If half of the retina is free from tumor, then other methods of treatment can be considered, as long as parents have been fully informed as to the possibilities of metastasis, the complications of treatment, and the risk for ultimate enucleation. Other indications for enucleation include the presence of neovascular glaucoma in an eye with retinoblastoma the and suspicion of optic nerve, choroidal, or orbital tumor extension. Seeding of retinoblastoma into the pars plana or into the anterior chamber are associated hemorrhagic or exudative retinal detachment. This is seen as a localised subretinal area of higher signal intensity compared to vitreous on both T1-and T2weighted sequences. Immunohistochemical and biochemical studies show an S-antigen detected in well-differentiated retinoblastomas using immunoperoxidase staining of paraffin sections and interphotoreceptor retinoidbinding protein (IRBP) [1; 2]. The aim of immunohistochemical studies is to decide whether retinoblastomas come from a common progenitor cell capable of differentiation into either glial or neuronal cells or from neuron-committed cells. Numerous variables alter the results in these studies. These variables include tissue fixation, staining procedures, specific areas consideration, taken into tumor cell differentiation, antigen expressivity, and age Caution required of tumor. is when interpreting most immunohistochemical results because of the related controversies associated with these tests. An experienced

atrophy and a sunken appearance to the prosthesis, as well as decreased tear production with chronic discharge mucous drying on the prosthesis. The use of the integrated hydroxyapatite implant with rectus muscles attached improves the motility of the prosthesis [4]. For years, various techniques of external beam radiotherapy represented the only available method of irradiation for retinoblastoma. It is still one of the favored methods for advanced tumors involving the entire eye, especially when there is extensive vitreous seeding. Because of the concern for the development of related second cancers after external radiotherapy and, less importantly, cosmetic problems, episcleral radioactive plaques have been used increasingly. These serious problems are much less common with plaque treatment. Relative indications for a radioactive plaque include a retinoblastoma that is less than 15 mm in diameter and 9 mm in thickness. Customdesigned plaques with proper shielding essential for are

important findings that often lead to enucleation. In bilateral cases, the eye with the most advanced tumor traditionally has been enucleated and the less involved eye managed with irradiation or other methods. If the most sparing advanced eye has of more than half of the retina, an attempt can be made to salvage both eyes with treatment. If both eves have far-advanced tumors and there is no hope of vision. any bilateral enucleation may be necessary. Trying chemoreduction, bilateral external beam irradiation. both with close or follow-up may be justified if the parents are fully informed and refuse bilateral enucleation. The cosmetic results of enucleation for retinoblastoma generally are excellent.

If the child had external beam radiotherapy in addition to enucleation, then the cosmetic result often is less satisfactory, related to radiation-induced orbital fat radiotherapy represented consideration, tumor cell capable, Ultrasonography is useful in distinguishing retinoblastomas from nonneoplastic conditions. It is also useful in detecting calcifications.

Tumor control was 87%. The rate average tumor had a 7-mm base and 4-mm thickness. The median dose to the tumor apex was 4000 cGy and to the tumor base was 15.000 cGy. delivered over a mean duration of 65 hours. In 30% of cases, plaque radiotherapy was the primary treatment, 70% and in of cases, it was used as a secondary treatment after failure of other methods, most often failure of external beam radiotherapy [4].Photocoagulation can be used for selected small retinoblastomas. It may be used as primary treatment in some patients or as supplementary treatment in patients who were initially treated with irradiation or cryotherapy. Xenon arc photocoagulation was the first photocoagulator used, but its size and operation were cumbersome. Recently, it has found that the indirect ophthalmoscope laser delivery system using argon or diode is adequate to treat small retinoblastomas.

When it is administered properly,

tumors near the optic disc. This treatment can be used for both unilateral and bilateral cases. Plaque treatment can be repeated on a single eye to retreat the same tumor or treat one at a new site. It can be used when mild to moderate vitreous seeding is present over the tumor. Recurrent or residual tumors that have been uncontrolled with external beam irradiation. photocoagulation, thermotherapy, chemothermotherapy, or cryotherapy may be treated by plaque radiotherapy [5]. Most tumors show a dramatic response to irradiation within the first 4 weeks after removal of the plaque. The regression patterns that are noted are similar to those seen with external beam irradiation. A successfully irradiated retinoblastoma usually appears as a shrunken white mass that resembles cottage cheese. There may be pigmentary alterations and scar tissue around the regressed tumor. Shields JA, Shields CL have been reported their preliminary results with episcleral plaque radiotherapy for retinoblastoma. In an evaluation of 103 consecutive patients with retinoblastoma treated by solitary plaque application, local For years, various techniques of external beam radiotherapy represented the only available method of irradiation for retinoblastoma. It is still one of the methods favored for advanced tumors involving the entire eye, especially when there is extensive vitreous seeding. Because of the concern for the development of related second cancers after external radiotherapy and, less importantly, cosmetic problems, episcleral radioactive plaques have been used increasingly. The regression patterns that are noted are similar to those seen with external beam irradiation. A successfully

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The Journal of Neuroscience, 2013 Oct, 33 (44): 17458–17468. "Receptor Interacting Protein Kinase-Mediated Necrosis Contributes to Cone and Rod Photoreceptor photocoagulation has fewer complications than irradiation. Photocoagulation is indicated for small tumors confined to the retina that do not involve the optic disc or the macula. It is probably contraindicated if there is ophthalmoscopic evidence of vitreous seeding, choroidal invasion, or involvement of the fovea, optic disc or pars plana. The regression patterns that are noted are similar to those seen with external beam irradiation. A successfully This technique does not eliminate tumor cells in the vitreous. It probably would not destroy tumor cells in the choroid and possibly could promote dissemination of the tumor in such cases. If it is used on the optic disc or fovea, photocoagulation would result in marked visual loss. for the development of related second cancers after external radiotherapy and, less importantly, cosmetic problems, episcleral radioactive plaques have been used increasingly. These serious problems are much less common with plaque treatment. Relative indications for a radioactive plaque include a retinoblastoma that is less than The regression patterns that are noted are similar to those seen with external beam irradiation. A successfully The reported results of 45 retinoblastomas treated with xenon photocoagulation show that photocoagulation alone was successful in eradicating 76% of the tumors, whereas in 24% of the tumors, supplemental treatment with other modalities was necessary. In cases where thetumor was less than or equal to 3.0 mm in diameter and 2.0 mm in thickness and was confined to the sensory retina The regression patterns that are noted are similar to those seen with external beam irradiation. A successfully without vitreous seeding, tumor destruction usually was achieved with photocoagulation.

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