CA

10

**The reaction of the carbonyl group with primary amines**
P. Zuman. Collection Czechoslov. Chem. Communs. 15,
839-73(1951)(in German).—The reaction between carbonyl
groups and $NH_3$ or primary amines was followed polaro-
graphically. In this reaction, only the base form of the
amine takes part. The rate of the reaction to reach equil. in
alk. soln. is slow compared to the rate of the electrode proc-
ess. The imino compd. formed is reduced at more pos.
potentials than the original carbonyl compd. Equil. consts.
are given for the reaction of $AcCO_2H$, $PhCOCO_2H$, $Me_2CO$,
cyclohexanone, AcH, BzH, Ac, the oxidation product of
ascorbic acid and $NH_3$, $NH_2CH_2CO_2H$, alanine, cokamine,
histamine, and histidine. Polarographic criteria are given
for the estn. of the no. of mols. taking part in the reaction.
The polarographic detn. of $Me_2CO$, cyclohexanone, and the
oxidation products of ascorbic acid is possible in the presence
of $NH_3$ or primary amines. The reaction described is char-
acteristic for primary amines and for most carbonyl compds.
and can be used for their detn. A table is included giving
the values of equil. consts. and shift of the half-stage
potentials. Harold H. Levine

"Determination of pyroracemic acids in lactic acid."
Chemicke Zvesti, Bratislava, Vol 6, No 3/4, Mar./Apr. 1952, p. 171

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

Foods

**Determination of sulfhydryl compounds in some fruits.** Petr Zuman (Central Polarographic Inst., Prague, Czech.). *Chem. Listy* 46, 73-9(1952).—In the current methods of detn. *of ascorbic acid* (I) other reducing compds. may give high results for the content of I. Reducing compds. contg. the SH group can be detd. polarographically with glutathione as a standard. The SH compds. form an anodic wave shifted by approx. 200 mv. to the more neg. potentials than the potential of I. The detn. is carried out directly in the *fruit juices* mixed with an acetate buffer at pH 4.7. The content of I and SH compds. in red currants, raspberries, tomatoes, gooseberries, cherries, black cherries, elderberries, green nuts, blackberries, pineapple, and watermelons, service fruits, apricots, and plums was detd. M. Hudlický

CP

Electrochemistry 4

**Polarographic behavior of anthocyanins. I.** Petr Zuman (Central Polarographic Inst., Prague, Czech.). *Chem. Listy* 46, 328-3(1952).—The polarographic behavior of anthocyanins in aq. and alc. solns. at various pH values was followed. Any color change of the solns. corresponded to a wave on the curve. Half-wave potentials in a tartrate buffer at pH 3.0 with Tl (I) ions as standards were detd.: pelargonidin −0.405, cyanidin, −0.40, delphinidin −0.425, pelargonin −0.41, cyanine −0.41, and delphinine (two waves) −0.30 and −0.52 v. Anthocyanins were detd. in *fruit juices* acidified with $H_2SO_4$ to pH 1.5-3 and in dried blooms extd. with 1% HCl. M. Hudlický

CII

4

**Polarography of barbituric acid derivatives. I. Barbituric acid.** Jiří Kůryta and Petr Zuman (Central Polarographic Inst., Prague, Czech.). *Chem. Listy* 46, 290-91 (1952).—Barbituric acid (I) gives an anodic wave at pH 3.5-13. Its half-wave potential toward the satd. calomel electrode is 0.23 v. at pH 3.5 and −0.08 v. at pH 9.4. The height of the wave is proportional to the concn. at low concns. and const. at higher concns. In the beginning the current is limited by the diffusion of I to the electrode surface. The compd. of I with the electrode Hg is adsorbed by the surface of the electrode and changes its capacity. When the surface of the electrode is occupied, at higher concns. and prolonged falling of the drop, the wave has an adsorption character. At pH 3.5-6.5, a more pos. wave is formed which is difficult to read. The range over which the wave is proportional to the concn. can be extended by the use of a streaming electrode. M. Hudlický

Perfumes 17

**Polarography of heart glycosides containing an aldehyde group.** Petr Zuman and František Šantavý (Central Polarographic Inst., Prague, Czech.). *Chem. Listy* 46, 203-6(1952).—Heart glycosides contg. a 5-membered lactone ring and having a CHO group on carbon 10 of the steroid skeleton show two depolarizing effects on their polarographic curves. In buffered solns., adsorption waves are formed, the height of which is independent of the concn. of the glycoside. A shift of the concn. limit by the use of a streaming electrode allows application of these waves for analytical purposes. In solns. of glycine half-titrated with NaOH, waves have been found corresponding to the reduction of a C:N bond in a condensation product of the aldehyde and glycine. The polarographic behavior of the aglycone strophanthidin resembles that of the glycosides. g-Strophanthin and gitoxine having no CHO groups show no polarographic effects. With the glycine solns., the amts. of aldehydic glycosides in com. preps. can be detd.

M. Hudlický

CZ

Electrochemistry-7

**Use of complexones in chemical analysis. XXXI. The polarography of germanium.** P. Valenta and P. Zuman. (Central Polarographic Inst., Prague, Czech.). *Chem. Listy* 46, 478-9(1952); cf. *C.A.* 46, 11012h.—$Ge^{4+}$ shows a polarographic wave at −1.4 v. in a soln. of 0.1 *N* $NH_3$ and 0.1 *N* $NH_4Cl$. If the detn. of Ge is carried out in 0.1 *M* Na salt of $(CO_2H)_2NCH_2CH_2N(CO_2H)_2$ (complexone III) at pH 6-8, the wave at −1.3 v. is formed; this wave is practically const. over the range of pH 6-9 and is undisturbed by excess Zn and $As^{5+}$. $As^{3+}$ gave a wave which was 0.3 v. more neg. Optimum concns. of Ge for the detn. were $5 \times 10^{-4}$ – $5 \times 10^{-4}$, min. $5 \cdot 10^{-6}$ at pH 7.6-8. Interfering effect of $SiO_2$ can be eliminated by the addn. of $10^{-4}$ *M* fuchsin.

M. Hudlický

TALVIK, A.; ZUMAN, P.; EXNER, O.

Studies on the inductive effect. Pt.3. Coll Cz Chem 29 no.5: 1266-1276 My '64.

1. Institute of Polarography, Czechoslovak Academy of Sciences, Prague (for Zuman and Exner). 2. Chemical Department, Tartu State University, Tartu, Estonian S.S.R. (for Talvik).

MANOUSEK, O.; ZUMAN, P.

Polarography of pyridoxine and some of its derivatives.
Coll Cz Chem 29 no. 6:1432-1457 Je '64.

1. Institute of Polarography, Czechoslovak Academy of Sciences, Prague.

ZUMAN, P.

Quantitative treatments of substituent effects in polarography. I. General equation for the relation between polarographic half-wave potentials and the effect of substituents. Coll Cz Chem 25 no.12: 3225-3243 D '60. (KEAI 10:9)

1. Polarographic Institute, Czechoslovak Academy of Science, Prague.

(Polarograph and polarography)

ZUMAN, P.

Polarography of nonbenzenoid aromatic and related substances. II. The course of the reduction of sydnones at the dropping mercury electrode. III. The course of the reduction of N,N'-polymethylene-bis-sydnones. IV. Polar effects of substituents in phenylsydnones; the application of modified Hammet equation. Coll Cz Chem 25 no.12: 3245-3270 D '60. (EEAI 10:9)

1. Polarographic Institute, Czechoslovak Academy of Science, Prague.

(Polarograph and polarography) (Aromatic compounds)
(Sydnone) (Electrode, Dropping mercury) (Phenylsydnone)
(Hammett equation) (Methylene group)

ZUMAN, P.; SANTAVY, F.

Polarography of cardiac glycosides containing aldehyde groups [with summary in English]. Sbor.Chekh.khim.rab. 18 no.1:28-35 F '53. (MLRA 7:6)

1. Central Polarographic Institute, Prague and Chemical Institute of the Medical Faculty, Palacky University, Olomouc.
(Glycosides) (Polarograph and polarography)

ZUMAN, P.

Polarographic behavior of anthocyans. Part 1. [in German with summary in Russian]. Sbor.Chekh.khim.rab. 18 no.1:36-42 F '53. (MLRA 7:6)

Central Polarographic Institute Prague

1. TSentral'nyy polyarograficheskiy institut, Praga.
(Anthocyans) (Polarograph and polarography)

ZUMAN, P.

KORYTA, J.; ZUMAN, P.

Polarography of barbituric acid derivatives. Part 1. Barbituric acid [in German with summary in Russian]. Sbor.Chekh.khim. rab. 18 no.2: 197-205 Ap '53. (MLRA 7:6)

1. TSentral'nyy polyarograficheskiy institut, Praga.
(Barbituric acid) (Polarograph and polarography)

ZUMAN, P.; PROCHAZKA, Z.

Com ined form of ascorbic acid. Part 4. Polarographic determination of ascorbic acid in ascorbigen concentrates [with summary in German]. Sbor.Chekh.khim.rab. 18 no.4:442-449 Ag '53. (MLRA 7:6)

1. TSentral'nyy polyarograficheskiy institut i TSentral'nyy khimicheskiy institut, Praga. (Vitamins) (Polarograph and polarography)

ZUMAN, P.; ZUMANOVA, R.; SOUCEK, B.

Polarographic determination of carbon bisulfide by anode rays [in German with summary in Russian]. Sbor.Chekh.khim.rab. 18 no.5:632-647 O '53. (MLRA 7:6)

1. TSentral'nyy polyarograficheskiy institut i Institut professional'nykh zabolevaniy i trudovoy gigiyeny. (Carbon bisulfide) (Polarograph and polarography)

ZUMAN P.

Polarographic determination of carbon disulphide from its anodic wave. p.178 (Chemicke Listy. Vol. 47, no.2, Feb. 1953) Czechoslovakia

SO: Monthly List of East European Accessions, Vol. 2, #8 Library of Congress, August 1953, Incl.

ZUMAN, P.

"Polarographic determination of carbon disulphide from its anodic wave." p. 189. (CHEMICKE LISTY, Vol. 47, #2, Feb. 1953, Czechoslovakia)

SO: Monthly List of ~~Russian~~ East European Accessions, Vol. 2, #8 Library of Congress, August 1953, Uncl.

8

3

Chemical Abst.
Vol. 48
Apr. 10, 1954
Electrochemistry

Polarographic study of cyanohydrin formation in alkaline media. P. Zuman and F. Šantavý (Central Polarographic Inst., Prague, Czech.). *Chem. Listy* 47, 207-9(1953).—Reactions of the CN ion with 24 aromatic aldehydes in alk. media were studied polarographically. Equil. consts. of cyanohydrin formation were computed and compared with titration data from the literature. The influence of substituents and rates of formation were discussed. E. Erdös

MF

ZUMAN, P.; SUE-YUAN TANG

Fission of activated carbon-nitrogen and carbon-sulfur bonds. Coll Cz Chem 28 no.4:829-837 Ap '63.

1. Polarographic Institute, Czechoslovak Academy of Sciences, Prague. 2. Petroleum Research Institute, Chinese Academy of Sciences, Talien, China (standing address for Sue-yuan Tang)

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065620004-6"

ZUMAN, P.

Congress of the Japanese Polarographic Society. Chem listy 57 no.8: 884-886 Ag '63.

ZUMAN, P.

ZUMAN, P., KORYTA, J., KALVODA, R.
" Polarography of Barbituric Acid Derivatives, Part 2. Veronal," p. 345.
(Chemicke Listy, Vol.47, No.3, Mar. 1953, Praha.)

SO:Monthly List of East European Accessions, Vol.2, No.9, Library of Congress, September, 1953, Uncl.

ZUMAN, P.

1

Steric effects in organic polarography. P. Zuman (Czechoslovakian Acad. Sci., Prague). *Acta Chim. Acad. Sci. Hung.* 18, 141-54(1959)(in German).—In some cases the steric and polar factors of the reactivity of org. compds. can be distinguished by polarographic methods. The authors investigated: (1) The steric hindrance of coplanarity; (2) the hindrance of solvation; (3) differences between the properties of diastereomers as regards dissocn. and complex formation; (4) relations of steric structure to adsorption; (5) steric factors in reactions. In the simplest cases the half-wave potentials ($E_{1/2}$) were characteristic of the electron affinity of the mols. The greater the no. of the conjugated $\pi$-electrons the more pos. the potential at which the redn. took place. If 3-phenylsydnone (I) was substituted by a Me group in para position, $E_{1/2}$ shifted to more neg. potentials. For ortho Me derivs. this shift was much greater than is explained by the hindrance of coplanarity in the latter case. If the ortho Me group was closed into a ring with I the planes of the rings of the benzene and of I became identical, and $E_{1/2}$ shifted to more pos. potentials. The aldehydes of the holarrhimine (II) group were reduced at much lower $E_{1/2}$ than those of the terpene or convallatoxin type; the oximes and aldimines of the former ones were reduced at more neg. $E_{1/2}$ than the free aldehydes, probably because the oxo group of the II derivs. is unhydrated. *erythro*-$\alpha,\alpha'$-Dibromosuccinic acid was reduced at more pos. potentials than the threo form; for the redn. of the anions the situation was reversed. There was little difference between the $E_{1/2}$ of the esters. The sepn. of H ions from ammoniacal $Co^{++}$ solns. was catalyzed differently by *threo*- and *erythro*-phenylcysteine because of the difference between their consts. of dissocn. and complex formation. A capacity phenomenon was noticeable for dehydrotetramethylholarrhimine contg. the tertiary amino group in $\alpha$-position; for dehydrotetramethylholarrhidine this was not observable (amino group in $\beta$-position). This indicates that the $\alpha$-form adsorbs more easily. In a case of the $HIO_4$ oxidn. of noncyclic threo- and erythro-1,2-diols the mixt. of threo and erythro epimers can be analyzed by the polarographic method. E. Kasztreiner

2

ZUMAN, P.

(3) Chem

Chemical Abst.
Vol. 48 No. 6
Mar. 25, 1954
Pharmaceuticals, Cosmetics, Perfumes

[illegible] of ascorbic acid. IV. [illegible] ascorbic acid in [illegible] concentrates. Petr Zuman and Zdeněk Kopecký? (Ústřední ústav polarogr., Prague, Czech.). Chem. Listy 47, 367-[illegible] (1953); cf. C.A. 48, 4171g.—Combined ascorbic acid content in cabbage concentrates was detd. polarographically after the hydrolysis with 1% $H_2SO_4$ in the absence of air. To a cabbage concentrate (18 ml.) is added 2 ml. 10% $H_2SO_4$, a stream of N or $CO_2$ is passed through the soln. immersed for 5 min. in a 100° bath, the soln. is cooled, filled to the mark, and a 0.5-1 ml. aliquot is polarographed in 4 ml. M acetate buffer pH 4.6. The results are checked by potentiometric and visual titrations.

M. Hudlický

6/8/54
BW

ZUMAN, PETR

Chemical Abstracts
May 25, 1954
Electrochemistry

**Reaction of carbonyl compounds with amines. V. Polarographic study of the reaction of cyclanones with primary amines; equilibrium states.** Miroslav Březina and Petr Zuman (Czech. akad. věd., Prague). *Chem. Listy* 47, 975-81(1953); cf. *C.A.* 47, 20594.—The cation :C:NRH⁺ obtained by the reaction of cyclopentanone (I), cyclohexanone (II), and methylcyclohexanone (III) with $NH_3$ (IV), $MeNH_2$ (V), $EtNH_2$, $HOCH_2CH_2NH_2$, $NH_2CH_2CO_2H$ (VI), and $MeCH(NH_2)CO_2H$ was reducible under polarographic conditions. The equil. consts. of the reaction, and the dissocn. consts. of the final ketimines were detd. The stability of the condensate depended on the polarity of the starting :CO group as well as on the polarity of the final :C:N— group. For analytical purposes, the reaction with $Me_2NH$ was most suitable and allowed the detn. of cyclanones in concns. up to $10^{-4}$. Dissocn. consts. and half-wave potentials of cyclanonimines were listed (carbonyl compd., amine, dissocn. const., and half-wave potential in v.): I, IV, 8.95, −1.56; I, V, <8, −1.60; I, VI, [illegible], −1.53; II, IV, 9.15, −1.53; II, V, 9.43, −1.68; II, VI, 9.48, −1.43; III, IV, 9.38, −1.54; III, V, 9.47, −1.62; III, VI, 9.04, −1.50. M. Hudlický

ZUMAN, Petr

Chemical Abstracts
May 25, 1954
Electrochemistry

9

Polarography of steroids. I. Directly reducible steroids: $\Delta^4$-cholestenone, methyltestosterone, testosterone, progesterone, and deoxycorticosterone. Petr Zuman, Jiří Tenygl, and Miroslav Březina (Czech. akad. věd, Prague). *Chem. Listy* 47, 1152-61(1953).—Reduction waves of $\Delta^4$-3-ketosteroids in aq.-alc. buffered solns. were studied. The presence of two forms interconvertible with pH was ascertained by polarography. Adsorption waves were found in the alk. range of pH, and with $\Delta^4$-cholestenone-3 and deoxycorticosterone, also in acidic medium. With lower concns. of EtOH in the solns., catalytic waves were observed in acidic medium. The most suitable conditions for the analytical detn. of the total contents of $\Delta^4$-3-ketosteroids and for the detn. of mixts. of some steroids were described. The detn. of the sum of ketosteroids was best carried out in 0.1*N* LiOH at pH [illegible]. Deoxycorticosterone could be detd. in the presence of testosterone at pH 9.5, in the presence of methyltestosterone at pH 9.2, and progesterone in the presence of methyltestosterone at pH 9.2.

M. Hudlický

ZUMAN, P.

Chemical Abst.
Vol. 48
Apr. 10, 1954
Electrochemistry

2 5

The Hammet equation in polarography. P. Zuman (Polarog. Ústav, Prague). Chem. Listy 47, [illegible] (1953).—The modified Hammet equation [illegible] (Brockman and Pearson, J. Am. Chem. Soc. 74, 4128 (1952)) can be applied to meta- and para-derivs. of PhNO2, PhI, (PhN:)2, and azonaphthalene. The half-wave potentials measured at the same conditions must be taken.

B. Erdös

MT

Translation /M

ZUMAN, P.

Chemical Abst.
Vol. 48
Apr. 10, 1954
Electrochemistry

9

9

Polarographic reversibility of the diethyldithiocarbamate-bis(diethylthiocarbamoyl) disulfide system. P. Zuman, R. Zumanová, and B. Souček (Polarog. Inst., Prague). Chem. Listy 47, 1023-[illegible] (1953).—In addn. to an adsorption pre-wave, the system gave but one oxidation-reduction wave. The anodic half-wave potential differed from the cathodic one by 30 to 100 mv., according to the concn. of depolarizer and of EtOH and to the pH of the soln.

B. Brdos

ZUMAN, P.

Chemical Abst.
Vol. 48
Apr. 10, 1954
Electrochemistry

(a) 7

Polarographic behavior of ferrocyanide, ferricyanide, and Prussian blue. P. Zuman (Polarog. Ustav, Prague, Czech.). *Chem. Listy* 47, 1621-5(1953).—The system ferrocyanide (I)-ferricyanide (II) was reversible even on the dropping Hg electrode. In the reaction of II with $Fe^{++}$ in 0.1*N* $H_2SO_4$ the equivalence point was indicated by a drop of the cathodic current to nearly zero. In excess $Fe^{++}$ the anodic wave also disappeared. This reaction could be suitable for the polarometric titration. Reaction of I with $Fe^{+++}$ showed a somewhat different behavior.
E. Erdös

NK

ZUMAN, P.

Vliv konstituce na polarograficke chovani organickych latek. (Vyd. 1.) Praha, Nakl. Ceskoslovenske akademie ved, 1954. p. 63. (Ceskoslovenska akademie ved. Mala knihovnice chemickych listr. Sekce chemicka, sv. 1) Effect of constitution on polarographic behavior of organic substances. 1st ed. bibl., diagrs., graphs, index, tables

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065620004-6"

ZUMAN, P.; SANTAVY, F.

Polarographic study of the cyanohydrin reaction in an alkaline medium [in German with summary in Russian]. Sbor.Chekh.khim.rab. 19 no.1:174-176 F '54. (MLRA 7:6)

Polarographic Institute, Czechoslovak Academy of Sciences

1. Polarographisches Institut, Tschechoslowakische Akademie der Wissenschaften, Praha, und Institut für Chemie der medizinischen Fakultät, Olomouc. (Polarograph and polarography) (Cyanohydrin)

Prague and the Chemical Institute of the Medical Faculty, Olomouc

ZUMAN, P.

"Significance of the Hammett Equation in Polarography." p. 597, (COLLECTION OF CZECHOSLOVAK CHEMICAL COMMUNICATIONS. SBORNIK CHEKHOSLOVATSKIKH KHIMICHESKIKH RABOT, Vol. 19, No. 3, June 1954, Praha, Czechoslovakia)

SO: Monthly List of East European Accessions, (EEAL), LC, Vol. 4 No. 5, May 1955, Uncl.

ZUMAN, P.

CZECH

ZUMAN, Petr.

Chemical Abstracts
May 25, 1954
Electrochemistry

1

(2)

Effect of structure on the polarographic behavior of organic compounds. Petr Zuman (Czech. akad. věd, Prague). Chem. Listy 48, 94-[illegible](1954).—A review with 233 references. M. Hudlický

ZUMAN, PETR

8

3

A polarographic study of nitroprusside. Petr Zuman and Miroslav Kabát (Polarograf. ústav, ČSAV, Prague, Czech.). *Chem. Listy* 48, 368-77(1954).—The polarographic behavior of the nitroprusside (I) ion in aq. buffer solns. and in $H_2SO_4$ solns. was studied. The reduction of the nitrosyl group in I is different from the reduction of the $NO^+$ ion. The blue product of the photolytic oxidation of I and the oxidation product of I in alk. soln. show a polarographic behavior similar to that of ferrocyanide. At 20° the equil. const. of the reaction: $[Fe(CN)_5NO]^{--} + 2 OH^- \rightleftharpoons [Fe(CN)_5NO_2]^{4-} + H_2O$ is $1.35 \times 10^{-6}$. The reactions of I with $Me_2CO$ and with secondary amines are discussed.

E. Erdös

11-13-54

[illegible] of barbituric acid derivatives. III. Derivatives of [illegible] of [illegible] derivatives of [illegible]

Po[illegible]

P. Zuman [illegible]

Polarogr[illegible]

[illegible]

electrode. The anodic wave is primarily [illegible] reaction of 2 mols of [illegible] with 3 mols of barbital to form [illegible] [illegible] adsorbed on the [illegible]

ZUMAN, P.; ZUMANOVA R.; TEISINGER, J.

Polarography of some sulfur compounds. IV. Anodic waves of 2.3-dimercaptopropanol. In German. p. 139

Vol. 20, no. 1, Feb. 1955
SBORNIK CHEKHOSLOVATSKIKH KHIMICHESKIKH RABOT
Praha, Czecheslovakia

So: Eastern European Accession Vol. 5, No. 4, April 1956

ZOMAN, Petr

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065620000004-6"

CH Effect of adsorption on anodic polarographic waves: formation of nonturbulent maxima and minima. Petr Zuman. *Collection Czechoslov. Chem. Communs.* 20, [illegible] (1955). (In German).—See C.A. 49, 7420. E. Leininger

ZUMAN, Petr.

Polarography of urea and thiourea. V. Anodic depolarization in solutions of uracil, its derivatives, and 6-methyl-2-thiouracil. Osvald Manoušek and Petr Zuman. *Collection Czechoslov. Chem. Communs.* 20, [illegible] (1955)(in German).—See *C.A.* 49, 11450g. R. J. C.

CH

(1)

ZUMAN, PETR

CZ

Polarography of sulfur compounds. V. Heavy metal [illegible]

[illegible] studies [illegible]

[illegible] height of the polarographic [illegible]

[illegible] reduction wave of the [illegible]

[illegible] wave of the [illegible] complexes [illegible]

LOMAN, PETR

ZUMAN, P.

Polarography of some sulfur compounds. VII. Anodic depolarization in solutions of [illegible] and [illegible] Zuman. [illegible]

[illegible] Polarographic behavior of [illegible] phenomena of [illegible] The behavior of [illegible] are suitable for analytical purposes. [illegible]

CZECHOSLOVAKIA/Analytical Chemistry - Analysis of Organic Substances G-3

Abs Jour : Referat Zhur - Khimiya, No 2, 1957, 4872

Author : Manousek Osvald, Zuman Peter

Title : Polarography of the Derivatives of Urea and Thiourea. IX. Polarographic Determination of Derivatives of Thiobarbituric Acid and 4-Methyl-2-Thiouracil in Medicaments

Orig Pub : Ceskosl. farmac., 1956, No 4, 193-195; Pharmazie, 1956, 11, No 8, 530-533

Abstract : Determiantion of derivatives of thiobarbituric acid (I) is based on dissolution of $\sim$ 0.3 g of the preparation in 100 ml water, 20-fold dilution with 0.1 M solution of NaOH and polarographic investigation in an atmosphere of $N_2$. The polarograph of V 301 type is equipped with a mercurosulfate electrode; height of reservoir 75 cm, duration of fall of the drop 2.4 seconds. The results

Card 1/3

CZECHOSLOVAKIA/Analytical Chemistry - Analysis of Organic Substances G-3

Abs Jour : Referat Zhur - Khimiya, No 2, 1957, 4872

subjected to polarography.
In Alkyron tablets the polarographic determination showed 30.4% V, while the bromate- arsenite method showed 29.8% V.

Communication VIII, see RZhKhim, 1956, 77746.

Card 3/3

ZUMAN, P.

[illegible]

ZUMAN, P.

The polarographic determination of vitamins. In German. p. 279. (Acta Chimica, Vol. 9, No. 1/4, 1956, Budapest, Hungary)

SO: Monthly List of East European Accessions (EEAL) LC, Vol. 6, No. 8, Aug 1957. Uncl.

ZUMAN, P.

ZUMAN, P. Polarography of some sulfur compounds. V. Complexes of 2, 3-dimercaptopropanols with heavy metals. In German. p. 123. Vol. 21, No. 1, Feb. 1956. SBORNIK CHEKHOSLOVATSKIKH KHIMICHESKIKH RABOT. COLLECTION OF CZECHOSLOVAK CHEMICAL COMMUNICATIONS. Praha, CZECHOSLOVAKIA.

SOURCE: EAST EUROPEAN ACCESSIONS LIST (EEAL) VOL 6, NO 4--APRIL 1957

ZUMAN, P. and ZAHRADNIK, R.

"Kinetics and Mechanism of the Decomposition of Dithio-Carbamic Acids in Acid Solution. Polarographic Study," Zeitschrift fuer Physikalische Chemie, p. 135, Ded 1957

ZUMAN, P.

Importance of buffers in analytic chemistry.

p. 172 (Chemie, Vol. 9, no. 2, Apr. 1957, Praha, Czechoslovakia)

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

ZUMAN, P.

A summer school on physical chemistry in Cambridge.

p. 298. (Chemie, Vol. 9, no. 2, Apr. 1957, Praha, Czechoslovakia)

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

ZUMAN, P.

The increased number of publications on analytic chemistry issued during the years following the Second World War.

P. 609 (Chemie) Vol. 9, No. 4, Aug. 1957, Czechoslovakia

SO: MONTHLY INDEX OF EAST EUROPEAN ACCESSIONS (EEAI) LC. - VOL. 7, NO. 1, JAN. 1958

ZUMAN, P.

CZECHOSLOVAKIA / Physical Chemistry. Electrochemistry. B

Abs Jour: Ref Zhur-Khimiya, No 19, 1958, 63904

Author : Zumanova R; Teisinger J; Zuman P
Inst : Not given
Title : The Influence of Albumens on the Polarographic Behavior of Metals and Their Compounds with 2.3-Dimercaptolpropanol.

Orig Pub: Chem. zvesii, 1957, 11, No 9, 517-527

Abstract: Waves of Au, Ag, Hg, Cu, Sb, Bi, Zn, Cd and Pb are reduced in a citric buffer solution (pH 6.3) with the addition of albumin (I) during which the dependence $i_{pr}$ on the I concentration is exponential. These data are explained by the

Card 1/3

CZECHOSLOVAKIA / Physical Chemistry. Electrochemistry. B

Abs Jour: Ref Zhur-Khimiya, No 19, 1958, 63904

Abstract: complex formation of metals (M) with (I); in addition, the Au, Ag, Hg and Bi complexes are not reducible and in the absence of I the waves of these M disappear, while Cu, Cd and Pb complexes are reduced, and their waves are reduced with the addition of I to a somewhat limited value, which is determined by the coefficient of diffusion of these complexes. An adsorption retardation of the process simultaneously appears, which indicates the character of the $i_{pr}$ dependence of the reduced waves on the height of the reservoir Hg and the reduction of the Cu wave only in the limited area of potentials (trough). With the addition of I to the solutions of complexes of M with 2.3--dimercaptolpropanol (II), the M waves are also reduced but only because of the adsorption

Card 2/3

ZUMAN, P.; ZUMANOVA, R.

"Polarography of some sulfur compounds. XI. Oxidation and some other reactions of the 2,3-dimercaptopropanol. In German."

p. 929 (Collection of Czechoslovak Chemical Communications. Sbornik Chekhoslovatskikh Khimicheskikh Rabot.) Vol. 22, no. 3, June 1957. Prague, Czechoslovakia

SO: Monthly Index of East European Accessions (EEAI) LC. Vol. 7, no. 4, April 1958

ZUMAN, PETR

CZECHOSLOVAKIA/Analytical Chemistry - Analysis of Organic Substances. E-3

Abs Jour: Referat Zhur-Khimiya, No 5, 1958, 14234.

Author : Zuman Petr, Krupicka Josef

Inst :

Title : Polarographic Method of Studying the Interaction of Periodic Acid with Glycols.

Orig Pub: Chem. listy, 1957, 51, No 3, 424-432.

Abstract: The method of polarographic determination of periodic acid (I) is utilized for a continuous study of the interaction of salts of I with glycols. The advantage of the above-stated method is its speed which permits to study the kinetics of the reaction, as well as its specific nature, small expenditures of materials and the possibility of determining of a number of substances. A vessel is described which makes it possible rapidly to add and withdraw the solutions, effect rapid and efficient agitation and to eliminate, as

Card : 1/2

CZECHCSLOVAKIA/Organic Chemistry. Theoretical and General Questions on Organic Chemistry. G-1

Abs Jour: Ref Zhur-Khim., No 13, 1958, 43207.

Author : Zuman Petr, Sicher Jiri, Krupicka Josef, Svoboda Miroslav.

Inst :

Title : Stereochemical Studies. VII. Oxidation of Diastereoisomeric Diols of RCH(OH)CH(OH)R' Type with Periodate.

Orig Pub: Chem. listy, 1957, 51, No 6, 1068-1081.

Abstract: Polarographic study (see Communication VI, RZhKhim, 1956, 78180) of the rate of oxidation of nine pairs of acyclic diols of RCH(OH)CHCHR' type with periodate at different pH (2-7.9) and diol concentration ($6 \cdot 10^{-5} - 9 \cdot 10^{-4}$ M). Investigated were ethylene glycol (I), threo- and erythro-isomers of

Card : 1/3

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CZECHOSLOVAKIA/Organic Chemistry. Theoretical and General Questions on Organic Chemistry. G-1

Abs Jour: Ref Zhur-Khim., No 13, 1958, 43207.

ment taking place after the interaction of diol with $NaIO_4$. A refutation is presented of the assumption that the determinant stage is the decomposition of the cyclic intermediate product of interaction of diol and $HIO_4$ or $IO_4^-$, direct interaction of diol with $NaIO_4$ or ionization of diol, preceding the reaction with $NaIO_4$. At all values of concentration and pH the threo-epimers are oxidized more rapidly than erythro-epimers. Thus, from the rate of oxidation it is possible to determine the configuration of substances of this type.

Card : 3/3

ZUMAN, P.E. BRAUDE AND F. NACHOD

"Determination of Organic Structures by Physical Methods; a book review. p. 1386."

p. 1386 (Chemicke Listy, Vol. 51, No. 7 July 1957, Praha, Czechoslovakia.)

Monthly Index of East European Accessions (EEAI) LC, Vol. 7, No. 7, July 1958

ZUMAN, P

Czechoslovakia

Polarographic Institute, Czechoslovak Academy of Science -- Prague (Ceskoslovenska akademia věd -- Praha)

Prague, Collection of Czechoslovak Chemical Communications, No 9, 1962, pp 2035-2056

"Quantitative Treatments of Substituent Effects in Polarography. IV. Linear Free Energe Relationships in Quinoid Series."

ZUMAN, P; SÜE-YUAN TANG.

Czechoslovakia

Polarographic Institute, Czechoslovak Academy of Science -- Prauge; Petroleum Research Institute, Chinese Academy of Science, Talien, China - (for Tang)

Prague, Collection of Czechoslovak Chemical Communications, No 4, 1963, pp 829-837

"Fission of Activated Carbon-nitrogen and Carbon-sulphur Bonds. III (PartII - for PartI see Journal 27, 187 (1962) and Reduction of the C-S Bond in Methyl Butyl Phenacyl Sulfonium Perchlorate."

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S/081/63/000/001/029/061
B144/B186

AUTHOR: Zuman, P.

TITLE: Quantitative estimation of substituent effects in polarography. II. Free energy relations in monocyclic heterocyclic series. III. Substituents in ortho-position

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 1, 1963, 102, abstract 1B712 (Collect. Czechosl. Chem. Communs, v. 27, no. 3, 1962, 630-647; 648-666 [Eng.; summary in Russ.])

TEXT: II. Linear relations are suggested for the dependence of $E_{1/2}$ shifts in monocyclic heterocyclic compounds on the changes in their structure. The following cases are considered: (1) the heterocyclic ring is reduced, whereby the substituent is either directly in the ring, or its effect is transmitted through the benzene ring (the substituent being in meta- or para-position); (2) a group in the side chain is reduced, whereby the effect of the substituent is transmitted either through the heterocyclic ring, or the nature of the heterocyclic ring itself affects the reduction,

Card 1/2

or the substituent is directly in the side chain. Examples of compounds are given and equations are suggested for each of the cases discussed. III. For ortho-substituted compounds of the aromatic series, Hammett's equation cannot be used; Taft's equation is suitable for estimating the effect of ortho-substituents. This equation was applied for establishing the connection between the nature of the ortho-substituent and $E_{1/2}$. It is also suggested that an estimation of this effect, be based on the value of the "ortho-shift"

$\Delta = E_{1/2}^{o-X} - E_{1/2}^{p-X}$ (the superscripts indicate that the substituent X is in ortho- or para-position). Based on these conceptions, frequent cases of the effect of ortho-substituents are considered, which are connected with the disturbance of the coplanarity of the molecule and with the formation of an intramolecular hydrogen bond. Communication I see RZhKhim, 1962, 5B515. [Abstracter's note: Complete translation.]

S/081/63/000/00.../...
B193/B102

AUTHORS: Zuman, P., Chodkowski, J.

TITLE: Polarography of nonbenzenoid aromatic and related compounds. VIII. Adsorption processes during the electroreduction of the tropylium ion

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 2, 1963, 90, abstract 2B565 (Collect. Czechosl. Communs, v. 27, no. 4, 1962, 759-774 [Eng.; summary in Russ.])

TEXT: The tropylium ion reveals up to five waves in buffer solutions with pH < 4. The first three are adsorption waves arranged close together: $\varphi_{1/2}$ = -0.16, -0.23 and -0.28 v (with respect to satur. c. e.) in the Britton-Robinson buffer solution. The total i of the four waves is diffusional. For the fourth wave $\varphi_{1/2}$ = -0.65 v. The fifth wave ($\varphi_{1/2}$ = -1.2 v) seems to be produced by capacitative phenomena for $\varphi$ of desorption in conjunction with a polarographic maximum of the second kind

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The first adsorption wave corresponds to plane orientation; theoretically 29 $A^2$ cathode surface covers one heptagon ring of reaction product. The second adsorption wave corresponds to a different orientation; finally, the third wave corresponds to the formation of a semi-molecular layer. For the fourth wave the product film is desorbed (see also RZhKhim, 1959, no. 9, 30670). For commun. VII see RZhKhim, 1962, 6B531. [Abstracter's note: Complete translation.]

ZUMAN, Pavel

International symposium on analytical chemistry in Birmingham. Vestnik CSAV 71 no.5:580-581 '62.

CZECHOSLOVAKIA/Analytic Chemistry. Analysis of Organic Substances.

E

Abs Jour: Ref Zhur-Khim., No 23, 1958, 77364.

Author : Zuman P., Krupicka J.

Inst :

Title : A Polarographic Method for the Study of Glycol Fission by Periodic Acid.

Orig Pub: Collect. czechosl. chem. commun., 1958, 23, No 4, 598-607.

Abstract: See RZhKhim, 1958, 14234.

Card : 1/1

Country : Czechoslovakia
Category : Organic Chemistry. Theoretical Organic Chemistry G-1
Abs. Jour. : Ref. Zhur.-Khimiya No. 6, 1959 19286
Author : Zuman, P.; Sicher, J.; Krupicka, J.; Svoboda, M.
Institut. :
Title : Stereochemical Studies. VII. Periodate Oxidation of Diastereoisomeric Diols of the Type R.CH(OH).CH(OH).R'.
Orig Pub. : Collect. czechosl. chem. commun., 1958, 23, No 7, 1237-1251
Abstract : See RZhKhim, 1958, 43207.

Card: 1/1

CZECHOSLOVAKIA / Physical Chemistry. Kinetics. Combustion. Explosives. Topochemistry. Catalysis. B-9

Abs Jour: Ref Zhur-Khimiya, No 23, 1958, 76707.

Author : Zahradnik, R. and Zuman, P.
Inst : Not given.
Title : Carbamates, Monothiocarbamates, and Dithiocarbamates. VIII. A Polarographic Study of the Kinetics and of the Mechanism of the Decomposition of Dithiocarbamic Acids in Acid Medium.

Orig Pub: Chem Listy, 52, No 2, 231-242 (1958) (in Czech).

Abstract: The mechanism of the decomposition of nine monoalkyl- and nine dialkyldithiocarbamates has been investigated as a function of $[H^+]$. The rate constant k for the decomposition has the form $k' = k[H^+]/([H^+] + K)$, where k' is the apparent

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Distr: 4E2c(j)

Steric effects on the catalytic evolution of hydrogen in ammoniacal cobalt solutions in the presence of *threo-* and *erythro*-phenylcysteine. P. Zuman (Polarograf. ústav, Čsl. akad. věd., Prague). *Chem. listy* 52, 1319-50(1958).—In the solns. contg. $Co^{+++}$ and $10^{-4}M$ phenylcysteine, polarographic catalytic waves were not observed, but they were well developed in solns. with $Co^{++}$. The catalytic wave of the erythro form was higher than that of the threo form of the same concn. The difference of the heights of both waves may be caused by different dissocn. consts. or by different stabilities of the $Co^{++}$ complex. P. Stráček

3-May

PETR ZUMAN

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Polarography of steroids. III. Polarographic reduction of the steroids with an 18-aldehyde group. Petr Zuman and Václav Černý (Polarograf. ústav, Čsl. akad. věd., Prague). *Chem. listy* 52, 1400-7.3(1958); cf. *C.A.* 49, 6740f.—Polarographic reduction of steroids which have an aldehydic group in position 18 and a branched chain in position 17 differed from the reduction of other aldehydes. The heights of their waves and the half-wave potentials did not depend on the pH value, which was explained by steric inhibition of hydration. The bulky 3α-dimethyl amino group of holarrhidine did not allow adsorption on the dropping Hg electrode. This substance did not show capacity effect and had a much lower efficiency in suppressing max. than the substances with a 20-dimethylamino group. F. Šeifert

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MY

99

ZUMAN, P.

"New trends in the qualitative analysis of organic compounds"

Chemicke Listy. Praha, Czechoslovakia. Vol. 53, no. 3, Mar 1959

Monthly list of East European Accessions (EEAI), LC, Vol. 8, No. 7, July 59, Unclas

ZUMAN, P. ; MANOUSEK, O.

Polarography of derivatives of urea and thiourea. V. Anodic depolarization in solutions of uracil, it derivatives, and 4-methyl-2-thiouracil. p. 668

CHIMICKE LISTY (Ceskaslovenska akademic ved. Ceskaslovensak spolecnost chemicks) Praha, Czechoslavaskia. Vol. 49, no. 5, May 1955

Monthly List of East European Accessions (EEAI) LC. Vol. 9/ no. 1, Jan 1960
Uncl.

ZUMAN, P. ; ZUMANOVA, R.

Polarography of some sulfur compounds. V. Complexes of 2, 3,- dimercapto-propanol with heavy metals. p. 652.

CHIMICKE LISTY (Ceskaslovenska akademic ved. Ceskaslovensak spolecnost chemicks) Praha, Czechoslavakia. Vol. 49, no. 5, May, 1955

Monthly List of East European Accessions (EEAI) LC, Vol. 9/ no. 1, Jan 1960
Uncl.

ZUMAN, P.

Steric effects in the polarography of organic compounds. p. 154.

CHEMICKE LISTY. (Ceskoslovenska akademie ved. Chemicky ustav) Praha, Czechoslovakia, Vol. 53, no. 2, Feb. 1959.

Monthly List of East European Accessions (EEAI), LC, Vol. 8, no. 11, Nov. 1959
uncl.

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|---|---|---|
| COUNTRY | : | GDR | 3-12 |
| CATEGORY | : | |
| ABS. JOUR. | : | RZKhim., No. 5 1960, No. 17174 |
| AUTHOR | : | Zuman, P. |
| INST. | : | Not given |
| TITLE | : | Steric Effects in the Polarography of Organic Compounds |
| ORIG. PUB. | : | Chem Listy, 53, No 2, 154-165 (1959) |
| ABSTRACT | : | A review article with a bibliography listing 58 titles. |

S. Zhdanov

CARD: 1/1

CARSKY, P.; ZUMAN, P.; HORAK, V.

Fission of activated carbon-nitrogen and carbon-sulphur bonds. Pt. 5. Coll Cz Chem 29 no.12:3044-3056 D '64.

1. J. Heyrovsky Institute of Polarography of the Czechoslovak Academy of Sciences, and Department of Organic Chemistry of Charles University, Prague. 2. Editorial Board Member, "Collection of Czechoslovak Chemical Communications" (for Zuman).

ZUMAN, P.; MANOUSEK, O.; HORAK, V.

Fission of activated carbon-nitrogen and carbon-sulphur bonds. Pt.6. Coll Cz Chem 29 no.12:2906-2912 D '64.

1. Jaroslav Heyrovsky Institute of Polarography of the Czechoslovak Academy of Sciences, and Institute of Organic Chemistry of Charles University, Prague. 2. Editorial Board Member, "Collection of Czechoslovak Chemical Communications" (for Zuman).

CZECHOSLOVAKIA

SESTAKOVA, I.; ZUMAN, P.; HORAK, V.

1. J. Heyrovsky Institute of Polarography, Czechoslovak Academy of Sciences (for Sestakova?); 2. Institute of Organic Chemistry, Karlova Univ., Prague (for ?)

Prague, Collection of Czechoslovak Chemical Communications, No 2, Feb 1966, pp 827-834

"Fission of activated carbon-nitrogen and carbon-sulfur bonds. Part 8: Elimination of $\beta$-piperidinoethyl phenyl sulfone methiodide and reaction of phenyl vinyl sulfone with hydroxyl ions."

ZUMAN, P.

CZECHOSLOVAKIA

CARSKY, P., ZUMAN, P., HORAK, V.

1. J. Heyrovsky Institute of Polarography, Czechoslovak Academy of Sciences, Prague - (for ?); 2. Department of Organic Chemistry, Karlova University, Prague - (for ?).

Prague, Collection of Czechoslovak Chemical Communications, No 12, December 1965, pp 4316-4336

"Fission of activated carbon-nitrogen and carbon-sulfur bonds. Part 7: Kinetics of ketol formation from $\alpha,\beta$-unsaturated ketones in alkaline media."

(For the 75th birthday of Academician J. Heyrovsky).

MANOUSEK, O.; ZUMAN, P.

Polarographic reduction of 2-(2-methyl-3-hydroxy-5-hydroxymethyl-4-pyridyl) thiazolidine-4-carboxylic acid. Coll Cz chem 29 no.7:1718-1722 Jl '64.

1. Polarographic Institute, Czechoslovak Academy of Sciences, Prague.

FEDORONKO, M.; ZUMAN, P.

Polarography of urea and thiourea derivatives. Pt. 13. Coll Cz Chem 29 no.9:2115-2133 S '64.

1. Jaroslav Heyrovsky Institute of Polarography, Czechoslovak Academy of Sciences, Prague. 2. Chemical Institute, Slovak Academy of Sciences, Bratislava (Present address for Fedoronko).

ZUMAN, P.

"Chemical kinetics" by J.C.Jungers and others. Reviewed by P. Zuman. Chem listy 58 no. 4:480-481 Ap '64.

ZUMAN, P.

Lectures on electroanalytic chemistry at the Congress of International Union of Pure and Applied Chemistry in London, 1963. Chem listy 58 no.1:54-58 Ja'64.

ZUMAN, Petr

"Oscillopolarographic measurement methods" by Robert Kalvoda. Reviewed by Petr Zuman. Chem prum 14 no.5:282 My '64.

1. Institute of Polarography, Czechoslovak Academy of Sciences.

ZUMAN, P.

"International Union of Pure and Applied Chemistry; 18th International Congress of Pure and Applied Chemistry, Montreal 1961; Special lectures from the Physical and Applied Chemistry Divisions." Reviewed by P. Zuman. Chem listy 57 no.9:935-936 S '63.

SUE-YUAN TANG; ZUMAN, P.

A new type of maximum on the limiting current of the reduction wave of phenacyl sulfonium ions. Coll Cs Chem 28 no.6:1524-1534 Je '63.

1. Polarographic Institute, Czechoslovak Academy of Sciences, Prague (for Zuman).
2. Petroleum Research Institute, Chinese Academy of Sciences, Talien, China (for Sue-Yuan Tang).

ZUMAN, Petr

Japanese polarography. Vestnik CSAV 72 no.3:396-397 '63.

ZUMAN, P.

Conference on the use of correlative equations in organic chemistry in Tartu, U.S.S.R. Chem listy 57 no.3:291-294 Mr '63.

ZUMAN, Petr

[redacted]

Conference on the use of correlation equations in organic chemistry. Vestnik CSAV 72 no.1:151-152 '63.

COUNTRY : Czechsoslovakia B-9
CATEGORY :

ABS. JOUR. : RZKhim., No. 23 1959, No. 81371

AUTHOR : Zahradnik, R.; Zuman, P.
INST. : Not given
TITLE : Carbaminate, Monothiocarbaminates and Dithiocarbaminates. VIII. Polarographic Studies of the Kinetics and Mechanism of Dithio- *
ORIG. PUB. : Collect. Czechosl. Chem. Communs., 1959, 24, #4, 1132-1145.
ABSTRACT : See RZKhim, 1958, #23, 76707.

CARD: 1/1

* carbaminic Acids Decomposition in the Acid Medium

ZUMAN, P., and others.

"Stereochemical studies. VII. Oxidation of diastereoisomeric diols of the type R.CH(OH). CH(OH). R' with periodate."

p. 1068 (Chemicke Listy, Vol. 51, no. 6, June 1957, Praha, Czechoslovakia.)

Monthly Index of East European Accessions (EEAI) LC, Vol. 7, No. 6, June 1958.

ZUMAN, P.

"Mechanism of homogenous reactions of organic matter. II. Methods of the reaction kinetics. (Conclusion)"

p. 482 (Chemie, Vol. 10, no. 6, June 1958, Praha, Czechoslovakia)

Monthly Index of East European Accessions (EEAI) LC, Vol. 7, no. 9, September 1958

Zuman, P.

PHASE I BOOK EXPLOITATION CZECH/2433

24(2,4)

International Polarographic Congress. 1st, Prague, 1951

Sborník I. Mezinárodního polarografického sjezdu. Díl 3: Hlavní referaty prednesene na sjezdu. Proceedings...Vol 3: Reviews Read at the Congress. Praha, Přírodovědecke vyd-ví [1952] 774 p. 2,000 copies printed.

Resp. Ed.: Jiří Koryta, Doctor; Chief Ed. of Publishing House: Milan Skalník, Doctor; Tech. Ed.: Oldřich Dunka.

PURPOSE: The book is intended for chemists, chemical engineers, and physicists.

COVERAGE: The book is a collection of reviews and original papers read at the International Polarographic Congress held in Prague in 1951. Uses of polarography in organic and inorganic analysis, biochemistry, medicine, and industrial chemistry are discussed. In that section, Reviews Read at the Congress, Russian and either German or English translations of each review are presented. In the section, Original Papers Read at the Congress, only those translations in Russian, German, and English which

Card 1/14

Proceedings (Cont.)

have not been published in Volume I are presented. The following scientists participated in the opening of the Congress: Professor Wiltor Kemula, Dean of the Faculty of Sciences, Warsaw; Doctor Jaromir Dolansky, Minister of Planning; Professor Jaroslav Herovsky, Chairmen of the Congress; and Professor Jaroslav Fukatko, Chairman of the Center for Scientific Research and Technical Development. References follow each paper.

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REVIEWS READ AT THE CONGRESS

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Proceedings (Cont.)



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