

Test bed for the investigation ...

P/523/62/000/042/002/002  
D262/D308

ASSOCIATION: Katedra Ciepłych Maszyn Przepływowych PŁ. Pracownia  
Komór Spalania (Department of Turbine Heat Engines  
of Łódź Polytechnic. Combustion Chambers Laboratory)

Card 2/2

MIDAK, Edmund; ZIELINSKI, Marian

Results of rapid pregnancy immunological test with pregnosticon.  
Wlad. lek. 18 no.15:1251-1253 1 Ag '65.

1. Z Oddz. Pol.-Gin. Centr. Szpitala Klin. Ministerstwa Spraw  
Wewnetrznych w Warszawie (Kierownik: dr. med. M. Zielinski).

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

C

Abs Jour : Ref Zhur - Fizika, No 8, 1959, 17128

Author : Zlotowski, Ignacy; Zielinski, Mieczyslaw

Inst : Warsaw University, Poland

Title : Determination of the Activity of the Isotope  $C^{14}$  in  
Gaseous State in a Geiger-Muller Counter Filled with a  
Mixture of  $CO_2$  or CO with Heavy Saturated Hydrocarbon

Orig Pub : Nukleonika, 1958, 3, No 5, 529-546

Abstract : The author investigates in detail a method of determining  
the activity of radioactive  $C^{14}$  in the form of  $CO_2$  or CO  
in a Geiger-Muller counter, filled with a gas mixture  
which contains, in addition to the aforementioned tagged  
molecules, a small additive of vapors of saturated heavy  
hydrocarbons (n-hexane, n-heptane, n-octane, n-nonane,

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

C

Abs Jour : Ref Zhur Fizika, No 8, 1959, 17128

and cyclohexane). The experiments performed have shown that counters filled with vapors of heavy saturated hydrocarbons or with a mixture of these hydrocarbons with carbon monoxide or dioxide are self-quenching and have good characteristics. The characteristics of counters filled with various mixtures of CO and CO<sub>2</sub> and heavy saturated hydrocarbons were investigated as a function of the nature of the quenching additive, the general pressure of the gas phase in the counter, and the partial pressures of the components. Preliminary experiments have shown that when the total pressure is changed from 20 to 100 mm mercury, the partial pressure of CO<sub>2</sub> can vary from 10 to 18 mm mercury, while the partial pressure of CO cannot exceed the partial pressure of the hydrocarbon. Applying a voltage to the counter anode through a resistor on the order of 100 meg-ohms, a resolution time on

Card 2/3

Zielinski, M. ; Zlotowski, I.

Istopic effect in the Van Slyke combustion of some carbon 14 aliphatic alcohols and acids. p. 5.

NUKLEONIKA. (Polska Akademia Nauk. Komitet do Spraw Pokojowego Wykorzystania Energii Jądrowej) Warszawa, Vol. 4, no. 1, 1958.

*POLAND*

Monthly List of Europe<sup>n</sup> Accession (EEAI) LC, Vol 8, no. 7, July 1959.

Uncl.

POLAND / Physical Chemistry. Radiochemistry. Isotopes. B

Abs Jour: Ref Zhur-Khimiya, No 20, 1959, 70696.

Author : Zielinski, M.; Wincel, H.

Inst : Not given.

Title : Synthesis of Potassium Oxalate and Oxalic Acid Labeled with  $C^{14}$ .

Orig Pub: Roczn. chem., 1958, 32, No 5, 1189-1190.

Abstract: In a previously proposed method of synthesizing  $K_2C_2O_4$  (I) labeled with  $C^{14}$  (Leng E. A., J. Amer. Chem. Soc., 1939, 61, 570), finely granulated sand (the adsorbent active agent) is replaced by gravel having a grain diameter of 5-7 mm. By the method of reverse isotope dilution, it is established that I, obtained by this method, contains no traces of carbonates. The labeled  $H_2C_2O_4$  (II) was obtained by means of isotope ex-

Card 1/2

CATEGORY : Physical Chemistry - radiochemistry.  
Isotopes.  
ABS. JOUR. : RZKhim., No. 24 1959, No. 85189  
AUTHOR : Zlotowski, J.; Zieliński, M.  
INST. :  
TITLE : Isotope Effect Observed During the Process of  
Combustion According to Van Slyke of Some  
Aliphatic Alcohols and Acids Tagged with C<sup>14</sup>.  
ORIG. PUB. : Nukleonika, 1959, 4, No 1, 5-12

ABSTRACT : Study of the isotope effect in wet combustion according to Van Slyke method of oxalic acid, acetic acid, and of methyl alcohol tagged with C<sup>14</sup>. The following results were obtained: CH<sub>2</sub>C<sup>14</sup>O<sub>2</sub>H 1.7 ± 0.5%; C<sup>14</sup>H<sub>3</sub>CO<sub>2</sub>H 4.0 ± 0.6%; C<sup>14</sup>O<sub>2</sub>HCO<sub>2</sub>H 3.5 ± 0.6%; C<sup>14</sup>H<sub>3</sub>OH 0.0 ± 0.6%. The values thus obtained are lower, in all instances, than the maximum theoretically calculated values (Bigeleisen J., J. Phys. Chem., 1952, 56, 823). -- A. Revzin.

CARD:

19

5(2), 21(1,5)

POL/46-4-6-4/19

AUTHOR: Złotowski, Ignacy; Zieliński, Mieczysław

TITLE: On Some Relations Between the Mechanism of the Reaction  
$$\text{CO}(\text{gas}) \xrightarrow{\text{J}_2\text{O}_5} \text{CO}_2(\text{gas})$$
 and Kinetic Isotope Effects for  $^{14}\text{C}$ .

PERIODICAL: Nukleonika, 1959, Vol IV, Nr 6, p 599-610

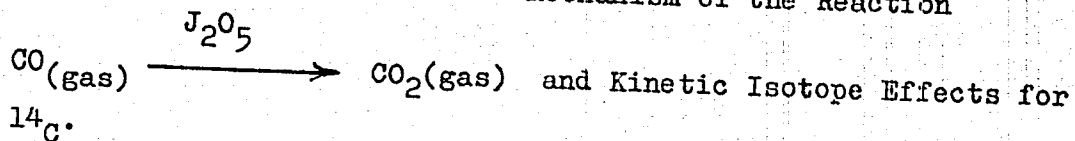
ABSTRACT: The authors expected that by using certain data concerning the kinetic isotope effect of oxidation of CO marked with  $^{14}\text{C}$  isotope, obtained during previous investigation, they might be able to elucidate the mechanism of this reaction. As the reaction takes place at the border between gas and solid phases, it was necessary to find out which of the three partial reactions, adsorption of Co on  $\text{J}_2\text{O}_5$ , - the reaction of  $\text{J}_2\text{O}_5$  splitting and formation of  $\text{CO}_2$  and finally the ✓

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FOL/46-4-6-4/19

On Some Relations Between the Mechanism of the Reaction

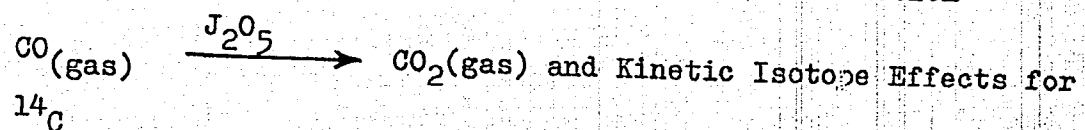


desorption of gaseous  $\text{CO}_2$  is progressing at the slowest pace and thus rules the kinetics of the whole process. The authors carried out extensive laboratory research and described them in detail in this article. They compared the experimentally obtained results with the kinetic isotope effect data theoretically calculated for the three consecutive stages of the process and found out, that the first phase of reaction is the slowest. Evidence has been obtained which suggests that in the intermediate active complex  $\text{O} \cdots \text{C} \cdots \text{O} \cdots \text{J}$ , the bonds between C-atom and the two atoms of Oxygen are equivalent, the oxidising atom of Oxygen being already very strongly attached to the CO molecule. On the

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POL/46-4-6-4/19

On Some Relations Between the Mechanism of the Reaction



other hand, the bonds of the active Oxygen atom with J-atom in  $J_2O_5$  and C-atom in CO, appear not to be equivalent in this active complex. There are 5 tables and 27 references, of which 3 are Polish, 3 German, 2 French, 17 English and 2 Soviet.

ASSOCIATION: Warsaw University, Chair of Nuclear Chemistry ✓

SUBMITTED: March 1959

Card 3/3

ZLOTOWSKI, Ignacy; ZIELINSKI, Mieczyslaw

Note on the kinetic isotope effects in decarboxylation of picolinic acid in fused state and in solutions. Nukleonika 6 no.7/8:511-515 '61.

1. University of Warsaw, Warszawa, Department of Nuclear Chemistry.

ACC NR: AP7003367 SOURCE CODE: PO/0046/66/011/11-/0807/0809

AUTHOR: Zielinski, Mieczyslaw

ORG: Department of Radiochemistry, University of Warsaw, Warsaw

TITLE: Tritium isotope effects in the oxidation of hydrogen and methane. Part 1. Tritium isotope effect in the oxidation of singly labelled methane

SOURCE: Nukleonika, v. 11, no. 11-12, 1966, 807-809

TOPIC TAGS: hydrogen, ~~hydrogen~~ oxidation, methane, methane oxidation, tritium, isotope, ~~tritium isotope~~, chemical labelling, labelled methane, HYDROGEN

## ABSTRACT:

<sup>13</sup>C Isotope effect measurements have shown that the C—H bond rupture seems to be the rate-determining step in the oxidation of CH<sub>4</sub> with CuO[1]. The purpose of the presented below experiments was to confirm that interpretation of <sup>13</sup>C Isotope studies using the singly tritiated methane as an isotopic molecule.

The analytical and counting apparatus used in this study was identical with that described in the Reference [1] and [2]. Tritiated methane obtained in the reaction[1]:



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ACC NR: AP7003367

was purified by repeated vacuum distillation. During oxidation of the  $\text{CH}_4 + \text{CH}_3\text{T}$  isotopic mixture over  $\text{CuO}$ , the U-tube "3" (see Fig. 1, Ref. [1]) was kept at  $-80^\circ\text{C}$ . During the last few recycling, before the oxidation was stopped, the temperature of the U-tube was lowered down to the temperature of the liquid air, to remove the traces of the water vapours. Tritiated methane was transferred into the G. M. — counter by passing it additionally through U-tubes of the counting apparatus kept at liquid air temperature[1]. Experimental results are given in the Table 1.

Table 1. Tritium isotope effects during oxidation of the  $\text{CH}_4 + \text{CH}_3\text{T}$  mixture with  $\text{CuO}$  at  $700-750^\circ\text{C}$ .

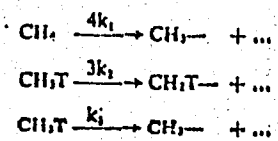
Exp. No.	$f$	$A_1/A_0$	$\phi$	Initial pressure of $\text{CH}_4$ , mmHg
1	0.618	1.19	1.22	144.4
2	0.596	1.12	1.14	220.5
3	0.642	1.17	1.18	69.9
4	0.559	1.22	1.33	111.0
5	0.362	1.06	1.13	242.0
6	0.610	1.162	1.19	71.3
7	0.559	1.07	1.09	102.0
			Av. 1.18 ± 0.05	

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ACC NR: AP7003367

## Discussion of the experimental results

For a set of three unimolecular reactions:



the following formula is valid:

$$\phi = \frac{\ln(1-f)}{\ln(A_t/A_0) + \ln(1-f)} \quad (1)$$

where  $f$  is the fraction of oxidized  $\text{CH}_4$ , $A_t$  — specific activity of unoxidized  $\text{CH}_4$ , $A_0$  — initial specific activity of unoxidized methane at  $t = 0$ ,

$$\phi = \frac{4k_1}{k_2 + 3k_3}$$

or

$$\phi = \frac{4}{3 + k_2/k_1}, \quad \text{if } k_2/k_1 = 1.$$

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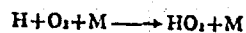
ACC NR: AP7003367

Measured enrichment factors  $\phi$  are collected in the column 4 of the Table 1. Average value of the separation factor  $\phi$  equals  $1.18 \pm 0.05$ . Using this value for the separation factor  $\phi$ , under condition that  $k_2/k_1 = 1$  one can see that the ratio  $k_1/k_2 = 2.6$ .

In spite of the quite large experimental error in the determination of the ratio  $k_1/k_2$ , caused by some back exchange between water vapours formed in the process of methane oxidation<sup>[1]</sup>, the value 2.6 indicates also that C—H bond rupture is the rate determining step in the process of oxidation of CH<sub>4</sub> with CuO. The separation factor for singly labelled tritiated methane, under assumption of the diffusion controlled reaction should be 1.06, the value lower 1 have obtained in this study.

#### Part II. Tritium enrichment of the tritiated hydrogen in the process of its oxidation by N<sub>2</sub>O

At 25°C protium oxidizes 1.3 times faster than tritium in the reaction of tritium and ordinary hydrogen with oxygen induced by the beta-radiation of tritium<sup>[1]</sup>. This small value of the isotope effect was interpreted by Dorfman and Hemmer as corresponding to the isotope effect in the reaction:

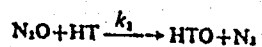
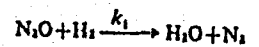


Additional explanation was given by Roginsky<sup>[2]</sup>, who suggested that differences in mobilities of the tritium and hydrogen atoms are responsible for such a small isotope effect. Hydrogen atoms are diffusing faster than the tritium atoms to the walls of the reaction vessel recombining there; thus, the concentration of tritium atoms in gas phase is larger than that of hydrogen and therefore the apparent rate of disappearance of tritium molecules is greater than it should be if the gas phase concentration of tritium and hydrogen atoms were equal.

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ACC NR: AP7003367

In this part of the research an attempt was made to measure the ratio  $k_1/k_2$  for the pair of reactions:



The partial oxidation reactions of the tritiated hydrogen with  $\text{N}_2\text{O}$  have been studied in quartz vessel (see Fig. 1, Ref. [2]) in the temperature interval 400-600°C.

Procedure described in the reference [1] was used to separate the postreaction gaseous mixture consisting of:  $\text{N}_2$ ,  $\text{H}_2 + \text{HT}$ ,  $\text{N}_2\text{O}$  and  $\text{HTO}$ .

The results of measurements and recalculated on their basis enrichment factors  $\phi$  are given in the Table 2. In formula (1) applied to the present case,  $R_t$  and  $R_0$  means specific activity of hydrogen at time  $t$  and at  $t = 0$ ,  $f = a$  before the degree of oxidation.

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ACC NR: AP7003367

Table 2. Tritium isotope fractionation in the oxidation of hydrogen with  $N_2O$ 

Exp. No.	Temp. °C	Fraction oxidized $-f$	$\frac{A_i}{A_0}$	$\phi$	Retention time, minutes
1	436	0.380	1.204	1.63	3043
2	400	0.159	1.052	1.40	6810
3	500	0.608	1.651	2.15	227
4		0.653	1.492	1.61	612
5		0.783	1.588	1.43	889
6		0.714	1.338	1.30	1480
7		0.585	1.179	1.23	2325
8	575	0.432	1.189	1.44	121
9	550	0.642	1.175	1.19	360
10	630	0.683	1.678	1.82	35
11		0.643	1.502	1.65	60
12		0.656	1.412	1.48	80
13		0.683	1.345	1.35	110
14	643	0.636	1.257	1.29	90

Data presented in the Table 2 show that enrichment factor  $\phi$  has small temperature dependence and changes depending on the time of standing of the reaction mixture in the reaction vessel. Above changes have been explained by the back exchange reaction taking place between the water enriched with protium and the hydrogen enriched with tritium[?] in the process of the oxidation reaction.

Further studies of the isotope effect in this reaction are in course.

Received 30 June 1966.

Card 6/7

ACC NR. 27100301

REFERENCES

1. ZIELIŃSKI M.: Kinetic Isotope Effects Accompanying Oxidation of CO, H<sub>2</sub>, and CH<sub>4</sub>, *Nuclear Applications* 2, 51-54 (1966).
2. ZIELIŃSKI M.: Isotopic Exchange Studies in the Systems: HTO—H<sub>2</sub>, HTO—CH<sub>4</sub>, CO—C<sup>18</sup>O, and Some Kinetic Isotope Effect Measurements (paper prepared for publication).
3. ZIELIŃSKI M.: Synthesis of Some Tritium Labelled Chemical Compounds, *Nukleonika* 7, 789-792 (1962).
4. DORFMAN M., HEMMER B. A.: Ion-Pair Yield of the Tritium-Oxygen Reaction, *J. Chem. Phys.* 22, 1555-1558 (1954).
5. ROGINSKIJ S. Z.: Teoreticheskiye osnovy izotopnykh metodov izuczenija chemiczeskich reakcij, Moskwa, 1966.

Orig. art. has: 2 tables and 1 formula. Original article [W. A. 68]  
[BO]

SUB CODE: 07/ SUBM DATE: 30Jun66/ ORIG REF: 001/ SOV REF: 001/  
OTH REF: 002

Card 7/7

L 15594-66 EWP(j) RM

ACC NR: AP6008231

SOURCE CODE: PO/0046/65/010/006/0337/0341

AUTHOR: Zielinski, Mieczyslaw--Zelin'ski, M.

ORG: Department of Nuclear Chemistry, Warsaw University

TITLE: Sup 13 C isotope effects in the decarboxylation of malonic acid

45  
45  
B

SOURCE: Nukleonika, v. 10, no. 6, 1965, 337-341

TOPIC TAGS: carbon, chemical reaction, aliphatic dicarboxylic acid, radiation chemistry, mass spectrometry, radioisotope

ABSTRACT: Intramolecular and intermolecular sup 13 C isotope effects in the decarboxylation of malonic acid were measured on the McKinney-Nier mass spectrometer and the data obtained were compared with isotope effects reported in the literature. This work was supported in part by the National Foundation grant - GP2019. Also many facilities from the Enrico Fermi Institute for Nuclear Studies of the University of Chicago have been used for which the author is indebted to Dr. Clayton and Dr. Sugarman. Orig. art. has: 6 formulas and 2 tables. [NA]

SUB CODE: 18, 07 / SUBM DATE: none / ORIG REF: 002 / OTH REF: 006

SB

Card 1/1

ZELINSKI, Mechislaw [Zielinski, Mieczysław]

Synthesis of certain tritium labeled chemical compounds.  
Nukleonika 7 no.12:789-792 '62.

1. Varshavskiy Universitet, Varshava, Kafedra yadernoy khimii.

ZLOTOWSKI, Ignacy; ZIELINSKI, Mieczyslaw; PANFA, Przemyslaw

The isotopic tracer method of study of the exchange reactions in the systems: Ferrous picolinate hexaquo complex of Fe (II) and ferrous picolinate picolinic acid. Nukleonika 7 no.5:311-323 '62.

ZLOTOWSKI, Ignacy; ZIELINSKI, Mianzyslaw

Note on the kinetic isotope effects in decarboxylation of picolinic acid in fused state and in solutions. Nukleonika 6 no.7/8:511-515 '61.

1. University of Warsaw, Warsaw, Department of Nuclear Chemistry.

ZIELINSKI, M.

Problem of pharmaceutical warehouses. Farm.polska 11 no.7:167-168  
July '55.

(PHARMACY,  
in Poland, warehouses)

ZIELINSKI, M.

Problem of pharmaceutical warehouses. Farm.polska 11 no.7:167-168  
July '55.

(PHARMACY,  
in Poland, warehouses)



ZIELINSKI, M.

"Problem of Maintaining Heat in Aquariums," P. 25. (GOSPODARKA RYBNA,  
Vol. 6, No. 8, Aug. 1954 Warszawa, Poland)

SO: Monthly List of East European Accessions, (EEAL), LC, Vol. 4,  
No. 1, Jan. 1955 Uncl.

PROCESSES AND PROPERTIES INDEX

A-4

BC

Phosphorus in the early development of the frog. M. A. ZIMMERMAN (Bull. Acad. Polonaise, 1933, B, 293-304). Inorg. and labile P were determined in the frog's embryo during development. Inorg. P increased at the expense of the labile; the latter passed through a min. between the 60th and 80th hr. and then increased; the increase being associated with increased powers of muscular contraction. H. I.

ASB-31A METALLURGICAL LITERATURE CLASSIFICATION

FROM DIVISION

SUBJECT OR ONLY LIST

SUBJECT OR ONLY LIST



ZIELINSKI, P.

Certain technical and technological solutions in the production of prestressed concrete slabs. p. 2.

BUDOWNICTWO PRZEMYSŁOWE. (Ministerstwo Budownictwa Przemysłowego) Warszawa, Vol. 4, No. 10, Oct. 1955.

SOURCE: East European Accessions List (EEAL), Library of Congress, Vol. 5, No. 7, July 1956.

"Conference of Theoretical Physicists in Wroclaw (Breslau)."  
Postepy Fizyki, Warsaw, Vol 4, No 4, 1953, p. 504

SO: Eastern European Accessions List, Vol 3, No 10, Oct 1954, Lib. of Congress

JAWOSSY, L.

21(1) **PHASE I BOOK EXPLOITATION** HW/1911  
International Conference on Cosmic Radiation, Budapest, 1956.  
International Conference on Cosmic Radiation Organized by the  
Hungarian Academy of Sciences, Budapest, 1957. 167 p.  
200 copies printed.

Sponsoring Agency: Magyar Tudományos Akademia  
Ms.: E. Fenyves, and A. Somogyi

**FUTURE:** This report is intended for geophysicists concerned with  
cosmic radiation.

**COVERAGE:** This report contains the six plenary sessions of the  
conference. Some of the problems dealt with include nuclear  
emulsions, extensive air showers and the program of cosmic  
ray measurements planned for the International Geophysical  
Year. Most of the reports are followed by references. Soviet  
scientists in the field of cosmic radiation who attended the  
conference are: E.L. Andronikashvili, E.A. Bobrova, Y.  
Gurevich, S.L. Mikolajski and S.M. Vernov. The articles are  
written in English, German and Russian without parallel trans-  
lations.

International Conference (Cont.)

HW/1911

- 5. Friedlander, E.M. A High Energy Neutron Shower With an  
Anomalous Angular Spread 144
- FIFTH SESSION**
- 1. Filipkowski, A., J. Gierulski, and P. Malincki. Survey of  
the Experimental Neutron Data 145
  - 2. Mason, G., J.C. Chadwick, M. Lu, and K.C. Wang. Some Heavy  
Nuclei Particle Events Observed With a Multiplate Cloud  
Chamber 172
  - 3. Friedlander, E.M., and M.E. Meyer. Some Remarks on the  
Possible Gascode Decay of the  $t$ -Boson 177
  - 4. Petralko, V. New Measurements of the Life Time of  
and Neutron Production Using a Graphite Absorber 178
  - 5. Kiss, D. Measurements of the Life Time of  $\Lambda$ -Mesons 181
  - 6. Meyer, M.E. and C. Kirstein. On Positron Pair Creation  
by Charged Particles of Spin 1/2 and 0 in an External  
Field 185

Card 5/6

"APPROVED FOR RELEASE: 09/19/2001

CIA-RDP86-00513R002065110015-0

CONFIDENTIAL

APPROVED FOR RELEASE: 09/19/2001

CIA-RDP86-00513R002065110015-0"

Zielinski, P.

401-PM  
K

5910  
NOTE ON THE ANGULAR CORRELATION IN THE DEGRADE  
OF HYPERFRAGMENTS. P. Zielinski (Polish Academy of  
Sciences, Warsaw). *Nauka i Technika* (197) 3, 1479-80 (1948)  
June.

PMF



**"APPROVED FOR RELEASE: 09/19/2001**

**CIA-RDP86-00513R002065110015-0**

**APPROVED FOR RELEASE: 09/19/2001**

**CIA-RDP86-00513R002065110015-0"**

ZIELINSKI, P.

An experiment by Gell, Mann, and Pais on the systematization of elementary particles. Tr. from the Russian. p. 167.  
(Pokroky Matematiky, Fysiky A Astronomie, Vol. 2, no. 2, 1957. Praha, Czechoslovakia)

SO: Monthly List of East European Accessions (EEAL) LC, Vol. 6, no. 10, October 1957. Uncl.

ZIPLINSKI, P.

An attempt at the systematization of elementary particles of Gell-Mann and  
Pais. p. 239.

SO: Monthly List of East European Accessions (EEAL) IC, Vol. 6, no. 7, July 1957. Uncl.

ZIELINSKI, P.

H. Wilhelmsson and P. Zielinski: "Derivation of the  $\alpha$ -Potential From the  ${}^7\text{He}_\Delta$  and  ${}^9\text{Be}_\Delta$  Hyperfragment Binding Energies," Nuclear Physics, Vol. 6, No. 2, Amsterdam, 1958. (Received 27 Nov 57). (Published from the Nordisk Institut for Teoretisk Atomfysik [Wilhelmsson - on leave from the Inst. of Theoretical Physics, Lund], and from the Institute for Nuclear Research of the Polish Academy of Sciences, Warsaw [Zielinski]).

POLAND/Nuclear Physics - Elementary Particles

C-3

Abs Jour : Ref Zhur - Fizika, No 8, 1958, No 17464

Author : Zielinski P.

Inst : Not Given

Title : Confirmation of the Existence of a  $^0$  Particle

Orig Pub : Postepy fiz., 1957, 8, No 4, 499-500

Abstract : No abstract

Card : 1/1

POL/47-10-3-5/9

21 (7,8)

AUTHOR: Zieliński, Przemysław

TITLE: Hyperfragments - a Review of Some Theoretical Problems

PERIODICAL: Postępy Fizyki, 1959, Vol 10, Nr 3, pp 341 - 361. (POL)

ABSTRACT: The article is a review of works published on hyperfragments since their discovery by M. Danysz and J. Pniewski in 1952. In connection with the appended 134 titles the author reviews a number of problems which have not yet found a satisfactory solution. Such problems are: the unknown binding energies of heavier hyperfragments, the insufficiently observed relative frequency of decay, the not exactly known frequency of the production of hyperfragments, the meager experimental data (the Chicago group) of the angular distribution. Experiments show that interactions with K-mesons do not maintain symmetry in the charge. Experiments are carried on in Berkeley in a bubble chamber. The spin in hyperon decay has been computed and amounts to  $1/2$ . The computations, however, are not supported by a statistically acceptable number of cases. The spin of hyperfragments is not identical with that of hyperons; the production of a hyperfragment may be accompanied by a number of impacts which make its angular momentum unpredictable. A number of works on this

Card 1/2

Hyperfragments - a Review of Some Theoretical Problems

POL/47-10-3-5/9

subject has been published by Dalitz, and experiments are being carried on in Berkeley. The process of hyperfragment production has not been satisfactorily explained. The structure of hyperfragments has been the subject of many works. However, no observation has been made on the possibility of the existence of a "hyper-dinucleon" (i.e. a hyperon bound with a nucleon). The binding energy in a very heavy nucleon has been only tentatively put at 25 - 35 MeV, but no means of exact measurement have been found. The binding of the lambda-hyperon has been observed in almost all cases of hyperfragment production but not, though, the binding of other hyperons. There is also not yet confirmed a possibility of the existence of "double hyperfragments", i.e. nuclei, containing two odd particles.

There are: 5 sets of graphs, 1 table and 134 references, 14 of which are Soviet, 17 Polish, 8 German, 33 Italian, 49 American and 13 unidentified.

ASSOCIATION: Instytut Badań Jądrowych, Warszawa (Nuclear Research Institute, Warsaw).

Card 2/2

P/046/60/005/011/012/018  
D249/D303

AUTHORS: Gierula, J., Mięslowicz, M., and Zieliński, P.

TITLE: Double maximum angular distributions in high energy nuclear collisions

PERIODICAL: Nukleonika, v. 5, no. 11, 1960, 786

TEXT: Abstract - Report No. 146/VI (IBJ - Institute of Nuclear Research, PAS). A detailed statistical analysis of the shape of the angular distribution of secondary particles generated in 65 nuclear collisions for primary energies higher than  $10^{12}$  eV has been presented. The double maximum shape of the distribution (in the coordinate  $\log \tan \theta$ ) is a general feature of the events with a high degree of anisotropy of secondaries in the CM system. It has been found that the shape of the angular distribution is in agreement with the predictions of the two-center model of multiple meson production both for nucleon-nucleon and nucleon-heavy nucleus collision. A new parameter D, which is a measure of the deviation from the normal shape of the distribution towards the two-center

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Double maximum angular distributions .. P/046/60/005/011/012/018  
D249/D303

distribution and also a coordinate convenient for visualizing this  
deviation, have been introduced. [Abstractor's note: Full version]. ✓

ASSOCIATION: Cosmic Ray Department, Institute of Nuclear Research,  
Cracow; General Physics Department, School of Mining  
and Metallurgy, Cracow (J. Gierula, and M. Mięslowicz)  
Cosmic Ray Department, Institute of Nuclear Research,  
Warsaw; Physics Department, University of Warsaw,  
Warsaw (P. Zieliński)

Card 2/2

AUTHORS: Gierula, J., Miegowicz, M.,  
Zieliński, P.

P/045/60/019/01/008/008  
B018/B000

TITLE: Statistical Significance of Double Maximum Angular Distribution  
in High-energy Jets

PERIODICAL: Acta Physica Polonica, 1960, Vol 19, Nr 1, pp 119-121 (Poland)

ABSTRACT: This is a letter to the editor. It was found that the angular distribution of secondary particles emitted in collisions of high-energy nucleons with nucleons or nuclei have the characteristic shape of two symmetric maxima in the coordinates  $dN/dx$  versus  $\log \tan \Theta_1$  ( $\Theta_1$  denoting the angles between the direction of the secondary particles and the primary direction of the bombarding nucleon). On the other hand the hydrodynamic theories predict Gaussian distributions. For an explanation the authors introduced the so-called two-center model. The analysis was made on 56 jets. The two-center model allows to explain the distribution to be a superposition of two separate Gaussian curves. It turned out that the two maxima could be observed only for dispersions greater than 0.6. The authors therefore divided the jets in two classes: 21 events with dispersion smaller than 0.6 and 35 events with the same quantity greater than 0.6 (Fig 1). From table 1 it follows that the existence of the double-maximum angular distribution may be regarded as statistically well

Card 1/2

DWORAK, Andrzej, mgr inz.; MOROZ, Zbigniew, inz.; ZIELINSKI,  
Ryszard, mgr inz.

The FYA-31<sup>u</sup> milling machine with continuous numerical  
control device. Techn lotn 19 no. 7:189-191 JI '64.

1. Institute of Electrical Engineering, Warsaw.

ZIELINSKI, R.; MYSTOWSKI, A.; WINIARSKI, B.

Numeral control of machine tools. p.490.

MECHANIK. (Stowarzyszenie Inzynierow i Technikow Mechanikow Polskich)  
Warszawa, Poland. Vol.32, No.9, Sept. 1959.

Monthly list of East European Accession (EEAI) IC, Vol.9, no.1, Jan.1960

Uncl.

ZIELINSKI, R. (Warszawa)

A method of calculating the waiting time of trains before entering  
a junction. Zastos mat 5 no.4:375-378 '61.

BUC, Jerzy, mgr. inz.; ZIELINSKI, Ryszard, mgr. inz.

Program-controlled machine tools in the aircraft industry.  
Techn lotn 17 no.5:146-149 My '62.

1. Politechnika, Warszawa.

BUC, Jerzy, mgr. inz.; ZIELINSKI, Ryszard, mgr. inz.

Problems connected with the introducing into production of  
numerically controlled machine tools. Techn lotn 16 no.10:  
245-247 0 '61.

1. Politechnika, Warszawa.

BUC, Jerzy, mgr. inz.; ZIELINSKI, Ryszard, mgr. inz.

The preparation of the program for numerically controlled  
machine tools. Techn lotn 17 no.6:171-175 Je '62.



ZIELINSKI, R.

TECHNOLOGY

Periodicals: NORMALIZACJA. Vol. 26, no. 1, Jan 1958

ZIELINSKI, R. A monogram for characterizing a lot after sorting. p. 11.

Monthly List of East European Accessions (EEAI) LC, Vol. 8, No. 2,  
February 1959, Unclass.

ZIELINSKI, R.

The application of the standardization of the use of materials to the individual footwear workstand.

P. 199 ((Przegląd Skorany. Vol. 11, no. 8, Aug. 1956, Lodz, Poland)

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

ZIELINSKI, R.

ZIELINSKI, R. Application of the achievements of atomic physics to the testing  
of building materials. p. 335.

Vol. 10, No. 12, Dec. 1955

MATERIALY BUDOWLANE

TECHNOLOGY

Warszawa, Poland

So: East European Accession, Vol. 5, No. 5, May 1956

ZIELINSKI, R.

ZIELINSKI, R. Tasks of the building industry according to Resolution No. 371 passed by the Presidium of the Government on October 29, 1955. p. 137

Vol. 28, no. 3, Mar. 1956  
PRZEGLAD BUDOWLANY  
TECHNOLOGY  
Warszawa, Poland

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

"Klenjenie i suszenie drewna prądami wielkiej częstotliwości" (Glueing and  
drying of wood by high-frequency currents), by R. Zielinski. Reported in New  
Books (Nowe Książki), No. 12, June 15, 1956.

ZIELINSKI, R.

"Problems of defining technical properties of concrete in constructions  
without destroying the material." p.380 (INZINERIA I BUDOWNICTWO  
Vo Vol. 11, No. 12, Dec. 1954. Warszawa, Poland)

SO: Monthly List of East European Accessions. (EEAL). LC. Vol. 4, No. 4.  
April 1955. Uncl.

ZIELINSKI, R.

"Role and importance of the Problem Session of the Polish Academy of Sciences on the subject of materials in building technique." p. 379.  
(INZINERIA I BUDOWNICTWO Vol. 11, No. 12, Dec. 1954, Warszawa, Poland)

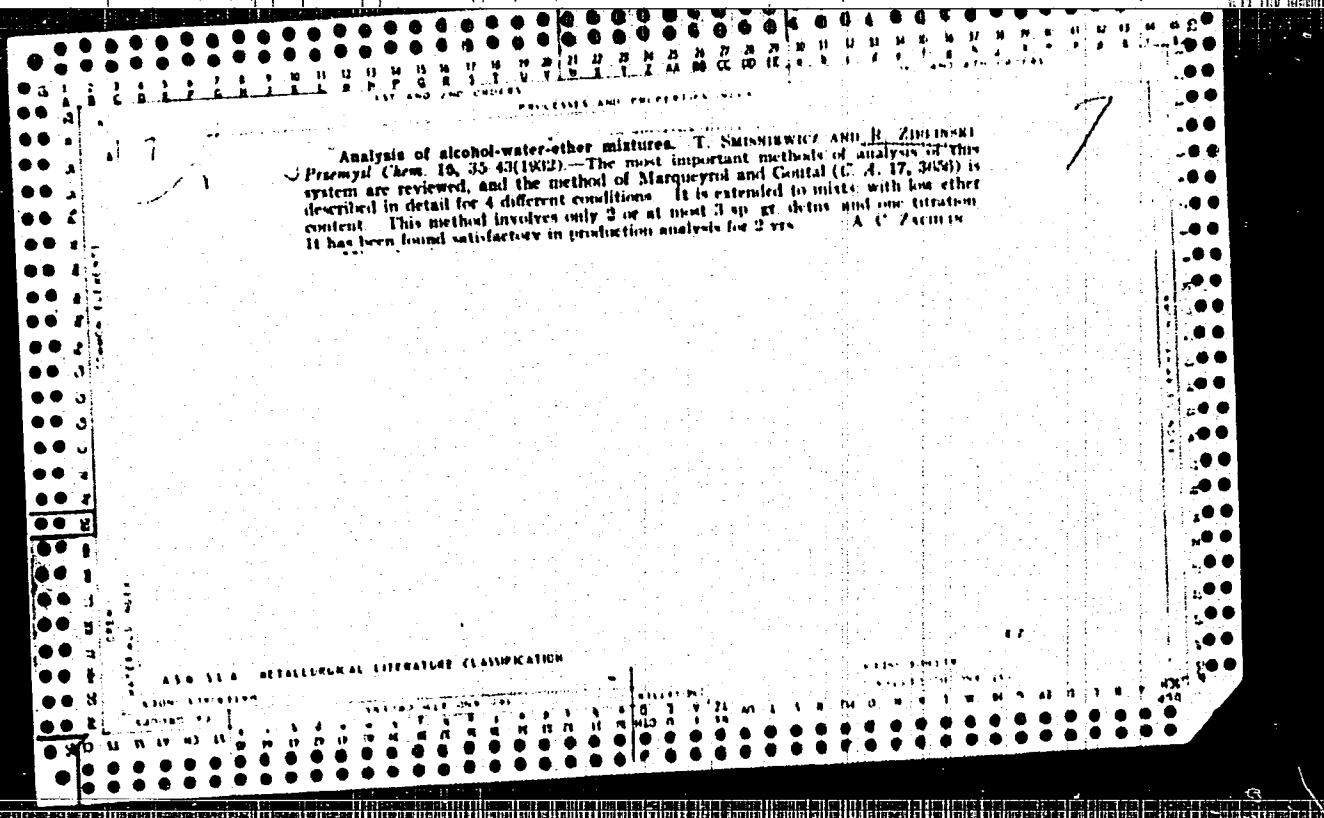
SO: Monthly List of East European Accessions. (EEAL). LC. Vol. 4, No. 4, April 1955. Uncl.

ZIELINSKI, R.

"Boards Made from Shavings by the use of a Synthetic Binding Material." p.126  
(Materialy Budowlane, Vol. 9, No. 5, May, 1954, Warszawa)

SO: Monthly List of East European Accessions, Vol. 3, No. 6, Library of Congress, June,  
1954, Uncl.





P.T.A.

are report

812

Zieliński S. The Use of Temporary Bridge Elements. 634.21.033.6 : 636.2

„Użytko prowizorycznych konstrukcji mostowych”. Przegląd Kolejowy. No. 2, 1931, pp. 61—66, 7 figs.

A number of railway lines will shortly be celebrating the centenary of their existence. The necessity for carrying out capital repairs or for reinforcing bridges and culverts. The use of temporary elements for small-span bridges (up to 10 metres clearance). Composition and design of temporary bridge elements. Organisation of repair work. Removal of permanent elements and replacing them by temporary elements; shifting of temporary elements; final operations. Opportunities for mechanising the work.

OTA

2

1484 625.122 : 625.1041.1  
Zieliński S. Rail Bundles as a Load Relieving Structure.  
"Wiązki szyn jako konstrukcja odciążająca". Przegląd Kolejowy.  
No. 10, 1951, pp. 366—370, 11 figs.

The considerable amount of constructional work on railroads frequently involves work underneath the rails or in the immediate vicinity of rails. It is customary in such cases to make use of temporary bridge constructions. The author deals with a method of relieving the load by means of bundles of rails acting as a supporting beam. Arrangement of rail bundles, transversal location, suspension methods. Carrying out the suspension. Instances in which this method is applicable.

BUC, Jerzy, mgr inz.; ZIELINSKI, Ryszard, mgr inz.

Development of program control. Techn lotn 18 no.6:143-148  
Je '63.

BUC, Jerzy; KURCYK, Tadeusz; ZDUN, Slawomir; ZIELINSKI, Ryszard

Use of program controlled machine tools in small and medium  
lot production. Problemy prof hut maszyn 12 no.11:321-339  
N '64.

1. Technical University, Warsaw.

KOMOSKA, Halina; ZAWARTKA, Maria; ZAWARTKA, Jan; ZIELINSKI, St.

Diaphragmatic relaxation in children. Pol. tyg. lek. 19 no.10:  
355-357 2 Mr '64.

1. Z I Kliniki Pediatrycznej Akademii Medycznej we Wroclawiu (kierownik: prof. dr. med. Hanna Hirszfildowa) i z Kliniki Chirurgii Dzieciecej Akademii Medycznej we Wroclawiu (kierownik: vacat).

ZAWARTKA, Jan; KOMORSKA, Halina; ZIELINSKI, Stanislaw

Portal hypertension in children. Pol. tyg. lek. 19 no.22:  
832-833 25 My '64

1. Z Kliniki Chirurgii Dziecięcej Akademii Medycznej we  
Wrocławiu.

ZIELINSKI, Stanislaw, inz.

Mechanization of works for the medium type complete repair. Przegł kolej  
drog Dodatek 14 no.5:101-109 My '62

1. Dyrekcja Okregowa Kolei Panstwowych, Leszno.



ZIELINSKI, St.; WOZNIACKI, Wl.

Insufflating blast furnaces with substitute fuels. Biul  
inf inst metal zel no.1:1-5 '63.

1. Institute of Iron Metallurgy, Gliwice.

ZIELINSKI, Stefan Jan, mgr., inz.

A machine for packing zinc sheets in plywood barrels. Rudy i metale 6  
no.11:495-496 '61.

(Zinc) (Packing(Mechanical engineering))

ZIELINSKI, Stefan Jan, mgr inz.

Volume and pressure control of Zn and Cd vapors in the cad-  
mium column of a zinc rectifying furnaces. Wlad hut 19 no.10:  
285-288 0 '63

ZIELINSKI, Stefan, mgr. inz.; JARZABEK, Stanislaw, inz.

Design and utilization of the experimental are clodding department in the Bierut Metallurgical Works. Wiad hut 17 no.11:  
324-329 N '61

ZIELINSKI, Stefan, mgr inz.; STEC, Roman, mgr inz.

Sintering of mixtures with a high percentage of dusty materials. Wiad hut 18 no.12:365-370 D '62.

ZIELINSKI, Stefan, mgr inż.

Prospects in lumping ores. Wiad hut 16 no.10:308-310 0 '60.

MASLANKA, Aleksander, mgr.inz.; ZIELINSKI, Stefan, mgr.inz.; KOWALEWSKI,  
Maciej, mgr.inz.

Determination of reductivity, temperature and softening range  
of different iron-nickel ores in the pelletizing process. Hutnik  
P 28 no.7/8:280-284 J1-Ag '61.

1. Instytut Metalurgii Żelaza, Gliwice.

ZIELINSKI, Stefan, mgr inz.

Influence of the reducer on the zinc distillation process in  
horizontal muffles. Wiad hut 15 no.10:308-311 0 '59.



ZIELINSKI, Stefan Jan, mgr inz.

Machine for loading metal plates into furnaces for melting purposes.  
Wlad hut 15 [i.e 20] no.1:11-12 Ja '64.

ZIELINSKI, Stefan J., mgr inz.; WALCZAK, Irena, mgr; CHMIELOWSKI,  
Jan, mgr

Tin recovery from tinplate scraps. Wiad hut 15 no. 3:  
79-83 Mr '64.

KRUKIEWICZ, Ryszard, inż.; ZIELINSKI, Stefan, mgr inż.

Influence of the roasting of leczyca ore on its crushability.  
Wiad hut 19 no. 6: 145-148 Je '63.

P/039/60/000/012/001/002.  
A221/A026

AUTHOR: Zieliński, Stefan, Master of Engineering  
TITLE: The Process of Direct Iron Ore Reduction in Rotary Kilns.  
PERIODICAL: Hutnik, 1960, No. 12, pp. 466 - 472

TEXT: The author describes briefly five methods of direct iron ore reduction in rotary kilns; three of them are fairly new, so far on semi-technical stage of development, while the remaining two are already in operation on industrial scale in several western countries. All five methods have been developed in western countries. The R-N process, after further development, might seriously endanger some existing industrial processes, like the production of pig iron in electric furnaces, lump concentrate or Wiberg process. The obvious reason for publishing this information is to familiarize wide circles of Polish metallurgical engineers with methods, which might be of importance for the Polish metallurgical industry, as they can be applied for processing low-grade iron ores and use inferior quality of fuel. The R-N method was developed by the Republic Steel Corp. and the National Lead Corp. and a semi-technical installation was built in Birmingham Ala, USA. This method can be applied for processing both poor and rich iron ores using inferior quality fuel, i.e. coke breeze, charcoal, peat or anthracite powder. The

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P/039/60/000/012/001/002  
A221/A026

### The Process of Direct Iron Ore Reduction in Rotary Kilns

Important point is that ore reduction is carried out in temperatures lower than the melting temperature of any of the charge constituents. Tanner process of initial, partial reduction of iron ore was developed by Avesta Metallurgical Plant in Sweden. The rotary oven of the semi-technical installation is 450 mm in diameter and 2,000 mm long. Magnetite concentrate containing 71.3% Fe was processed and 52 - 76.4% of oxygen removed from the ore. Carbon content in the product was 8.2 - 12.7% C. The output of this installation was 100 kg in 45 hours. The product has to be further processed by the Högånäs process or in electric furnaces for final reduction to metallic iron. Scortecchi process is based on reducing iron ore in a revolving drum by means of hot decomposed natural gas of the following composition: 84% H<sub>2</sub>O, 6% CH<sub>4</sub>, 4% CO and 5% N<sub>2</sub>. 90 - 97% of oxygen is thus removed from the ore and the product, the spongy iron contains around 81% Fe. An experimental plant producing spongy iron by the Scortecchi method was erected in Dolmine near Milan in Italy. The output of this plant is 2 tons of iron sponge in 24 h, and gas consumption 3,500 m<sup>3</sup> per ton of sponge. Beset process is applied on industrial scale in several western countries. By this method various iron ore substitutes, mostly pyrite cinders with addition of manganese ore, lime stone, coke breeze and iron separated from the slag are processed. The kiln is heated with

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The Process of Direct Iron Ore Reduction in Rotary Kilns

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A221/A026

crude oil or powdered coal to a temperature max. 1,290°C. The products are pig iron and slag. For 1 ton of pig iron 1,550 kg of pyrite cinders (containing 67% Fe, 2% SiO<sub>2</sub>, 2% S), 610 kg of coke breeze (containing 86% C, 1% S, and 10% ash), 335 kg of lime stone (containing 54% CaO and 2% SiO<sub>2</sub>) and 350 kg of crude oil (of calorific value 9,600 kcal/kg) are used. The slag, after separation of intruded iron, which is returned to the process, is used for portland cement fabrication. Such an installation exists since 1939 in Aalborg, Denmark. Stürzelberg process for pig iron production was developed in Germany and the first installation of this type was put into operation in 1934. The process is not a continuous one; it is carried out in batches. In this process, too, iron ore substitutes or ores containing elements harmful in blast furnace process, like Zn, Sn, Pb, etc. are used. The reduction of ore takes place in a rotary kiln 10.5 m long and 3.8 m in diameter. Gas or powdered coal are being used as fuel, and reaction temperature is maintained at 1,400°C. The process is divided into three phases: a) warming up of the charge, b) removal of zinc and partial reduction of iron ore, c) final reduction of iron. The slag containing 27% SiO<sub>2</sub>, 5% Al<sub>2</sub>O<sub>3</sub>, 57% CaO, 3 - 5% MgO, and 3 - 5 Fe is used for portland cement fabrication. There are 1 photo, 2 tables, 7 figures and 6 references: 2 English, 2 German, 1 Polish and 1 Danish.

ASSOCIATION: IMŻ, Gliwice  
Card 3/3

KOWALEWSKI, M., mgr inż.; ZIELIŃSKI, S., mgr inż.;

Sintering weathered mixtures. Hutnik P 30 no. 7/8:220-223  
Jl/Ag'63.

1. Instytut Metalurgii Żelaza, Gliwice.

WASYLEWICZ, Bronislaw; ZIELINSKI, Stefan

Ore lumping plants in Scandinavia. Problemy proj hut maszyn  
ll no.7:221-231 J1 '63.

1. Biprohut, Gliwice (for Wasylewicz). 2. Instytut Metalurgii  
Zelaza, Gliwice (for Zielinski).



ZIELINSKI, S.

Distr: 4E2e(p)/4E3d

ZIELINSKI, Stanislaw, inz.

Concrete pavements on railroad crossings. Przegł kolej drog  
14 no.4:65-67 Ap '62.

1. Dyrekcja Okregowa Kolei Panstwowych, Leszno.

ZIELINSKI, S.; WOZNIACKI, W.

The problem of carbon blocks for lining blast furnaces. p. 178

HUTNIK (Panstwowe Wydawnictwa Techniczne) Katowice, Poland. Vol. 26, no. 5, May 1959

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

ZIELINSKI, S.

SCIENCE

Periodicals: ROCZNIKI CHEMII. Vol. 31, no. 2, 1957.

ZIELINSKI, S. The abnormal activity of aluminum hydroxide used as catalyzer in the indigo carmine/ $H_2O_2$  system. p. 421.

Monthly List of East European Accessions (EEAI) LC, Vol. 8, No. 4,  
April 1959, Unclass.

ZIELINSKI, S.

SCIENCE

Periodicals: ROCZNIKI CHEMII. Vol. 31, no. 2, 1957.

ZIELINSKI, S. The specific catalytic activity of silver orthophosphate in reduction-oxidation systems. p. 429.

Monthly List of East European Accessions (EEAI) LC, Vol. 8, No. 4,  
April 1959, Unclass.

ZIELINSKI, S.

SCIENCE

PERIODICALS: ROCZNIKI CHEMII, Vol. 31, No. 2, 1957

ZIELINSKI, S. The oxidation of  $As_2O_3$  with atmospheric oxygen at various temperatures in the presence of one- and multicomponent catalysts. p. 481.

Monthly list of East European Accessions (EEAI) LC, Vol. 8, No. 4,  
April 1959, Unclass.

MALKIEWICZ, Tadeusz, Mgr Prof., Inz.; SIEMIERSKI, Jerzy, Mgr.Inz.; ZIELINSKI,  
Stefan, Mgr.Inz.; NOWAKOWSKI, Stanislaw, Inz.

Application of radioisotopes to the measurement of the wear of the  
carbon base block in the no.3 blast furnace at Lenin Ironworks.  
Huta Lenina prace no.9:24-33 My '61.

ZIELINSKI, S.

TECHNOLOGY

PERIODICAL: HUTNIK, Vol. 25, no. 7/8, July/Aug. 1958.

ZIELINSKI, S.; Maslanka, A. The analysis of the methods applied in Polish metallurgic plants in the drying and blowing of blast furnaces. p. 250.

Monthly List of East European Accessions (EEAI) LC Vol. 8, No. 4 April, 1959, Unclass.



ZIELINSKI, Stanislaw

Somatotropin & its use in surgery. Polski tygod. lek. 14 no.20:  
932-935 18 May 59.

1. (Z II Kliniki Chirurgicznej P. A. M. w Szczecinie; kierownik:  
doc. dr Wladyslaw Jatal Heftman).

(SOMATOTROPIN, ther. use  
in surg (Pol))

(SURGERY, OPERATIVE  
use of somatotropin (Pol))

ZIELINSKI, S .

Laying of surfaces on prestressed ferroconcrete foundations. p. 247.  
(PRZEGLAD KOLEJOWY DROGOWY. Vol. 8, no. 11, Nov. 1956, Warszawa, Poland)

SO: Monthly List of East European Accessions (EEAL) LC. Vol. 6, No. 12, Dec. 1957.  
Uncl.

ZIELINSKI, S.

New methods of blast-furnace blowing-in and drying practices. p. 23.

(HUTNIK, Vol. 24, No. 1, Jan. 1957, Katowice, Poland.)

SO: Monthly List of East European Accessions (EEAL) Lc. vol. 6, No. 10, October, 1957. Uncl.

ZIELINSKI, S.

POLAND / Physical Chemistry, Kinetics, Combustion, Explosions, Topochemistry, Catalysis. B

Abs Jour: Ref Zhur-Khimiya, No 18, 1958, 60250.

Author : Alfons Krause, Stanislaw Zielinski.

Inst : -

Title : Anomalous Behaviour of Aluminum Hydroxides as Catalyst at Reaction of Indigocarmine with H<sub>2</sub>O<sub>2</sub>.

Orig Pub: Roczn. chem., 1957, 31, No 2, 421-428.

Abstract: The catalytic activity of Al(OH)<sub>3</sub> (I) was studied at the oxidation of indigocarmine (II) with H<sub>2</sub>O<sub>2</sub> at 37°. It was found that II is strongly adsorbed on I decreasing its catalytic activity. The ad-

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POLAND / Physical Chemistry, Kinetics, Combustion, Explosions, Topochemistry, Catalysis. B

Abs Jour: Ref Zhur-Khimiya, No 18, 1958, 60250.

Abstract: sorbed part of II oxidizes more slowly than II in the solution. A method to evaluate the catalytic activity of any aluminum hydroxide by the reaction of II oxidation with H<sub>2</sub>O<sub>2</sub> is proposed.

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ZIELINSKI, S.

POLAND / Physical Chemistry. Kinetics, Combustion,  
Explosions, Topochemistry, Catalysis.

B

Abs Jour: Ref Zhur-Khimiya, No 18, 1958, 60251.

Author : Alfons Krause, Stanislaw Zielinski, Maria Blawatska.

Inst : -

Title : Oxidation of  $As_2O_3$  by Oxygen from Air at Various  
Temperatures in Presence of Mono- and Multicom-  
ponent Catalysts.

Orig Pub: Roczn. Chem., 1957, 31, No 2, 481-488.

Abstract: It was found that the rate of  $As_2O_3$  (I) oxidation  
by oxygen from the air in the presence of  $Cu(OH)_2$   
(II) at 30-50° rises with the temperature rise.

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ZIELINSKI, STANISLAW

POLAND / Physical Chemistry, Kinetics, Combustion, Explosions, B-9  
Topochemistry, Catalysis.

Abs Jour : Ref Zhur - Khim., No 10, 1958, 31798

Author : Alfons Krause, Stanislaw Zielinski, Henryk Wozniczok.

Inst : -

Title : Determination of Active Places on Surface of  $Al(OH)_3$   
Carrier.

Orig Pub : Roczn. chem., 1956, 30, No 4, 1103-1110.

Abstract : It was found that the catalyst  $Al(OH)_3-Co^{2+}$  is very active at the indigocarmine oxidation with hydrogen peroxide at  $37^{\circ}$ . The activity of the  $Co^{2+}$  ions rises with the increase of the amount of the carrier  $Al(OH)_3$ . The maximum activity and the magnitude of the surface are determined, and the number of active places on the surface is computed.

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ZWELINSKI, S. ZIELINSKI, S.

18(5,7), 25(5)

POL/39-59-5-2/14

AUTHOR: Zielinski, Stefan, Master of Engineering Sciences and  
Wozniacki, Wladyslaw, Engineer

TITLE: The Problem of Carbon Blocks for Lining Blast Furnaces

PERIODICAL: Hutnik, 1959, Nr 5, pp 178-186 (Poland)

ABSTRACT: The national economic plan provides for an increase in the output of blast furnaces to 7,4 million tons yearly by 1965, giving an increase of 94% compared to 1958. It is essential, therefore, to exploit to a maximum all production resources. One of these important tasks is to lengthen the life-span of blast furnaces by providing high-quality heat-resistant materials, by improving their preparation for lining the furnace itself and above all, by perfecting the techniques of carbon-lining of the lower parts of blast furnaces. The factors which make for rapid deterioration of the carbon lining are as follows: too wide-ranging differences in the physical and chemical

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The Problem of Carbon Blocks for Lining Blast Furnaces

properties of carbon products successively used; faulty transportation, loading, unloading and storage of these products; the use in many cases of improper construction and block-laying methods; physical changes which take place in the blocks at high temperature, penetration of slag and pigiron into the lining; finally, inadequate cooling of the carbon lining. Of these factors, the most important is the influence of drying procedures and the first stages of operation of the furnace. These cause the physical changes which take place in the carbon lining and make the latter less resistant to the inroads of slag and pigiron. It must be added here that the destructive effects of some of these factors could be obviated by better adapting some of our furnaces to construction methods using heat-resistant linings. In order to prolong the life-span of all parts of the blast furnace, the following steps must be taken: carbon blocks used for lining should show the least possible

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The Problem of Carbon Blocks for Lining Blast Furnaces

variance in physical and chemical properties; blocks should be transported in closed trucks, handled carefully and stored in dry, sheltered spaces; The system of block-laying where 50 mm spaces are left between the blocks should be discontinued in favor of using specially shaped blocks or else laying them in contact with one another; undertake research to develop a new putty less porous than the one used hitherto yet with higher resistance and better binding properties; with such a putty in use, carbon blocks of smaller dimensions can be produced, thus making it easier to endow them with the required high qualities; introduce a series of shelves welded to the structure to act as protection against interior landslides; undertake research to determine how proper cooling methods can be achieved, based on the heat conductivity of the carbon materials used, thus counter-acting slag and pig-iron inroads on the lining; consider possibilities of water and air cooling of the hearth, thus improving

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The Problem of Carbon Blocks for Lining  
Blast Furnaces

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safety conditions; use gas-proof sheathing and introduce regular control of cooling facilities to prevent oxidation of the carbon materials by contact with air or steam. It is the author's opinion that the implementation of these recommendations will make it possible for the Polish industry to achieve a life-span for its blast furnaces similar to those achieved in the USA, the Soviet Union, Britain and Germany. There are 8 microphotographs, 2 tables and 21 references, 15 of which are English, 2 Soviet, 2 German, 1 Polish and 1 Czech

ASSOCIATION: Instytut metalurgii zelaza - Gliwice (Institute of Iron Metallurgy - Gliwice)

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