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ACCESSION NR: AP3001753

AUTHOR: Szydowski, Henryk

TITLE: Magnetic anisotropy 1. Magnetic anisotropy energy

SOURCE: Postepy fizyki, v. 14, no. 2, 1963, 229-260

TOPIC TAGS: anisotropy, magnetic anisotropy, resonance, ferromagnet, crystal, exchange anisotropy, induced anisotropy

ABSTRACT: The author's article is a review of literature on the subject of magnetic anisotropy. Formulas and tables are quoted and figures reproduced from 33 papers referred to in the article. The author first discusses the magnetic anisotropy energy, pointing out the difference between anisotropic bodies and magnetic anisotropy. Anisotropic constants are tabulated for various crystals. Connection between the surface within the magnetizing curves and the anisotropy constants is pointed out. Formulas are quoted estimating anisotropic energy in various crystallographic directions. Several methods of measuring constants of magnetic anisotropy are discussed. These are: the torsion method, using resistance and compensation anisometers; the oscillation method (formulas are tabulated

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giving the second derivative of anisotropic energy and directional moment); induction method (effect of magnetic field and intensity is discussed); and the ferromagnetic resonance method, as applied to monoaxial crystals and to crystals of normal shape (formulas are given for components of the internal field and for the anisotropic field). Latest theories are given on induced anisotropy, exchange anisotropy and anisotropy of polycrystalline materials. The latter for the case of crystals oriented with the magnetic field and crystals encountered in transformer sheet steels. The mechanism of exchange anisotropy is discussed, and values for Co ferrite constants are given for various Co concentrations. "I express sincere thanks to Prof. Dr. A. Piekarz, Prof. Dr. S. Szczeniowski and Docent Dr. Z. Pajak for their help in editing this paper." Orig. art. has: 71 equations, 21 figures and 6 tables.

ASSOCIATION: Katedra Fizyki Dos'wiadchalney, Universiteta Im. A. Mickiewicza, Poznan (Dept. of Experimental Physics, Univ. of Poznan)

SUBMITTED: 00

DATE ACQ: 12Jun63

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OTHER: 030

Card 2/2

ACCESSION NR: AP4040361

P/0045/64/025/003/0401/0416

AUTHOR: Szydłowski, H.

TITLE: Magnetic annealing effect on the magnetic anisotropy of cobalt ferrite crystals

SOURCE: Acta physica polonica, v. 25, no. 3, 1964, 401-416

TOPIC TAGS: cobalt ferrite, magnetic annealing effect, magnetic field heating, single crystal, single crystal anisotropy

ABSTRACT: Results in respect to anisotropy induced in cobalt ferrite single crystals and polycrystalline specimens by heating in a magnetic field are given. Anisotropy constants were measured at room temperature by the oscillation method and the ballistic method. The shape (number of maxima) of the magnetic torque curves was investigated by an oscillographic method. The dependence of the induced anisotropy constants on the temperature and time of heating in the magnetic field were investigated. Relaxation times in polycrystalline specimens were determined. With low measuring field strengths, only

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SZYDŁOWSKI, J.; RZEPKA, J.

Machines and equipment for the food industry at the 28th Poznan International Fair. p. 629.

PRZEGLĄD MECHANICZNY. (Stowarzyszenie Inżynierów i Techników Mechaników Polskich) Warszawa, Poland. Vol. 18, no. 19/20, Oct. 1959.

Monthly List of East European Accessions (EEAI) LC, Vol. 9, no. 2, Feb. 1959.  
Uncl.

KROLIKOWSKA-PRASAL, Irena; SZYDLOWSKI, Jerzy

Influence of x-rays irradiation of the central nervous system of albino rats on the glycogen content in the liver cells. Ann. Univ., Lublin sect.D 16:93-107 '61.

1. Z Katedry i Zakładu Histologii i Embriologii Wydziału Lekarskiego Akademii Medycznej w Lublinie Kierownik: prof. dr med. Stanisław Grzycki z Katedry i Zakładu Radiologii Wydziału Lekarskiego Akademii Medycznej w Lublinie Kierownik: doc. dr med. Kazimierz Skorzyński.  
(BRAIN) (RADIATION EFFECTS) (LIVER GLYCOGEN)

POLAND

KOWALEWSKI, Jan and Jerzy SZYDLOWSKI; Second Clinic of Internal Diseases (II Klinika Chorob Wewnętrznych) AM /Akademia Medyczna -- Medical School/ in Lublin, Director: Prof Dr Med A. R. TUSZKIEWICZ and the Institute of Radiology (Zakład Radiologii) of the AM in Lublin, Director: Prof Dr Med K. SKORZYNSKI.

"A Case of Medullary Leukemia with Skin and Extensive Bone Alterations"

Krakow, Przegląd Lekarski, Vol 18, No 12, 62, pp 474-478.

Abstract: [Authors' English summary modified] Case report of medullary leukemia, which at first was clinically and hematologically chronic, having then passed quickly into an acute form. Interesting in this case were the formation of leukemic infiltrations in the skin and extensive changes in the bone system, which had the character of a multifocal atrophy of bone tissue. These bone alterations which appear

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Krakow, Przegląd Lekarski, Vol 18, No 12, 62, pp 474-478 (continued).

very rarely in medullary leukemias in adults, were the cause of disturbances in calcium phosphate metabolism together with the formation of calcium metastases in kidneys. The treatment, at first with Myleran, and afterwards during the exacerbation of the disease, with Prednisolon and Purinethol did not influence in any way the course of the disease and did not contribute to the prolongation of the patient's life.

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2/2

2542, 2372  
CSO: 2000-N

Szydlowski M.

Szydlowski M. "The Problem of Utility Furniture for the Working Class."  
(Problem mebla mieszkaniowego dla mas pracujacych). Przemysl Drzewny,  
No. 1, 1950, pp. 21-24.

The problem of mass production of furniture suitable for an average worker's household (utility furniture) imposed itself with particular urgency in Poland after the last war. The wood industry of the People's Poland was faced by the necessity of creating new, standardized types of furniture which would meet the following requirements: 1) maximum utility combined with aesthetic design and proper finish, 2) compliance, as to dimensions and lines of design, with the standard types of dwellings, 3) considerable lowering of prices in comparison with the cost of the types hitherto prevailing, 4) construction corresponding to the possibilities of mechanical mass production with regard to the present state of technical equipment of production plants, 5) reduction of a minimum of the use of expensive materials which are an unremunerative proposition.

SO: Polish Technical Abstracts - No. 2, 1951

SZYDLOWSKI M

Szydlowski M., Giebuttowicz W. Technical Progress Trends in the Wood Furniture Industry.

„Kierunki postępu technicznego w przemyśle mebli drewnianych”. Przemysł Drzewny, No 6, 1955, pp. 13-21, 18 figs., 1 tab.

... the organization of bent wood furniture production



~~SHYDLAWSKI, M.~~ [Szydowski, M.], irzh. (Warszawa)

Modern factory of bent furniture in Poland. Der.prom. 10 no.5:28-  
31 My '61. (MIRA 14:5)

(Poland--Furniture industry)

SZYDLOWSKI, Marian, mernok; KOWALINSZKY, Pal [translator]

A modern bentwood furniture factory in Poland. Faipar 10  
no.9:273-282 S '60.

SZYDLOWSKI, S.

"Etiquette in the milling industry." Gospodarka Zbozowa, Warszawa, Vol 5, No 7,  
July 1954, p. 28.

SO: Eastern European Accessions List, Vol 3, No 11, Nov 1954, L.C.

ZABLOCKI, B.; SZYDLOWSKI, S.

Hyaluronidase in staphylococci. Med. dosw. mikrob., Warsz. 4 no.  
3:328-329 1952. (CML 23:3)

1. Summary of work progress presented at 11th Congress of Polish  
Microbiologists held in Krakow May 1951. 2. Lodz.

2631

SZYDLOWSKI, S.;GORZELAK, Z.;GOSCICKI, J.;ROLICKA, M.

Studies on bactericidal properties on newly synthesized compounds  
from the group of aromatic chloramines. Med. dosw. mikrob. 5 no.3:  
310-311 1953. (CML 25:5)

1. Lodz.

*SZYDLOWSKI, STANISLAW*

ZABLOCKI, Bernard; SZYDLOWSKI, Stanislaw; GORZELAK, Zofia

Viscosity of solutions of hyaluronic acid and accelerating properties in blood sedimentation; standardization of hyaluronic acid for determination of hyaluronidase titer. Med. dosw. mikrob. 6 no.2:151-160 1954.

1. Z Katedry Mikrobiologii Szczegolwej Uniwersytetu Lodzkiego.  
(BLOOD SEDIMENTATION,  
\*relation to viscosity of hyaluronic acid)  
(HYALURONIC ACID,  
\*viscosity, relation to blood sedimentation)

S. SZYDLOWSKI,

B. ZABLOCKI, K. KOTELKO, S. SZYDLOWSKI: The influence of staphylococcal antihyaluronidase on the course of skin reactions due to *Corynebacterium diphtheriae* in guinea pigs.

SO: Medycyna Doswiadczalna I Mikrobiologia (Experimental Medicine and Microbiology)  
Fourth quarter 1959.

SZYDŁOWSKI S.

✓The effect of staphylococcal antihyaluronidase on skin reactions elicited in guinea pigs by diphtheria bacilli. B. Zabłocki, K. Kotelko, and S. Szydłowski (Univ. Łódź, Poland). *Bull. acad. polon. sci., Classe II*, 3, 257-60 (1956). - Fifty-one strains (*gravis* and *mitis* types) of *Corynebacterium diphtheriae* freshly isolated from patients' throats were used for intramuscular injection into 350 g. guinea pigs. Each pig received 3 injections: (1) diphtheria-bacillus suspension and physiol. saline; (2) diphtheria-bacillus suspension, antidiphtheritic antitoxic bacillus serum; and (3) diphtheria-bacillus suspension, antitoxic serum, staphylococcal antihyaluronidase, and physiol. saline. Staphylococcal hyaluronidase was obtained from a filtrate of hemolytic *Micrococcus pyogenes*, var. *aureus* by pptg. with acetone and desiccating *in vacuo*. Staphylococcal antihyaluronidase was obtained by injection of rabbits (immunized for 10 weeks) at 3-day intervals with staphylococcal hyaluronidase soln. With 43 out of 51 strains the antihyaluronidase caused decrease in the intensity of edema and extent of the necrotic area. In 35% of the strains skin reaction symptoms were completely suppressed in the presence of antihyaluronidase. Abdn. of antihyaluronidase to specific serum for human use is suggested. U. G. K.



ZABLOCKI, Bernard; KOTEKLO, Krystyna; <sup>L</sup>SZYDKOWSKI, Stanislaw.

Effect of staphylococcal antihyaluronidase on the course of cutaneous reactions to *Corynebacterium diphtheriae* in guinea pig. *Med.dosw.mikrob.* 7 no.4:353-360 1955.

1. Z Katedry Mikrobiologii Szczegolowej Uniwersytetu Lodzkiego  
Kierownik: prof. dr B. Zablocki.

(*CORYNEBACTERIUM DIPHThERIAE*,

eff. of *Staphylococcus antihyaluronidase* on reactivity of skin in guinea pig to *C. Diphtheriae*.

(*SKIN*, physiology,

reactivity to *Corynebacterium diphtheriae*, eff. of *Staphylococcus antihyaluronidase*)

(*HYALURONIDASE*, antagonists,

*Staphylococcus antihyaluronidase*, eff. on skin reactivity to *Corynebacterium Diphtheriae* in guinea pigs)

(*MICROCOCCUS PYOGENES*,

antihyaluronidase from, eff. on skin reactivity to *Corynebacterium diphtheriae* in guinea pig)

~~SZYDŁOWSKI, S.; ROLICKA, M.; ZABŁOCKI, B.~~

Preparation of purified preparations of hyaluronic acid for titration of hyaluronidase. Acta microb. polon. 6 no.3:211-218 1957.

1. Z Katedry Mikrobiologii Szczegolowej Uniwersytetu Lodzkiego w Lodzi.  
(HYALURONIC ACID, preparation of,  
purified prep. for titration of hyaluronidase (Pol))  
(HYALURONIDASE, determination,  
titration with purified hyaluronic acid (Pol))

SZYDLOWSKI, S.; ZABLOCKI, B.

Heterogenetic reactions of antistaphylococcal serum with polysaccharides isolated from plant and animal tissues. Bul Ac Pol biol 7 no.5:169-171 '59. (EEAI 9:7)

1. Department of Systematic Microbiology, Lodz University.  
Presented by E.Mikulaszek.

(STAPHYLOCOCCUS)  
(POLYSACCHARIDES)  
(BOTANY)  
(HISTOLOGY)

ZABLOCKI, Bernard; SZYDIOWSKI, Stanislaw; KOTEIKO, Krystyna

Types of diphtheria bacilli occurring in the city of Lodz and their sensitivity to penicillin. Nauki matem przyrod Lodz no.7:161-169 '60.

1. Katedra Mikrobiologii Szczegolowej, Uniwersytet, Lodz.

KOPELKO, Krystyna; SZYDLOWSKI, Stanislaw; ZABLOCKI, Bernard

Studies on phase-variability of *Shigella sonnei*. Communication I.  
Med.dosw.mikrob. 12 no.1:53-59 '60.

1. Z Katedry Mikrobiologii Szczegolowej Uniwersytetu Lodzkiego  
Kierownik: prof.dr B. Zablocki.  
(SHIGELLA)

SZYDLOWSKI, Stanislaw; KERSZMAN, Gustaw

Heterogenetic reactions of the serum of the anti-Bacillus magatherium with extracts of bacterial cells from plant and animal tissues. Nauki matem przyrod Lodz no.13:3-8 '62.

1. Katedra Mikrobiologii, Uniwersytet, Lodz.

SZYDŁOWSKI, St.

Publishing activities of the Polish Ruch Publishing Agency.  
Problemy 18 no. 12:903 '62.

SZYDLOWSKI, Stanislaw

Survey of the works of Subcommittee 2/2 on exploitation and tariff  
schedules in telephony. Przegł telekom 34 no.8:241-242 Ag '61.



SZYDLOWSKI, Zygmunt

Oxygen metabolism of the liver tissue after halothane and diethyl ether anesthesia. Acta physiol. Pol. 16 no.2: 251-257 Mr-Ap'65.

1. I Katedra Chirurgii Akademii Medycznej we Wroclawiu (Kierownik: prof. dr. K. Czyzewski).

BRZECKI, Andrzej; SZEPIETOWSKI, Tomasz; SZYDLOWSKI, Zygmunt;  
ZAGROBELNY, Zdzislaw

Bronchial spasm as a complication of endotracheal anesthesia.  
Polski przegl. chir. 35 no.6:625-627 '63.

1. Z I Kliniki Chirurgicznej AM we Wrocławiu Kierownik: prof.  
dr K. Czyzewski i z Kliniki Chorob Nerwowych AM we Wrocławiu  
Kierownik: prof. dr R. Arend.  
(BRONCHIAL SPASM) (ANESTHESIA, INTRATRACHEAL)

CZYZEWSKI, Kazimierz; JAWORSKI, Zdzislaw; SZYDLOWSKI, Zygmunt

The mechanism of jaundice following ligation of the common  
bile duct. Pol. przegl. chir. 35 no.7/8:761-762 '63.

1. Z I Kliniki Chirurgicznej AM we Wroclawiu Kierownik: prof.  
dr K. Czyzewski i z L'Unite de Recherches Chirurgicales de  
Lyon Kierownik: prof. dr P. Mallet-Guy.

(JAUNDICE, OBSTRUCTIVE)  
(COMMON BILE DUCT)  
(BILIRUBIN)  
(BLOOD CHEMICAL ANALYSIS)  
(LYMPH)

DOLINSKI, Jan; SUDOWICKI, Zygmunt; ZAGROBENY, Tadeusz

Result of the bromsulphophthalein test following surgery of the  
epigastrium in patients with normal and disturbed liver func-  
tion: using ether and halothane anesthesia. Pol. tyg. lek. 20  
no.3:266-268 22 F'65.

L. Z I. Kliniki Chirurgicznej Akademii Medycznej we Wrocławiu  
(kierownik: prof. dr. med. Kazimierz Czyzewski).

SZYDŁOWSKI, W.

SZYDŁOWSKI, W. Single-tube battery receiver. p. 4.

Vol. 6, No. 6 , June 1956

RAFIOMATOR

TECHNOLOGY

Warszawa, Poland

So: East European Accession, Vol. 6, No. 2, Feb. 1957

SZYDŁOWSKI, Z., Dr.

Experience of the industrial medical service at the Aluminium  
foundry at Skawina. Zdrowie pub., Warszawa no.6:430-436 Nov-  
Dec 54.

(INDUSTRIAL HYGIENE  
in Poland, med. care in foundries)

BELOWSKI, Henryk; KOTZ, Jerzy; SZYDŁOWSKI, Zygmunt

Sensitivity of the intestinal mucosa to hydrochloric acid in dogs. Polski przegląd chir. 32 no.11:1059-1066 '60.

1. Z I Kliniki Chirurgicznej A.M. we Wrocławiu Kierownik: prof. dr K. Czyżewski z Katedry Anatomii Patologicznej W.S.R. we Wrocławiu Kierownik: prof. dr A. Zakrzewski.

(INTESTINE physiol) (HYDROCHLORIC ACID)

SZYDŁOWSKI, Zygmunt F.

Remarks on the conclusions from statistical analysis. Zdrow.  
publiczne no.9:415-417 S '65.

1. Z Zakładu Leczniczko-Zapobiegawczego przy Hucie Aluminium w  
Skawiniw (Kierownik: dr. med. Z.F. Szydłowski).



SZYFELBEJN, E.

Zoohigiena (dia rolnikow). Wyd. 2. Warszawa, Panstwowe Wydawn. Naukowe, 1956.  
224 p. (Skrypty dia szkol wyzszych) (Veterinary hygiene; for farmers. 2nd ed.)  
DA Not in DLC

SO: Monthly Index of East European Accession (EEAI) LC Vol. 7, No. 5, 1958

SZYFELBEJN, Edward (Warszawa)

Analysis of the characteristics of temperature and humidity curves  
in buildings for farm animals, Rocznik nauki rolnej 70 no.1/4:  
144-146 '60. (EEAI 10:9)

(Domestic animals) (Farm buildings)

SZYFELBEJN, Edward; KARAS, Jozef

The problem of litter shortage on Polish farms. Postepy nauk  
roln 8 no.1:73-80 '61. (EKAI 10:8)

1. Katedra Zoohigieny Szkoły Głównej Gospodarstwa Wiejskiego,  
Warszawa.  
(Litter(Bedding))

NIELUBOWICZ, Jan; OLSZEWSKI, Waldemar; LUKASIEWICZ, Hanna; MICHALSKI,  
Andrzej; ROWINSKI, Wojciech; SZYFELBEJN, Stanislaw; WIECKOWSKA,  
Wanda

Pathomechanism of meteorism. I. Composition of intestinal gases  
in paralytic ileus. Pol. przegl. chir. 36 no.5:707-715 My '64.

1. Z Zakladu Chirurgii Doswiadczalnej Polskiej Akademii Nauk  
(Kierownik: prof. dr J. Nielubowicz).

OLSZEWSKI, Waldemar; SZYFELBEJN, Stanislaw; ROWINSKI, Wojciech; NIELUBOWICZ,  
Jan.

Healing of experimental wounds of the pancreas. Pol. przegl. chir.  
37 no.4:322-325 Ap'65.

1. Z I Kliniki Chirurgicznej Akademii Medycznej w Warszawie  
(Kierownik: prof. dr. J. Nielubowicz).

OLSZEWSKI, Waldemar; SZYFELBEJN, Stanislaw; KRUS, Stefan

Experimental stenosis of the bile duct. Pol. przegl. chir. 36  
no.6:767-776 Ja '64

1. Z Zakladu Chirurgii Doswiadczalnej Polskiej Akademii Nauk  
(Kierownik: prof. dr. J. Nielubowicz) i z Zakladu Anatomii  
Patologicznej Akademii Medycznej w Warszawie (Kierownik:  
doc. dr. R. Stanczykowa).

POLAND

OLSZEWSKI, Waldemar, SZYFELBERG, Stanislaw, and NIELUBOWICZ, Jan, Research Office for Experimental Surgery (Zaklad Chirurgii Doswiadczalnej) of PAN [Polska Akademia Nauk, Polish Academy of Sciences] in Warsaw (Director: Prof. Dr. Jan NIELUBOWICZ)

"Experimental Portal Hypertension and Ascites Caused by Partial Constriction of the Choledochus."

Warsaw, Polski Tygodnik Lekarski, Vol 18, No 13, 25 Mar 63, pp 457-461.

Abstract: [Authors' English summary] The constriction of the dulus choledochus to an extent of 50-70 percent, causes in dogs, in addition to cholestasis, a complete picture of hypertension in the vena portae. The effects were noted mostly in the 13th week following operation and were expressed in increased portal pressure, development of abdominal collateral circulation, and ascites. Authors suggest this method to be used as a model for studies on hypertension in the portal vein. With the exception of one Polish one, the 27 cited references are English.

1/1

SZYFMAN, Leon; DOBRZYCKI, Jerzy

M. Piehl, a Danish historian of sciences, visiting Poland. Kwart  
hist nauki i tech 7 no.1/2;228-230 '62.



SZYFMAN, Leon

"J.B. Lamarck and the science of evolution of the organic world"  
by I.M. Polakow [Polyakov, Il'ya Mikhaylovich], Reviewed by Leon  
Szyfman. Kwart hist nauki i tech 8 no.1:107-112 '63.

SZYFTER-ZOLLECKA, A.

Journal of the Science of  
Food and Agriculture  
April 1954  
Agriculture and Horticulture.

Digestibility of lucerne straw harvested at different stages of development. K. Bieliński, A. Szyfter-Ziolecka, K. Bielińska, and J. Filus (*Roczn. nauk Roln.*, 1953, 68, H, No. 2, 69-82).—In trials with sheep the digestibility coeff. of lucerne at different stages of growth was inversely related to its fibre content. However, the digestibility of the org. matter was influenced more by the individual characteristics of the test animal than by the content of crude fibre in the lucerne. A. G. POLLARD

SZYFTER-ZIOLECKA, A.

SZYGENDOWSKI, J.

"When is the pillow unnecessary?" p. 152 (Skrzydla I Motor, Vol. 8, no. 10, Mar 53, Warszawa)

"Krakow has won the Sim award" p. 154 (Skrzydla I Motor, Vol. 8, no. 10, Mar 53, Warszawa)

SO: Monthly List of East European Accessions, Vol 2 No 9 Library of Congress Sept 53 Uncl

SZYGOCKI, A.

"Technical progress in the cement industry" p. 184 (CEMENT, WAPRO, GIFS, Vol.8, no.9  
Sept. 1952 Krakow, Poland)

SO: Monthly List of East European Accessions, Vol. 2, #1, Library of Congress  
August 1953, Uncl.

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Rysocki A. Rotary Kiln Combustion Products Balance Sheet.

"Przegląd techniczny" Cement, Wapno, Gips No 9-10, 1951, pp. 89-95, 4 figs.

The combustion of solid fuels in rotary kilns is a complex process. The author discusses the various factors that influence the combustion process, including the rate of rotation, the temperature of the gases, and the composition of the fuel. The author provides a detailed analysis of the combustion process, including the calculation of the combustion products and the balance sheet. The author also discusses the various methods used to measure the combustion products and the balance sheet. The author concludes that the combustion process in rotary kilns is a complex process that requires a detailed analysis of the various factors that influence it.

SZYGOCKI, A.

SZYGOCKI, A. Technological cards in the cement industry. p. 111.  
EUDOWNICTWO PRZEMYSLOWE. Warszawa, Poland. Vol. 4, No. 11, Nov. 1955

SOURCE: East European Accessions List (EEAL) LC Vol. 5, No. 6, June 1956

SZYGOCKI, Anatol, mgr., inz., (Sosnowiec); STARK, Zofia, mgr., inz., (Sosnowiec)

The influence of sodium sulphate on the liquidness of slurry. Cement  
wapno gips 16/26 no.7:237-242. '61.

(Clinker bricks) (Sodium sulphate)



SZYGOCKI, Anatol, mgr chem; NURKIEWICZ, Artur, techn mech; PIECZARA,  
Stefan, mgr chem.; PAJAK, Franciszek, inz.

Influence of sodium sulfite on the fluidity of sludge.  
Gosp paliw 11-Special issue no.(95):3-5 Ja '63.

1. Zjednoczenie Przemyslu Cementowego, Sosnowiec, (for Szygocki  
and Nurkiewicz). 2. Cementownia Nowa Huta, Krakow (for  
Pieczara). 3. Najwyzsza Izba Kontroli, Delegatura Katowice  
(for Pajak).

KRASUCKI, Florian, mgr inz.; SZYJA, Stanislaw, mgr inz.

Selection of the power supply voltage for mining machines  
in sectors of high mining concentration. Przegl gorn 20  
no.10:402-410 0 '63.

SEYJA, S.

SZYJA, S. Testing the driving machinery for belt conveyers. Biuletyn. p. 9  
No. 11, Vol. 11, Nov. 1955. PRZEGLAD GORNICZY. Stalinogrod, Poland.

SOURCE: East European Accessions List (EEAL) LC VOL. 5, No 6 June 1956

Szyjaj S.

28. METHOD OF ANALYSIS OF DYNAMIC STRESSES IN CONVEYOR BELTS AND CHAINS.  
Grzywak, A. and Szyja, S. (Przepl. Gorn. (Min. Rev., Stalingrad), Sept. 1955, vol. 11, 319-321). Mathematical relationships characterizing the movement of conveyors whose transmission is coupled, without any possibility of slipping, with a closed asynchronous motor are established. The values for dynamic forces and accelerations occurring during movement of the conveyor are determined by analysis of theoretical curves representing the relationship between motor revolutions and time. Practical results of tests on conveyors carried out underground are compared with the theoretically established values.  
(L). N.C.B.

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Ball

SZYJA, S.

10-54 speed controller for automatization of belt conveyers. Biuletyn Mech.

p. 7 (Przegląd Gorniczy. Vol. 12, no. 7/8, July/Aug. 1956. Katowice, Poland)

Monthly Index of East European Accessions (EEAI) LC. Vol. 7, no. 2,  
February 1958

SZYJA, S.; GRZYMAK, A.

The influence of electric feeders on the output of electric motors in mines.  
p. 194.

PRZEGLAD GORNICZY. Katowice, Poland, Vol. 5, no. 4, Apr. 1959.

Monthly List of East European Accessions (EEAI), LC, Vol. 8, no. 9, September, 1959.  
Uncl.

SZYJA, Stanislaw, mgr., inz.; GRZYWAK, Andrzej, dr., inz.

Problems connected with mining electrical drives and feeding  
transformers. Przegl gorn 17. no. 11; Suppl.: Biuletyn Zakl  
Konstr. Mech PW 9 no. 1: 8-12 '61.







SZYKIER, Leon; IZDEBSKI, Marian; KULESZA, Wojciech

Results of the treatment of rheumatoid arthritis with gold salts according to observations on 656 patients. Pol. tyg. lek. 22 no.23: 912-914 4 Je '62.

1. Z Wojewodzkiej Przychodni Reumatologicznej w Lodzi; dyrektor:  
dr med. Leon Szykier.

(ARTHRITIS RHEUMATOID ther)

P/015/62/000/010/002/002  
D001/D101

AUTHORS: Winogradow, Leon; Widadaj, Józef; Szykuła, Paweł

TITLE: Paraffin wax as plasticizer in the production of capacitor dielectric based on barium titanate

PERIODICAL: Szkło i ceramika, no. 10, 1962, 303-314

TEXT: The Zakłady Ceramiki Radiowej (Radio Ceramics Plant) and the Katedra Ceramiki Szlachetnej Akademii Górniczo-Hutniczej (Chair of Ceramic Whiteware of the Metallurgical and Mining Academy) in Kraków examined the effect of paraffin wax plasticizer on the manufacture and properties of capacitor disks made of the ceramic mix  $\text{BaTiO}_3$ ,  $\text{ZrO}_2$ ,  $\text{CaCO}_3$ ,  $\text{MgCO}_3$ ,  $\text{BaCO}_3$  and  $\text{Bi}_2\text{O}_3$ . To this end, paraffin was added to form a content of 2, 4, 6, 10, and 15%. Disks measuring 14.4 mm in diameter and 1.5, 1.0, and 0.7 mm thick were pressed at 100, 300, 800, 1,500, and 2,500  $\text{kg/cm}^2$ , and heated at 60, 120, and 180°C for 1 and 3 hours, respectively. Heated disks were examined for mechanical strength and, after firing, for linear and volumetric shrinkage, absorption, bulk density, and electrical properties. Conclusions: Best

Card 1/2

Paraffin wax as plasticizer in the ...

P/015/62/000/010/002/002  
D001/D101

results were achieved with a paraffin content of 4%, with disks pressed at 1,500 kg/cm<sup>2</sup> and heated at 120°C for 1 hour. Disks thus prepared had a mechanical strength of 6 kg against the minimum required 2.5 kg. Mechanical strength was established by resting a 60° conical steel point with a tip of  $r = 0.3$  on the samples and adding ballast until destruction. There are 9 tables and 17 figures. [Abstracter's note: The unit in  $r = 0.3$  is not specified.]

✓

Card 2/2

WROBLEWSKA-MULARCZYKOWA, Zofia; ZOLTOWSKI, Zbigniew; DOBRZYNSKI, Leszek;  
PRZESMYCKI, Feliks; SZYKULA, Roman; OLKOWSKA, Danuta; SWOBODZINA,  
Ewa; SZYMANSKI, Stanislaw; KOZLOWSKI, Slawomir; ZUKOWSKI, Kazimierz.

A search for arborviruses previously not known to occur in  
Poland. II. Serologic and virologic studies in selected areas  
of Warsaw and Bialystok. Przegl. epidem. 18 no.4:381-390 '64.

SZYLAGYI, Agnes, dr.

Difficulties in the diagnosis of incarcerated hernia in infancy and childhood. Magy sebesz. 17 no.1:1-5 F'64.

1. Peterfy Sandor u-i korhaz (igazgato: Galocsi, Gyorgy, dr.)  
Gyermeksebészeti osztalya (foorvos: Robert, Jozsef, dr.)  
kozlemenye.

\*

SZYLAK, A.

WILCZYNSKI, Z.

In Olecko, index 16, 3, p. 4. A new state in the struggle for contracting and purchasing livestock. p. 5

ROLNIK SPOLDZIELCA (Centrala Rolniczej Spoldzielni "Samopomoc Chlopska")  
Warszawa, Poland Vol. 8, No. 45, Nov. 1955

Monthly list of East European accessions (EEAI) LC, Vol. 9, No. 2, Feb. 1960

uncl.

SZYLIKA, JAN

POLAND/Chemical Technology - Chemical Products and Their  
Application, Part 3. - Food Industry.

H-27

Abs Jour : Ref Zhur - Khimiya, No 7, 1958, 23034

Author : ~~Jan Szylika~~

Inst : -

Title : Upon the Scientific Research Work Concerning Grains in  
France.

Orig Pub : Przegl. zboz.-mlynarski, 1957, 1, No 7, 19-20

Abstract : No abstract.

Card 1/1



LAWROWA, K.W.; SZYLOWA, J.A.

Clinico-diagnostic and prognostic role of urinary sediment  
color reaction in diphtheria patients. Pol. tyg. lek. 18 no.26:  
929-931 Je '63.

1. Z Katedry Dziecięcych Schorzen Zakaznych; kierownik naukowy:  
doc. W.L. Eberts - Panstwowego Instytutu Medycznego w Tomsku;  
rektor: prof. I.W. Toropcew - na materiale Zakaznego Szpitala  
im. zasluzonego lekarza RSFSR G.E. Sibircewa; lekarz naczelny:  
L.I. Wintowkin.

(URINE) (DIPHTHERIA)

~~SHUMA, S.~~ [Szyma, S.] (Pol'sha); VOZNICHEK, K. [Wozniczek, K.] (Pol'sha)

Acoustic aspects of the Gruneisen-Debye equation. Prim. ul-traakust.  
k issl. veshch. no.14:61-63 '61. (MIRA 14:12)  
(Molecular theory) (Sound--Speed) (Differential equations)

SZYMACHA, A.; WERLE, J.

On the problem of discrete quantum numbers for three particle states. Bul Ac Pol mat 11 no.8:557-560 '63.

1. Institute of Theoretical Physics, University, Warsaw,  
and Institute for Nuclear Research, Polish Academy of  
Sciences, Warsaw. Presented by L. Infeld.

L 01915-6/ I RO/JK

ACC NR: AP6035155

(A) SOURCE CODE: PO/0081/65/019/002/0216/0218

BUJNOWSKI, Zbigniew, KARWOWSKA, Krystyna; SZYMAJDA-KOLLOTO, Barbara and MASKOWSKA-IVANICKA, Danuta; Clinic of Infectious Diseases of the Medical Academy (Klinika Chorob Zakaznych AM), Bialystok, and Regional Sanitary and Epidemiologic Station (Wojewodzka Stacja Sanitarno-Epidemiologiczna) Bialystok.

21  
B

"Epidemiologic Analysis of Mass Outbreaks of Poisoning in the Territory of the Bialystok Wojewodztwo 1953 to 1963."

Warsaw, Przegląd Epidemiologiczny, Vol 19, No 2, 1965; p 216-218.

Abstract: Review of 59 outbreaks involving 929 patients, with hospitalization necessary for 347 of these; 9 of the latter died of the disease. The data regarding the number of outbreaks and persons involved are given for each year; causative organisms and food involved are discussed, as well as diagnostic methods. Most cases were due to home-processed meat products; occurrence was seasonal mainly May to October; only one case was due to ice cream. Presented at the 3rd Scientific Assembly of Polish Epidemiologists and Infectologists.

Krakow, 5-6 Oct 64. [JPRS]

TOPIC TAGS: epidemiology, therapeutics

SUB CODE: 06 / SUBM DATE: none

Card 1/1 big

0921 1545

POLAND

SZMUNESS, Wolf ; SIKORSKA, Jadwiga; SZYMANEK, Elzbieta; MIKOSZ, Aleksander, and GECHOWICZ, Lucja; Regional Sanitation-Epidemiology Center (Wojewodzka Stacja Sanitarno-Epidemiologiczna,) Head (Dyrektor) C. HOROCH, MD, Lublin.

"Possibilities of Dissemination of Salmonella enteritidis Infections by the Respiratory Route."

Warsaw, Przegląd Epidemiologiczny, Vol 19, No 4, 1965; pp 433-439.

Abstract [ English summary modified] : Strains of antibiotic-resistant Salmonella enteritidis were isolated from the throat and nose swabbings of 37 out of a total of 131 children infected with the microbe in five hospital foci. Most were quite young, below 1 year of age. Carrier state was usually permanent. Three tables, 1 Soviet, 16 Western references.

1/1

SZYMAKOWSKA, Franciszka

Bentonites from Silesian Cretaceous of the Chelm-Czarnorzeka Range. Kwartalnik geol 6 no.2:440-441 '62.

1. Karpacka Stacja Terenowa, Instytut Geologiczny, Warszawa.

SZYMAKOWSKA, Franciszka

The development of Krosno deposits in some regions of the middle  
Carpathian Mountains. Kwartalnik geol 3 no.3:620-627 '59. (EEAI 9:7)

1. Karpacka Stacja Terenowa Instytutu Geologicznego  
(Poland--Geology) (Carpathian Mountains)

JASIONOWICZ, Jan; KOSZARSKI, Leszek; SZYMAKOWSKA, Franciszka

Geologic conditions of the occurrence of phosphoritic concretions in the Weglowka variegated marls in the Upper Cretaceous of the Middle Carpathian Mountains. Kwartalnik geol 3 no.4:1016-1023 '59.  
(EEAI 10:1)

1. Karpacka Stacja Terenowa I.G.  
(Poland--Phosphorities) (Poland--Marl)  
(Carpathian Mountains)



SZYMAKOWSKA, Franciszka

A new stand of Paleocene sediments from the Skole unit at Kamiernica Dolna and Gorzejowa. *Kwartalnik geol* 5 no.3:613-629 '61.

1. Karpacka Stacja Instytutu Geologicznego.

SZYMAKOWSKA, Franciszka

Geological structure of the northwestern part of the  
Strzyzow Depression and its petroleum-bearing possibilities.  
Kwartalnik geol 6 no.4:798-799 '62.

1. Karpacka Stacja Terenowa, Instytut Geologiczny, Warszawa.

СЫМАКОВСКАЯ, Франциска

POLAND

SZYMAKOWSKA, Franciszka

Carpathian Field Station, Geological Institute  
(Karpacka Stacja Terenowa Instytutu Geologicznego)

Warsaw, Kwartalnik geologiczny, No 3, 1963, pp 559-60.

"Influence of Frydecian (frydecki) Facia in Lower  
Istebnian Layers of the Silesian Series in the Profile  
of Kobylo near Frysztak".

JASIONOWICZ, Jan; SZYMAKOWSKA, Franciszka

Genesis of Magura nappe outliers from the vicinity of Jaslo  
and the Subsilesian nappe from the vicinity of Wielopole  
Skrzynskie. Roczn geol Krakow 33 no.1/3:363-385 '63.

1. Geologic Survey, Carpathian Branch, Krakow.

ИЗВЕЩАНИЕ о результатах работы группы ученых в области [генетики, Э.]

Институт генетики и селекции растений Ботанического сада, Пробл. генет.  
Инстит. ботаники, 1970-71, 1-я кн. (МIRA 13 6)

Л. С. Сидорова: биологическая химия. Исследования генетики в  
Ташкенте, 1970.

SZYMANIAK, Ewa

The activity of foci of dental infection and the radiological examination of the periodontium. Czas. stomat. 18 no.4:351-356 Ap'65.

1. Z Zakładu Stomatologii Zachowawczej Akademii Medycznej w Łodzi (Kierownik: prof. dr. M. Fuchs).

OROS Pa, Białystok; AUDERKA-WADAS, Wanda; SZYMAŃSKI, Sław...

The possibility of removal of active foci of the periodontium using conservative treatment in cases of chronic periodontitis. Dent. stomat. 18 no.2:357-361. Apr65.

I. S Zakład Stomatologii Zachowawczej Akademii Medycznej w Łodzi (Kierownik: prof. dr. M. Fuks).

SZYMANIAK, Ewa

New views on the diagnosis and therapy of dental foci of infection. Pol. tyg. lek. 19 no.36:1364-1367 7 S '64.

1. Z Zakładu Stomatologii Zachowawczej Akademii Medycznej w Łodzi (kierownik: prof. dr Mieczysław Fuhs).



KOZŁOWSKA, Janina; KOPPE-LIPOWSKA, Halina; MURAWSKI, Kazimierz;  
SZYMANOWSKA, Zofia.

The hemoglobin M-Radom clinical syndrome. *Pediat. Pol.* 38  
no.12:1043-1050 D'63

1. Z I Kliniki Pediatricznej AM w Warszawie (kierownik: prof.  
dr.med. R.Baranski); z Oddziału Dziecięcego Szpitala Miejskiego  
w Radomiu (ordynator: dr.med. H.Koppe-Lipowska)  
i z Instytutu Hematologii w Warszawie (dyrektor: doc.dr.med.  
A.Trojanowski).

\*

SZYMANOWSKA, Z.

From the activities of the Commission for the History of Forestry  
of the Polish Sylvan Society. Kwart hist kult mater 12 no.2:341-  
342 '64.

SZMIDER, J.; SZYMAKOWSKI, J.

The high pressure helium-xenon gas scintillation counter  
as a fast neutron energy and spin polarization analyzer.  
Inst fiz jadr report no. 266:1-12 '63

1. Instytut Fizyki Jadrowej, Krakow.

NIEWODNICZANSKI, H.; SIEWIDOR, A.; ~~XXXXXXXXXX~~

Polarization of neutrons from the  $D(d,n)^3He$  reaction  
for deuteron energies between 5.9 and 11.3 MeV. Inst  
fiz jadr report no. 262:1-10 '63

1. Instytut Fizyki Jadrowej, Krakow.

POLAND/Nuclear Physics - Installations and Instruments. Methods of C-2  
Measurement and Research

Abs Jour : Ref Zhur - Fizika, No 8, 1958, No 17371

Author : Szymakowski Jan

Inst : Not Given

Title : Diffusion Chamber for the Investigation of Ionizing Radiation

Orig Pub : Zesz. nauk. Uniew. Jagiell., 1955, No 3, 203-207

Abstract : The author describes in detail a constructed diffusion chamber and shows photographs of tracks of ionizing particles formed in this chamber.

Card : 1/1

SLAVIC, I.; SZYMAKOWSKI, J.; STACHORSKA, D.; MILOJEVIC, A.; AJDACIC, V.

Distribution of temperature in a diffusion cloud chamber.  
Bul Inst Nucl 11:23-35 '61.

1. Institute of Nuclear Sciences "Boris Kidrich," Department of Physics, Vinca. 2. At present at the University of Lublin, Poland (for Stachorska). 3. At present at the Institute "Badan Jadrowych," Krakow, Poland (for Szymakowski).

SZYMAKOWSKI, Jan, mgr.,inz.; FIEGA, Marian, mgr.,inz.

Welding of tool joints with drilling pipes. Nafta Pol 16 no.2:  
35-40 '60.

1. Instytut Naftowy, Krakow.

OPERA. Nauda: 10. TYTYANKA, Matina: 010 2410, autora: SYMIRNOV, Albina

The appearance of pathogenic staphylococci in stools of infants and so-called staphylococcal enterocolitis. Pariat. Pol. 39 no.4: 491-500 Apr 1964.

L. Z. Kliniki Diagnostyki Chorob Dzieci Akademii Medycznej w Warszawie (Kierownik: prof. dr. med. Z. Lejwach) i ze Stacji Sanitarno-Epidemiologicznej w Warszawie (Kierownik: Działu badań laboratoryjnych: dr. med. J. Jakobkiewicz).



SZYMANIEC, Stanisław; KWIATKOWSKA, Janina

A simple method for the cultivation of leukocytes for the study of karyotypes. Postepy hig. med. dosw. 18 no.5:849-852 S-0 '64

1. 2 Zakładu Patofizjologii Instytutu Immunologii i Terapii Doswiadczałnej Polskiej Akademii Nauk im. L. Hirszfelda we Wrocławiu (kierownik: prof. dr. H. Kowarzyk) i z Zakładu Chemii Fizjologicznej Akademii Medycznej we Wrocławiu (kierownik: prof. dr. T. Baranowski).

SITKOWSKI, Waclaw; PLOCKER, Leon; SZYMANOWSKI, Jan

Successful x-ray treatment in ulcerative colitis. Pol. tyg. lek. 17  
no.52:2040-2043 25 D '62.

1. Z Pracowni Radiologicznej Szpitala Miejskiego Nr 6, kierownik: dr  
med. I. Pronaszko, konsultant; W. Sitkowski; z Kliniki Gastrologicznej,  
kierownik: prof. dr med. L. Plocker i z II Kliniki Chirurgicznej  
Studium Doskonalenia Lekarzy: kierownik: prof. dr med. J. Dryjski.  
(COLITIS, ULCERATIVE)

SZYMANEK, DOMINIK

KOWALEWSKI, Jan, SZYMANEK, Dominik

Leukergy in diseases of the liver and the biliary tract. Polskie  
arch.med.wewn. 25 no.3a:629-631 '55.

1. II Klinika Chorob Wewnetrznych AM w Lublinie. Kierownik: prof  
dr med. A.R. Tuskiewicz.

(LIVER, diseases

diag.,test for leukergy)

(BILIARY TRACT, diseases

diag.,test for leukergy)

(LEUKOCYTES

leukergy in dis.of liver & biliary tract, diag.value)

SZYMANEK, Dominik; WRONSKI, Jerzy; BRYC, Stanislaw

Diabetes insipidus with hypothalamo-pituitary-adrenal insufficiency  
resulting from a pineal tumor. Endokr. pol. 12 no.5:543-549 '61.

1. II Klinika Chorob Wewnętrznych AM w Lublinie Kierownik: prof.  
dr A.R.Tuszkiewicz Oddział Neurochirurgii przy Klinice Chorob  
Nerwowych AM w Lublinie Kierownik: prof. dr W.Stein Kierownik  
Oddziału: doc. dr H.Kozniewska Zakład Radiologii AM w Lublinie  
Kierownik: prof. dr K.Skorczyński.

(PINEALOMA compl) (DIABETES INSIPIDUS etiol)  
(HYPOTHALAMUS dis) (PITUITARY GLAND dis)  
(ADRENAL CORTEX dis)

KRAWCZYNSKI, Jerzy; KUJAWA, Romauld; POKORA, Jan; SZYMANEK, Dominik

A case of diabetes insipidus treated with chlorothiazide and hydrochlorothiazide. Polski tygod. lek. 16 no.43:1658-1663 23 0 '61.

1. Z II Kliniki Chorob Wewnętrznych A.M. w Lublinie; kierownik: prof. dr A.R. Tuskiewicz i z Centralnego Laboratorium Klinicznego PSK Nr 1 w Lublinie; kierownicy: doc. dr J. Krawczyski.  
(DIABETES INSIPIDUS ther) (CHLOROTHIAZIDE ther)

EXCERPTA MEDICA Sec. 17 Vol. 3/3 Public Health Mar. 57

912. SZYMANIAK E. Obozu Naukowo-Badawczego A. M., Łódź, Burzeninie; Zakł. Stomatol. Zachowawczej A. M., Łódź. \*Stan uzębienia młodzieży gminy Burzenin w świetle warunków bytowych i badań ogólnoustrojowych. The state of teeth of the youth in Burzenin village in the light of living conditions and the examination of the entire body CZAS. STOMAT. 1956, 9/5 (233-246) Graphs 4 Tables 9 Illus. 1

The age of the youngsters ranged from 10-14 yr. Total number examined was 323 (161 males and 162 females). The percentage suffering from caries amounted to 27.2%, the average value of DMF =  $7.66 \pm 0.297$ . The percentage of caries in females amounted to 30.3% (DMF =  $8.53 \pm 0.342$ ), in males 24.1% (DMF =  $6.82 \pm 0.360$ ). The disease increases with age. No relation was established between caries and the living conditions, Rickets in childhood does not exert any distinct influence on the stage of permanent teeth. Caries does not show any connection with the state of palatal tonsils. The inhibiting action of fluorine salts in drinking water was shown. Faulty physical posture, according to the author, seems to predispose to caries.

PIONKOWSKI, Janusz; SZYMANIAK, Ewa

2 cases of cretinism with special reference to changes in the oral cavity. Polski tygod.lek. 15 no.14:516-519 4 Ap '60.

1. Z Kliniki Psychiatrycznej A.M. w Lodzi; kierownik: doc.dr med. Stanislaw Cwynar i z Kliniki Stomatologii Zachowawczej A.M. w Lodzi; kierownik: doc.dr Mieczyslaw Fuchs.  
(CRETINISM case reports)  
(MOUTH abnorm.)

L 64673-65

PO/0059/64/018/005/0849/0852

16  
B

ACCESSION NR: AP5023139

AUTHOR: Szymaniec, Stanislaw (Wroclaw); Kwiatkowska, Janina (Wroclaw)

TITLE: Easy method of preparing leukocytes for caryotype observation

SOURCE: Postepy higieny i medycyny doswiadczalnej, v. 18, no. 5, 1964, 849-852

TOPIC TAGS: blood, experiment animal, hematology

ABSTRACT: Method based on use of polyvinyl alcohol 900 (MW 4000) and red-bean phytohemagglutinins, permitting rapid utilization of isolated leukocytes from minimal volumes (0.5 to 1 ml) of blood is described in detail. It was tested on blood of guinea pigs, rabbits, and in 70 specimens of human blood with good results. Orig. art. has 1 figure.

ASSOCIATION: Zaklad Patofizjologii Instytutu Immunologii i Terapii Doswiadczalnej PAN im. L. Hirszfelda, wroclaw (Department of Pathology of the L. Hirszfelda Institut of Immunology and Experimental Therapy of PAN); Zaklad Chemii Fizjologicznej AM, Wroclaw (Department of Physical Chemistry of the MA)

SUBMITTED: 00May64

ENCL: 00

SUB CODE: LS

NO REF SOV: 000  
Card 1/1

OTHER: 015

JPRS



SYMANIK, R.

2

**P O L .**

Przewodnictwo Ciepła Włóknistych  
Materiałów Izolacyjnych (Thermal Con-  
ductibility of Fibrous Insulating Mate-  
rials). Ryszard Szymanik. *Arch. Budowy  
Maszyn* (Warsaw), No. 1, 1954, pp. 89-  
110. 24 refs. In Polish, with summaries  
in English and Russian.

BJ

SZYMANIK, Ryszard; STANISZEWSKI, Robert (Warszawa)

A certain test method of combustion chambers. Archiw bud masz  
10 no. 3: 239-247 '63.

ACCESSION NR: AT4022288

P/2535/64/000/012/0065/0069

AUTHOR: Szymanik, Ryszard

TITLE: Application of nuclear energy to rocket technology

SOURCE: Gliwice. Politechnika Slaska. Zeszyty naukowe, no. 99, 1964. Energetyka, no. 12. Materialy na Konwersatorium Spotkanie Techniki Konwencjonalnej z Technika Nuklearna (Materials of the Conference on General and Nuclear Engineering), 65-69

TOPIC TAGS: high-speed cosmic rocket, nuclear rocket engine, low molecular mass propellant, high temperature rocket engine

ABSTRACT: Higher maximum velocities are obtained by means of multistage rockets. A conventional rocket would require  $2.5 \times 10^8$  kilograms of high-grade chemical fuel in order to be able to transport a mass of 10 kg. from Earth to the Moon and back. The size of a cosmic rocket can be tremendously reduced by utilizing nuclear energy instead. The simplest such scheme appears to consist of a nuclear reactor as source of heat, in place of the fuel combustion chamber. An evaluation of various types of nuclear rockets is made on the basis of

Card 1/47

ACCESSION NR: AT4022288

comparing their performance characteristics with those of conventional ones, as shown in Fig. 1 of Enclosure 01. The two major difficulties in high-speed nuclear rocket design are : 1) the high temperature of 5000C required in the engine to make the velocity of the jet gases reach about 7 km./sec., and 2) the selection of the proper propellant material, which should have a small molecular mass. Hydrogen would be an excellent choice, if its density even in liquid state were not so low. Ammonia or water are being considered for that purpose. The first problem is essentially also one of material selection, which has not been overcome yet. A possible solution of the high-temperature problem is shown in Fig. 2. of Enclosure 02 with a gas reactor. High unit thrusts are obtained here, but the difficulty lies in the large size of the apparatus.

ASSOCIATION: none

SUBMITTED: 0C

DATE ACQ: 13Apr64

ENCL: 02

SUB CODE AS, IS.

NO REF SOV: 000

OTHLR: 005

Card 2/4 J