Krause, A.

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

Abs Jour: Ref Zhur-Khimiya, No 16, 1958, 53016.

Author : Krause, Volsky, Svetlyak.
Inst : Not given.
Title : Cuprous Oxide Activity in Regard to a Catalytic Mutation.

Orig Pub: Rocan. chem., 1957, 31, No 2, 413-419.

Abstract: In the decomposition of H_2O_2 the catalytic activity of pure Cu_2O (I) was investigated as well as that of a I used as a carrier for the series of ions; $[Fe(CN)_6]^{4-}$, Fe^{3+}, WO_4^{2-}, Co^{2+}, Al^{3+}, Ni^{2+}. It

Card 1/2

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

Abs Jour: Ref Zhur-Khimiya, No 16, 1958, 53016.

Abstract: was established that Al^{3+} and Ni^{2+} ions hinder the reaction and that the rest of the ions increase the catalytic activity of I. The effect of an addition of 2 ions to the carrier was investigated as well. It was establishod that the catalytic activity depends on the successive introduction of additions, that is, a so-called catalytic mutation takes place.

Card 2/2

15

KRAUSE, A.

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_2O_2.

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

Abstract: The catalytic activity of $Al(OH)_3$ (I) was studied at the oxidation of indigocarmine (II) with H_2O_2 at 37°. It was found that II is strongly adsorbed on I decreasing its catalytic activity. The ad-

Card 1/2

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_2O_2 is proposed.

Card 2/2

KRAUSE, A.

SCIENCE

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

DRAUSE, A. 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.

KRAUSE, A.

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

Abs Jour: Ref Zhur-Khimiya, No 18, 1958, 60248.

Author : ~~Alfons Krause,~~ Wlodzimierz Wolski, Mieczyslaw Jasiak.
Inst : -
Title : Effect of Ceria Earths on Catalytic Oxidation of As_2O_3.

Orig Pub: Roczn. chem., 1957, 31, No 2, 471-479.

Abstract: It was found that the catalytic oxidation of As_2O_3 by oxygen from the air in the presence of $Cu(OH)_2$ is strongly inhibited by admixtures of $La(OH)_3$, $Pr(OH)_3$, $Nd(OH)_3$ and $Sm(OH)_3$, while $Ce(OH)_3$ is an excellent activator of that reaction.

Card 1/1

KRAUSE, A.

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

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

Author : Alf~~ons Krause;~~ Stanislaw Zielinski, Maria Blawatska.
Inst : -
Title : Oxidation of As_2O_3 by Oxygen from Air at Various Temperatures in Presence of Mono- and Multicomponent 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.

Card 1/2

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

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

Abstract: It is shown that should new portions of I (solid or solute) be added during the reaction, the catalyst would act more regularly and a greater yield of reaction products per unit of catalyst mass would be obtained. The authors receive still more effective catalysts at the activation of II with other hydroxides (AgOH, $Au(OH)_3$, $MN(OH)_2$, $Co(OH)_2$, $Ni(OH)_2$ and $Mg(OH)_2$. 3-component catalysts were also studied, and [II/AgOH + $Co(OH)_2$] proved to be the best among them.

Card 2/2

KRAUSE, ALFONS

✓ **Anomalous behavior of certain oxidation-reduction catalysts.** Alfons Krause and Anna Witkowska (Univ. Poznań, Poland). *Roczniki Chem.* 31, 723-6(1957)(German summary).—Five $Zn(OH)_2$-Co^{++} catalysts of different compns. were prepd. under the same conditions, and their activity was studied in the indigo carmine (I) oxidation by H_2O_2 at 37°. Co^{++} ions were activators for $Zn(OH)_2$. Two of the catalysts showed identical activity. This is due to the fact that with increasing $Zn(OH)_2$ content the activity increases, reaches a max., and then falls. When the $Zn(OH)_2$ excess is too large, adsorption of I occurs, which in this state reacts very slowly.

A. Kręglewski

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KRAUSE, ALFONS

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On the catalytic oxidation of As_2O_3 by air in presence of $Mn(OH)_2$. Alfons Krause, Wlodzimierz Wolski, and Jerzy Trankiewicz (Univ. Poznan, Poland). *Roczniki Chem.* 31, 183-91(1957)(German summary).—As_2O_3 is almost completely oxidized by air in the presence of $Mn(OH)_2$ at pH ~12 and 20°. The reaction starts at a pH higher than 7-10. The time necessary for complete oxidation of As_2O_3 varies linearly with the content of $Mn(OH)_2$. The reaction is of 0.5 order, its rate being dependent on the rate of air flow. It was stated that $Cu(OH)_2$ or $Co(OH)_2$ are activators, whereas AgOH, $Mg(OH)_2$, and $Ni(OH)_2$ did not affect the activity of $Mn(OH)_2$. The action of $Mn(OH)_2$ is attributed to formation of Mn(II)-peroxy-compds. under the influence of OH^- in a strongly alk. medium. A. Kr—

KRAUSE, A.

6

Activation of cupric hydroxide as a catalyst for the oxidation of arsenic trioxide. Alfons Krause, Włodzimierz Wolski, and Kajetan Krystinski (Univ. Poznań, Poland). *Roczniki Chem.* 31, 793-800(1957)(German summary).—When 0.0646 g. As_2O_3 dissolved in 0.5*N* NaOH contg. 0.0261 g. $Cu(OH)_2$ (I) (pH 13-14) is oxidized by air at 18°, >98% yield is obtained after 24 hrs. The reaction takes place through the formation of Cu^{++} peroxy compds. I can be activated by $Co(OH)_2$, which itself has no activity. $Mn(OH)_2$ is an inhibitor for I, whereas AgOH is an activator only at higher temps., e.g. 37°.

A. Kreglewski

KRAUSE, ALFONS

4.

The catalytic activity and the surface area of certain heterogeneous catalysts. Alfons Krause and Aleksandra Binkówna (Univ. Poznań, Poland). *Roczniki Chem.* 31, 801-8(1957)(German summary).—The activity of amorphous $Fe(OH)_3$ (I), γ-FeOOH (II), and goethite, α-$Fe_2O_3.H_2O$ (III), in the H_2O_2 decompn., or HCOOH and indigo carmine oxidation by H_2O_2 at 37° was studied. It was highest for I, and lowest for III, in spite of which the surface of I, detd. by the B.E.T. method, was 5.15, of II 10.6, and of III 13.3 sq. m./g. Therefore, there is no relation between size of surface and catalytic activity. The latter depends on the ~~no. of active centers (active OH groups)~~, which is the greatest for I. The adsorption of indigo carmine was greater on II than on I or III. The activity of a catalyst may increase with size of surface only if it contains many and close-lying active centers. However, the increase in surface is meaningless for catalysts showing such low activity as III. A. K.

1/1

KRAUSE, ALFONS

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The preparation of ferromagnetic ferrites of some rare earths. Alfons Krause and Włodzimierz Welski (Univ. Poznań, Poland). Roczniki Chem. 31, 1343-4(1957)(German summary).—Different Fe hydroxides (cryst. or amorphous) were used to prep. ferromagnetic Sm ferrite (I); goethite (II) was the best. The ratio of Sm_2O_3 to Fe_2O_3 should be 1:10. A mixt. of Sm nitrate, or better acetate, with II is heated 1 hr. at 600°. The Curie point of I is 650°. To prep. ferromagnetic La ferrite the ratio La_2O_3 to Fe_2O_3 should be 1:3.5.

A. Kręglewski

Distr: 4E3d/4E4c

gR

KRAUSE, A

Ferromagnetic ferrites. A. Krause and W. Wolski. Pol. 41,360, Dec. 3, 1958. Ten parts γ-FeO.OH is treated with 4 parts of $Co(NO_3)_2.4H_2O$ in aq. soln. The mixt. is dried and roasted at 1000° for 1 hr. The $Co(FeO_2)_2$ thus obtained has permanent magnetic properties and may be used, e.g., in the production of recording tape. The substances can also be ground, dehydrated, and roasted as above. Thus, 55.6 parts $FeSO_4.7H_2O$ was ground with 27.8 parts $Co(NO_3)_2.6H_2O$ and roasted initially at 500° until the evolution of gases stopped, and then at 900–1100°. Ferromagnetic ferrites of Ba, Zn, Mg, Cd, Cu, Mn, Ni, etc., can be obtained in the same way from γ-, polyortho, and polyisoörtho Fe hydroxides with Fe_2O_3:MO ratios of 1-70:1-50.

K. Bojanowska

3

Krause A.

5953 542.973:547.211

4

4E3d

(1,3)

4E2c (j)

Krause A., Kotkowski S. **The Study of the Activity of a Commercial Catalyst Used in Methane Conversion.**

„Badanie aktywności i ocena katalizatora przemyslowego stosowanego do konwersji metanu". Przemysl Chemiczny. No, 8, 1958, pp. 511—515, 13 tabs.

The degree of activity of the commercial catalyst MgO/NiO used in methane conversion can be established by simple and rapid laboratory methods. The selective activity in this catalyst was examined and established in catalytic (peroxidative) oxidation of indigocarmine (1) and formic acid with H_2O_2 (2), as well as in H_2O_2 decomposition at 37°C. (3). It was found that the deactivated commercial catalyst (Z), no longer suitable for methane conversion, is more active than fresh catalyst (A) in the redox systems mentioned (1), (2), and (3). This excess can be greatly increased by locating on the surfaces (A) and (Z) suitable ion-promotors. A particularly sensitive system suitable for estimation of these catalysts is indigocarmine/H_2O_2 (1), especially when (A) and (Z) have been previously activated with Co^{2+} ions. At the high temperature of methane conversion (750°C.), the commercial catalyst gradually undergoes deactivation. This is caused not only by sintering and losing the radical structure of the system MgO/NiO, but also by chemical action of the silicate carrier (kaolin, cement), Magnesium and nickel silicates, formed under these conditions, are inactive as catalysts in methane conversion, but they show — as a new transitory phase — a very high activity in redox systems.

KRAUSE, A.

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37 27

✓ The structure of active metallic oxides and hydroxides. Alfons Krause (Univ. Poznań, Poland). *Bull. soc. amis sci. ~~et lettres Poznań~~* B14, 237-52 (1958) (in German); cf. *C.A.* 52, 813e.—A review. The structure of metallic oxides is discussed in relation to their catalytic activity. J. Steckl

JB

1/1

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

Abs Jour: Ref Zhur-Khim., No 1, 1959, 509.

Author : Krause A.
Inst : Soc. Amis sci. et lettres Poznan.
Title : The Particular Significance of Ions in Catalysis. (Ueber die besondere Bedeutung der Ionen in der Katalyse).

Orig Pub: Bull. Soc. Amis sci. et lettres Poznan, 1956-1957 (1958), B 14, 267-278.

Abstract: A review with 27 references.

Card : 1/1

B-

Country : Poland
Category : Physical Chemistry - Kinetics. Combustion. Explosions. Topochemistry. Catalysis.
Abs. Jour : RZhKhim., No 13, 1959 45162

Author : Krause, A.
Institut. : Not given
Title : The Formation, Reactions, and Aging of Hydrous Oxides and Oxides of Trivalent Iron

Orig Pub. : Bull Soc Amis Sci et Lettres Poznan, B14, 229-256, 1955-1957 (1958)

Abstract : A survey of work done on the genetic relationships between the various compounds formed by the system $Fe_2O_3-H_2O$. The bibliography lists 77 titles.

[illegible]. Zakharov

Card: 1/1

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27

✓Influence of calcium ions on catalytic oxidation of arsenic trioxide by air. Alfons Krauze and Maria Borkowska (Univ. Poznań, Poland). *Bull. soc. amis. sci. et lettres Poznan* B14, 201-6(1958)(in German).—As_2O_3 was oxidized by air in 0.5*N* NaOH to which $CuSO_4$ (0.0107 g. Cu per 0.1175 g. As_2O_3) was added, in the presence of $Ca(OH)_2$. Higher concns. ($c > 3.08 \times 10^{-3}$ g. Ca per 50 ml. of the reacting mixt.) inhibited the reaction; lower ones accelerated it; below a limit of $c = 4.74 \times 10^{-4}$ there was no effect.

J. Steckl

JB

1/1

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

Abs Jour: Ref. Zhur. - Khimiya, No. 4, 1959, 11110

Authors : ~~Krause A.,~~ Gleinert H., Gorgolewski L., Krezewinski Z.

Inst : Not given

Title : Amphoteric Mixed Hydroxides as Models of Peroxidases of an Inorganic Nature.

Orig Pub: Roczn. chem., 1958, 32, No. 1, 139-142

Abstract: The mixed hydroxides, into the composition of which, together with the ions of Fe^{2+}, there enter the ions of Cu^{2+} and Co^{2+}, Cu^{2+} and Ca^{2+} or Cu^{2+}, Mn^{2+} and Ni^{2+}, reveal an important catalytic activity (CA) at the oxidation of HCOOH by hydrogen peroxide at 37°. The CA of mixed hydroxides is greater than the CA of the separate components, entering into its composition.

Card 1/2

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

Abs Jour: Ref. Zhur. - Khimiya, No. 4, 1959, 11109.

Authors : Krause A., Borkowski S.
Inst : Not given
Title : The Structure and Catalytic Properties of Ferric Hydroxide, Formed During the Hydrolysis of Sodium Ferrite.

Orig Pub: Roczn. chem., 1958, 32, No. 1, 143-145.

Abstract: It is established that roentgeno-amorphous gel, formed during the hydrolysis of sodium ferrite, represents a product of polymerization of HCOOH by hydrogen peroxide and the reaction of H_2O_2 decomposition.--M. Sakharov

Card 1/1

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

Abs Jour : Referat Zhur--Khimiya, No. 11, 1959, 37910

Author : Krause, A.; and Lasiewicz, K.
Inst : ~~Not given~~
Title : The Effect of Trace Elements on the Catalytic Activity of γ - FeOOH

Orig Pub : Roczniki Chem, 32, No. 2, 403-404 (1958) (in Polish with a German summary)

Abstract : A marked increase in the catalytic activity of γ-FeOOH in the decomposition of H_2O_2 is observed when 10^{-6} gm Mn^{2+} or $4 \cdot 10^{-5}$ gm Mg^{2+} is adsorbed at the surface of catalyst specimens weighing 0.1 gm. The authors ascribe the observed effect to the formation of the ferrites of the adsorbed metals, which have incompletely formed lattices;

Card 1/2

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

Abs Jour : Referat Zhur--Khimiya, No. 11, 1959, 37910

the free radical-like structure of these compounds favors a chain mechanism for the reaction. -- M. Sakharov

Card 2/2

KRAUSE, A

CZECHOSLOVAKIA / Inorganic Chemistry. Complex Compounds. C

Abs Jour: Ref Zhur-Khimiya, No 8, 1959, 26711.

Author : Krause, A. and Zabtocka, K.
Inst : Not given.
Title : An Associate of Fe Polyorthohydroxide.

Orig Pub: Roczniki Chem, 32, No 2, 405-408 (1958) (in Polish with a German summary).

Abstract: The slow aging of $Fe(OH)_3$ proceeds according to the scheme: orthohydroxide (I) (amorphous) → polyorthohydroxide (amorphous) → polyorthohydroxide associate (II) → α-Fe_2O_3 (III). When I is dehydrated rapidly in an autoclave at 150° large crystals of III are formed without marked intermediate formations. When $FeCO_3$ is oxidized with hydrogen peroxide at 20° and $FeSO_4$ is treated with H_2O_2 and then with NH_3, the topochemical formation of orthohydrox-

Card 1/2

10

✓ On the action of promotors chemically related to the carrier. Alfons Krause, Benon Bethke, and Aniela Całkówna (Univ. ~~Poznan, Poland~~). *Roczniki Chem.* 32, 409-11(1958) (German summary); cf. *C.A.* 51, 1707*i*.—Cu^{++} are inhibitors in the catalytic action of CuO on the H_2O_2 decompn. The action of Mn^{++} on the catalytic activity of MnO_2 is similar. The high activity of the ternary catalyst, composed of Fe, Cu, and Mg hydroxides (Fe:Cu:Mg = 1:0.3:0.22) (I), which is the ideal model of respiration enzyme (*C.A.* 33, 3283^7), is increased upon addn. of identical ions. The content of a given component does not play the main role in the activity. These facts indicate that an exchange reaction should take place even between identical atoms leading to active or inactive complex compds. WO_4^{--} acts on I as a strong inhibitor in the HCOOH oxidation, but not in the H_2O_2 decompn. On the other hand Al^{+++} inhibits the action of I in the H_2O_2 decompn. but not in the HCOOH oxidation.

A. Kręglewski

JB
1/1

7

Various promoters of a multicomponent catalyst. Halina Karpińska and Alfons Krause (Univ. Poznan, Poland). *Roczniki Chem.* 32, 671-3(1958)(German summary).—The activity of catalysts composed of Fe, Cu, and Mn hydroxides in the oxidation of HCOOH with H_2O_2 at 37° was investigated. The x-ray amorphous ortho-ferrihydroxide showed the highest activity. A mixed catalyst contg. the hydroxides in the wt. ratio Fe_2O_3:CuO:MnO = 2:1:$^1/_2$ shows a super-additive activity. A. Kreglewski 4

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9-9

COUNTRY : Poland B-9
CATEGORY :

ABS. JOUR. : RZhKhim., No. 14 1959, No. 48823

AUTHOR : Krause, A. and Nowak, Z.
INST. : Not given
TITLE : On the Effect of the Carrier and of the Promoter Concentration on the Catalytic Mutation of a Complex Multicomponent Catalyst
ORIG. PUB. : Roczniki Chem, 32, No 3, 675-678 (1958)

ABSTRACT : The authors have investigated the activity of three-component catalysts obtained by mixing three solutions containing Cu(2+), Co(2+), and $[Fe(CN)_6]^{4-}$ in concentrations of 1 mg/ml, in the decomposition of H_2O_2. It is shown that maximum activity is obtained by the combination Cu(2+) + Co(2+) + $[Fe(CN)_6]^{4-}$ and that minimum activity is obtained with the combination $[Fe(CN)_6]^{4-}$ + Cu(2+) + Co(2+). When these ions are precipitated on a $Cd(OH)_2$ carrier, the

CARD: 1/2

COUNTRY : Poland

CATEGORY :

B-9

ABS. JOUR. : RZhKhim., No. 14 1959, No. 48828

[illegible] :

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[illegible] :

ORIG. PUB. :

ABSTRACT : optimum combination was found to be carrier + $Co(2+)$ + $[Fe(CN)_6]^{4-}$ + $Cu(2+)$; the combination carrier ($[Fe(CN)_6]^{4-}$ + $Co(2+)$ + $Cu(2+)$ was found to possess minimum activity. As the concentration of ions in solution is decreased, the order of mixing of the solution has a smaller effect on the catalytic activity of the catalysts obtained (the 'catalytic mutation' effect disappears).

M. Sakharov

CARD: 2/2

B-47

Distr: 4E2c

Gold as promoter and inhibitor in catalytic oxidation-reduction reactions. Alfons Krause, Maria Bławacka, and Krystyna Markowska (Univ. Poznań, Poland). *Roczniki Chem.* 32, 879-80(1958)(German summary).—AuOOH (I) increases considerably the activity of $Cu(OH)_2$ (II) in the air oxidation of As_2O_3 dissolved in NaOH soln. (pH 13). The promoter action was noted at 37° but not at 20° and is significant even at concns. of I equal to 1:5 × 10^6. Analogous action is shown by I in H_2O_2 decompn. in the presence of $Mg(OH)_2$ (III). I without II or III does not show any activity in these reactions. In the indigocarmine oxidation in presence of III, I shows a reverse behavior, acting as an inhibitor.

A. Kręglewski

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Krause, A.

Distr: 4E2c

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27

The catalytic properties of metallic silver and its poisoning. Alfons Krause and Anastazja Hermannówna (Univ. Poznań, Poland). *Roczniki Chem.* 32, 071-3(1958)(German summary).—The catalytic activity of Ag in H_2O_2 decompn. at 37° increases if the same piece is again immersed in fresh H_2O_2 soln. This is probably due to formation of colloidal Ag with intermediate formation of Ag_2O or Ag peroxide. The corrosion of Ag is accelerated by HCOOH. The action of Ag in the benzidine reaction is strongly poisoned by traces of As_2O_3, NaCN, $HgCl_2$, or NaF. Ag acts as an inhibitor in the indigocarmine decoloration, contrary to other noble metals.

A. Kreglewski

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27 27

27 Silver oxide as promotor and inhibitor of a $Fe(OH)_3$/$Cu(OH)_2$ double catalyst. Alfons Krause and Alicja Turowska (Univ. Poznań, Poland). Roczniki Chem. 32, 975-7 (1958)(German summary).—A catalyst prepd. by simultaneous pptn. of Fe and Cu hydroxides is very active in the oxidation of HCOOH with H_2O_2. Added Ag_2O acts as a promotor or inhibitor depending on its content and the reaction temp. The catalyst contg. the metals in the ratio 1 Fe: $^1/_3$ Cu: $^1/_1$ Ag at 37° is more active than that contg. 1 Fe: $^1/_3$ Cu, although pure Ag_2O is inactive. At 70°, Ag_2O acts as an inhibitor, if present in the above ratio, and even at 37° if its content is higher. A qual. explanation is suggested. —A. Kręglewski

TH

Krause, A.

Distr: 4E2c(j)

Nickel(II) ferrocyanide as carrier of multicomponent catalysts. Alfons Krause and Jolanta Kowalczyk (Univ. Poznań, Poland). *Roczniki Chem.* 32, 979-81(1958)(German summary).—Pure $Ni_2Fe(CN)_6$ (I) pptd. at 20° is slightly active in the H_2O_2 decompn. reaction. Cu^{++}, Pb^{++}, Mn^{++}, Fe^{+++}, Co^{++}, Ni^{++} ions adsorbed on the surface of I form superactive multicomponent catalysts even if present in trace amts. Some ions, e.g. Mg^{++}, UO_2^{++}, and Zn^{++} act as inhibitors, which is probably due to formation of stable and thus inactive complexes.

A. Kręglewski

KRAUSE, A.

4
4E2c

Increased catalytic activity of some noble metals due to scratching their surfaces. Alfons Krause and Anastazja Hermann (Univ. Poznań, Poland). *Roczniki Chem.* 32, 1026-31(1958)(German summary).—Scratching increases considerably the catalytic activity of Pt and Pd-Au H_2O_2 decompn. or HCOOH oxidation, but has no influence on the activity of Au. The effect is discussed as due to formation of radicals (*C.A.* 44, 10451*i*) and may be related to induced emission of electrons from a solid surface. A. K.

ac

ALFONS KRAUSE

Distr: 4E2c

Inactive bivalent iron. Alfons Krause and Aleksandra Binkówna (Univ. Poznan, Poland). *Roczniki Chem.* 32, 1045-52(1958)(German summary).—Artificial magnetite, in spite of its content of Fe^{++}, can be inactive in oxidation-reduction systems. The electronic transfer necessary for a catalytic reaction can be induced only after adding suitable ions, such as Cu^{++}: $Fe^{++} + Cu^{++} + Fe^{+++} \rightarrow Fe^{+++} + Cu^{+} + Fe^{+++}$, etc. The inducing effect was noted even at a diln. of 1:10 million.

A. Kręglewski

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V The activating action of calcium in multicomponent catalysts. 7 Alfons Krause and Ludwik Schulz (Univ. Poznań, Poland). Roczniki Chem. 32, 1191-3(1958)(German summary).—$Ca(OH)_2$ shows superadditive activity in the ternary catalyst composed of $Fe(OH)_3$, $Cu(OH)_2$, and $Ca(OH)_2$ when acting on the H_2O_2 decompn. at 37°. Pure $Ca(OH)_2$ is inactive. The activity of lime appears usually in complexes with Cu^{++}. The possible radical structure of such catalysts is discussed. A. Kreglewski

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COUNTRY : Poland 8-9
CATEGORY :

ABS. JOUR. : RZKhim., No. 22 1959, No. 77826

AUTHOR : Krause, A. and Turowska, A.
INST. : Not given
TITLE : On the Optimum Composition and Activity of Two-Component Catalysts as a Function of the Reaction Temperature
ORIG. PUB. : Roczniki Chem, 32, No 5, 1195-1197 (1958)

ABSTRACT : The authors have investigated the oxidation of HCOOH with H_2O_2 at 37-80° in the presence of the two-component catalyst $Fe(OH)_3$-$Cu(OH)_2$. It is shown that as the reaction temperature is changed, the maximum activity of the catalyst depends on its composition. At 37° the most active catalyst was found to be a mixture of hydroxides in which the Fe : Cu atomic ratio is 1 : $\frac{1}{2}$, while at 50-80° optimum activity was obtained with a mixture corresponding to an Fe : Cu ratio of $\frac{1}{3}$: 1.

O. Polotnyuk

CARD: 1/1

15

The influence of traces of elements on the catalytic activity of zinc hydroxide. Alfons Krause and Mieczyslaw Miedziński (Univ. Poznań, Poland). *Roczniki Chem.* 32, 1199-1201(1958)(German summary).—$Zn(OH)_2$ shows low catalytic activity in the H_2O_2-decompn. reaction at 37°. The Ag^+ and Mn^{++} ions increase considerably the activity of $Zn(OH)_2$ if their concn. is not too low. At very low concn., e.g. 2×10^{-7} g. Mn^{++}/0.1 g. $Zn(OH)_2$, the ions act as inhibitor. This phenomenon was observed also in expts. with other mixed catalysts (*C.A.* 49, 9371b). As to ternary catalysts, the most active corresponds to the compn.: 0.1 g. $Zn(OH)_2$ + 2×10^{-4} g. Co^{++} + 2×10^{-4} g. Mn^{++}.

A. Kreglewski

Distr: 4E2c

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The attractive forces and interaction between carrier and promotor ions. Alfons Krause and Janina [illegible] (Univ. Poznan, Poland). Roczniki Chem. 32, 1203-6 (1958) (German summary).—Expts. made with ferric hydroxide activated with Cu^{++} ions as catalysts in the oxidation of HCOOH by means of H_2O_2 give addnl. support to the hypothesis that between a carrier and activating ions there is a chem. exchange leading to a new compd. with radical structure. Such compds. show superadditive activity. A. [illegible]

4E3c

Coagulation of hydrophilic and hydrophobic hydrosols of ferric hydroxides. Alfons Krause and Maria Belzyńska (Univ. Poznań, Poland). Roczniki Chem. 32, 1385-7 (1958)(German summary).—There were prepd. by peptization with AcOH hydrophobic sols from γ-FeO$_2$H (I) and (α-Fe$_2$O$_3$.H$_2$O)$_n$ (II), resp., and a hydrophilic sol from roentgen-amorphous orthoferric hydroxide (III). Coagulation of the sols by means of Na chloride, sulfate, and citrate solns. confirmed the Schultze-Hardy rule. An excess of the citrate ion caused peptization, fastest for III and slowest for I.

A. Kręglewski

gRT

Factors improving the catalytic properties of x-ray amorphous orthoferric hydroxide. Alfons Krause and Stanislaw Magas (Univ. Poznań, Poland). Roczniki Chem. 32, 1393-5 (1958)(German summary).—X-ray amorphous Fe hydroxide (I) shows high catalytic activity in oxidation of HCOOH by means of H_2O_2 at 37° (*C.A.* 31, 4194⁶). Pptn. from a $FeCl_3$ soln. contg. 5*N* NaCl yields a more active I because of inhibiting action of NaCl on the aging of I. The optimum temp. of pptn. is 60°. The activity of I is increased when NaOH soln. is used for pptn. in place of NH_3 soln. A qual. explanation is offered. A. Kreglewski

7

Distr: 4E2c(j)

4w

1/1

4

2-May

1

COUNTRY : Poland
CATEGORY : B-9

ABS. JOUR. : RZKhim., No. 22 1959, No. 77827

AUTHOR : Krause, A. and Miedzinski, M.
INST. : Not given
TITLE : The Effect of Trace Elements on the Catalytic Activity of Zinc Hydroxide

ORIG. PUB. : Roczniki Chem, 32, No 5, 1999-1201 [sic] (1958)

ABSTRACT : The authors have investigated the decomposition of H_2O_2 at 37° in the presence of $Zn(OH)_2$ with additions of traces of Mn(2+) and Co(2+). $Zn(OH)_2$, Mn(2+), and Co(2+) by themselves exhibit insignificant activity. Of the mixtures tested, the most effective in the above reaction was found to be a catalyst of the following composition: 0.1 gm $Zn(OH)_2$ + $2\cdot10^{-6}$ gm Co(2+) + $2\cdot10^{-4}$ gm Mn(2+).

O. Polotnyuk

CARD: 1/1

42

COUNTRY : Poland

APPROVED FOR RELEASE: Monday, July 31, 2000 CIA-RDP86-00513R000826 20(

CATEGORY : B-9

ABS. JOUR. : RZhKhim., No. 1959, No. [illegible]

AUTHOR : Krause, A.; Lezuchowska, J.
INST. : -
TITLE : On the Forces of Attraction and the Inter-Action Between Carrier and Ions of Promoters

ORIG. PUB. : Roczn. chem., 1958, 32, No 5, 1203-1205

ABSTRACT : Study of promoter action of Cu^{2+} ions on the catalytic activity (CA) of roentgen-amorphous orthohydroxide of iron (I) and gamma-FeOOH (II), in relation to oxidation of HCOOH with hydrogen peroxide at 37°. It is shown that CA of I, II, and Cu^{2+}-ion, taken singly, is considerably lower than CA of gels activated with Cu^{2+} (1 mg Cu^{2+} per [illegible] g I or II). It was ascertained that CA of I and II does not depend on whether they are impregnated with Cu^{2+} solution prior to addition to reaction mixture of HCOOH and H_2O_2, or the solution of Cu^{2+} is added directly to the reaction mixture after I (or II) has been added to the mixture. -- O. Polotnyuk.

CARD:

POLAND/Physical Chemistry - Colloid Chemistry. Dispersed Systems. B

Abs Jour : Ref Zhur Khimiya, No 19, 1959, 67453

Author : Krause, Alfons; Belzinska, Maria

Inst : -

Title : Coagulation of Hydrophyllic and Hydrophobic Hydrosols of Hydrohydroxides of Trivalent Iron.

Orig Pub : Roczn. chem., 1958, 32, No 6, 1385-1387

Abstract : The x-ray crystallic metahydroxides of Fe: γ -FeOOH and goethite $(\alpha\text{-}Fe_2O_3.H_2O)_n$ give slightly stable acetasols of a hydrophobic character on peptization in CH_3COOH. Under the same conditions, Fe orthohydroxide gives rise to a stable hydrophillic sol. Electrolyte coagulation of both types of sols was studied; electrolytes: Na chloride, sulfate, and citrate. It was shown that the coagulation threshold for hydrophobic sols is considerably below that for the hydrophillic ones. In conformity with the Schultz-Gardi rule, the citrate ion

Card 1/2

POLAND/Physical Chemistry - Colloid Chemistry. Dispersed Systems. B

Abs Jour : Ref Zhur Khimiya, No 19, 1959, 67455

has the strongest coagulating action. Excess citrate causes overcharge of positive hydrosols; apparently, Fe citrate intracomplex anionic compounds are formed during overcharging. -- I. Slonim.

Card 2/2

CATEGORY : Physical Chemistry. Kinetics. Combustion. Explosions. Topochemistry. Catalysis

ABS. JOUR. : RZKhim., No. 1 1960, No.553

AUTHOR : Krause, A.; Ciecierska, D.

INST. : -

TITLE : On Inorganic Heterogeneous Catalyzers of Ferrite Type Accelerating the Hydrolysis of Starch

ORIG. PUB. : Roczn. chem., 1958, 32, No 6, 1389-1392

ABSTRACT : A study was made of the hydrolysis of starch in a solution of H_2O_2 at 37° in the presence of $Fe(FeO_2)_3$ (I), $Cu(FeO_2)_2$ (II), as well as of II with the addition of Mn^{+2}. It was shown that II is more active than I and that Mn^{+2} (1 mg per 0.01 g of II) promotes II. The speed of hydrolysis of starch is proportional to the concentration of H_2O_2 and inversely proportional to the concentration of starch. The speed of

CARD: 1/2

CATEGORY : Physical Chemistry. Kinetics. Combustion. Explosions. Topochemistry. Catalysis

ABS. JOUR. : RZKhim., No. 1 1960, No. 541

AUTHOR : Krause, A.; Magas, S.

INST. : ——

TITLE : On the Factors Influencing Improvement of the Catalytic Properties of Roentgeno-Amorphous Ortho-Iron Hydroxide

ORIG. PUB. : Roczn. chem., 1958, 32, No 6, 1393-1395

ABSTRACT : It is pointed out that the roentgeno-amorphous ortho-hydroxide of iron, prepared by precipitation from the solution of $FeCl_3$, saturated with a solution of NH_3 at room temperature and dried in air, is a good catalyzer (C) for the oxidation of HCOOH by hydrogen peroxide at 37°. According to the authors, the catalytic activity of C is determined by the size of its surface and the presence in it of hydroxyl

CARD: 1/3

COUNTRY :
CATEGORY :
B

ABS. JOUR. : RZKhim., No. 1 1960, No. 541

AUTHOR :
INST. :
TITLE :

ORIG. PUB. :

ABSTRACT cont'd : groups. By precipitation of the catalyzer from the solution of $FeCl_3$ in 5 n. NaCl with a solution of NH_3, or from the aqueous solution of $FeCl_3$ with a solution of NaOH, more active samples than C were obtained* The positive action of solutions of NaCl and NaOH is explained by the stabilization of the surface of the catalyzer or by the activation of its hydroxyl groups. The additions of solid NaCl lead to

*The additions of solid NaCl to C decrease its activity.

CARD: 2/3

B-37

COUNTRY
CATEGORY

ABS. JOUR. : RZKhim., No. 1 1960, No. 541

AUTHOR :
INST. :
TITLE :

ORIG. PUB. :

ABSTRACT cont'd : decrease of the surface of C. It was noted that with increase of the temperature of the precipitation of C from 10 to 70°, the activity of C passes through its maximum at the temperature of precipitation of 60°.-- O. Polotnyuk

CARD: 3/3

POLAND/Physical Chemistry. - Colloid Chemistry. Dispersed Systems. B

Abs Jour : Ref Zhur Khimiya, No 19, 1959, 67452

Author : Krause, Alfons; Belzynka, Maria; Jagodzinska, Wanda
Inst : -
Title : Protective and Stabilizing Effect of the Hydrosol of Iron Orthohydroxide in a Mixed Sol of Trivalent Iron Hydroxides.

Orig Pub : Roczn. chem., 1958, 32, No 6, 1397-1400

Abstract : Acid peptization of the x-ray crystallic Fe- hydroxides: γ-FeOOH and goethite (α-$Fe_2O_3 \cdot H_2O$) leads to the formation of yellow turbid hydrophobic sols which leave a deposit on glassware. The red hydrosols produced in the peptization of x-ray amorphous Fe orthohydroxide are transparent and stable. It was shown by means of sedimentation measurements and measurements of the degree of precipitation by starch that the orthosol protects the -FeOOH-sol in mixed hydrosols; half the weight of

Card 1/2

POLAND/Physical Chemistry - Colloid Chemistry. Dispersed Systems. B

Abs Jour : Ref Zhur Khimiya, No 19, 1959, 67452

orthohydroxide will suffice for stabilizing the γ-FeOOH. -- M. Slonim

Card 2/2

COUNTRY : POLAND B

CATEGORY : Physical Chemistry. Kinetics. Combustion. Explosions. Topochemistry. Catalysis

ABS. JOUR. : RZKhim., No. 1 1960, No.531

AUTHOR : Krause, A.

INST. : -

TITLE : Significance of the So-Called Blind Test in Studies on Catalytic Reactions

ORIG. PUB. : Roczn. chem., 1958, 32, No 6, 1431-1432

ABSTRACT : The significance of the so-called "blind" or control test in the investigation of catalytic reactions in oxidation-reduction systems was demonstrated on a number of examples.-- Author's summary

CARD: 1/1

ALFONS KRAUSE

Distr: 4E2c(j)/4E3d

Activity and evaluation of the technical catalyst used in the conversion of methane. Alfons Krause and Stefan Kotkowski (Univ. A. Mickiewicza, Poznan, Poland). *Przemysl Chem.* 37, 511-15(1958)(English summary).—A rapid lab. method for the evaluation of catalyst MgO/NiO used in the conversion of CH_4 by the Bamag method is given. The activity of the catalyst can be established by catalytic peroxidative oxidation of indigo carmine and HCOOH with H_2O_2 as well as by decompn. of H_2O_2 at 37°. Deactivated catalyst is more active in the above reduction-oxidation reactions than fresh catalyst. This difference is greatly enhanced by locating on the surface of the catalyst suitable ion promoters, e.g., Co^{++}.

F. J. Hendel

6
2-may
2

Krause Alfons

18

The influence of trace elements on the color and structure of yellow ferric hydroxides. Alfons Krause, Maksymilian Kranz, and Anna Witkowska (Univ. Poznański, Poznań, Poland). *Przemysl Chem.* 37, 580-2(1958)(English summary).—The authors describe a new method for the manuf. of yellow ferric hydroxides by the oxidation of Fe with air in $FeSO_4$ medium. The product has a better color and structure than the present Polish pigments, and is equal to the imported grades. The method is based on the initiation of oxidation of Fe with a trace amt. of H_2O_2 soln. in the presence of trace amts. of ions of heavy metals such as As, Sb, Bi, Sn, Hg, or even such as Mg, Al, Ca, and Zn. Tech. $FeSO_4$ (or pickling liquor) and Fe shavings are used as raw material. It is believed that this method can be adopted for com. production.

F. J. Hendel

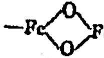
6
4E2c
4E3d

QW

7/c

KRAUSE, A.

L1

Chemistry of the ferromagnetic iron oxides. Alfons Krause (Univ. Poznański, Poznań, Poland). Przemysł Chem. 37, 637-9(1958)(English summary).—Synthetic magnetite can be prepd. by a partial oxidation of $Fe(OH)_2$ gel or synthetically from Fe hydroxides and oxides reacting with $Fe(OH)_2$ in an alk. medium. γ-FeOOH (II) is considered the best intermediate, as it gives a synthetic magnetite that is totally converted into γ-Fe_2O_3 (I) by oxidation and roasting (up to 300°). I obtained by this method shows, in general, lower magnetic activity than does I from magnetite; this is because the latter requires a lower velocity of $Fe(OH)_2$ oxidation than does II prepd. from $Fe(OH)_2$. The gels of ferric hydroxides in aq. medium (and at room temp.) also can be reduced to magnetite. Another way of prepg. ferromagnetic I is the utilization of the property of H_2S of giving with all Fe hydroxides and oxides ferric sulfides that in moist air readily change to II. In the mol. of magnetite that is a macromol. compd. $(Fe_3O_4)_n$, there is a characteristic bond  that is responsible for the ferromagnetic properties. A rapid catalytic method for estn. of the magnetite properties is suggested. HCO_2H is oxidized with H_2O_2 in presence of magnetite that was previously activated with Cu^{++} ion. This ion is such a good promoter that it can bring out the faintest differences in the structure of the magnetites investigated (magnetites that are not activated with the above ion, have practically no catalytic properties in the system HCO_2H/H_2O_2). 20 references.

F. J. Hendel

4/2e

3

LC

/1

1/c

Distr: 4E3d

The effect of inorganic salts on the oxidation of paraffin wax with atmospheric oxygen. Alfons Krause, Stefan Kotkowski, and Helena Szczepańska (Univ. Poznań, Poland). *Chem. Stosowana* 3, 123-4(1959)(German summary). —Paraffin wax m. 55° was oxidized with air (80 l./hr.) at 140-60° in the presence of several inorg. salts. NiNO$_3$ (0.5 g./70 g. paraffin wax) was the most effective catalyst. The product thus obtained had acid, sapon., and ester nos. 19.0, 40.0, and 21.0, resp., and m.p. 49.0°. Na$_2$SO$_4$, FeSO$_4$, or NaOH was found to inhibit the process. A. Szafrański

5

1

ALFONS KRAUSE

27

Properties of tantalum in oxidation-reduction systems. Alfons Krause and Anastazja Hermann (Univ. Poznań, Poland). *Roczniki Chem.* 33, 225-6(1959)(German summary).—Metallic Ta is unable to transfer O in the HCOOH-H_2O_2 or the indigocarmine-H_2O_2 system. Ta acts as an inhibitor in H_2O_2 decompn., especially at higher temps. (70°), where the reaction is of the 1st order. Ta oxidized in air to Ta_2O_5 behaves indifferently. Ta_2O_3 is not formed by action of H_2O_2 (on Ta), which shows in this case reducing properties.

A. Kreglewski

4/

9E2c

JW

1/1

G/c

ALFONS KRAUSE

27

Barium sulfate as carrier of complex catalysts. Alfons Krause, Włodzimierz Wolski, and Felicja Skrzypczak-Krzymińska (Univ. Poznań, Poland). *Roczniki Chem.* 33, 237-9 (1959)(German summary).—$BaSO_4$ is inactive in H_2O_2 decompn. or in the oxidation of HCOOH with H_2O_2. It can be activated by the mixt. $Cu^{++} + Co^{++}$ if pptd. at 98°. Attempts to activate $BaSO_4$ pptd. at 20° were unsuccessful. A qual. discussion is given.
A. Kręglewski

5

ALFONS KRAUSE

4

4
462A

Preparation of ferromagnetic ferrites from natural raw materials. Alfons Krause and Irena Plura (Univ. Poznan; Poland). Roczniki Chem. 33, 236-7(1959)(German summary).—Ferromagnetic ferrites of Mg and Cu can be prepd. by mixing the respective fine powd. minerals (bog iron ore, carnallite, and malachite or cuprite) with water to a paste, drying at 200-800°, and heating 2 hrs. at 1000°. The at. ratio of Fe to Mg (or Cu) should be about 2:1. A. Kr

5

The behavior of zinc hydroxide as the component of a catalyst formed by amphoteric hydroxides of metals. Alfons Krause and Alicja Turowska (Univ. Poznań, Poland). *Roczniki Chem.* 33, 407-9(1950)(German summary). —The activity in the HCOOH/H_2O_2 system of the following mixed-hydroxide catalysts was investigated at 37 and 50° at the at. ratios of 1 Fe:$^1/_2$ Cu and 1 Fe:$^1/_2$ Cu:$^1/_2$ Zn. Both were prepd. by simultaneous pptn. of the hydroxides by means of 1*N* NaOH at 20°. Their activities were practically identical at 37°; at 50° the activity of 1 Fe:$^1/_2$ Cu was much higher. Selection of a promotor on the basis of Fermi's potential seems to be insufficient because its activity also depends on temp. A. Kreglewski

4

Distr: 4E2c

27

Catalytic properties of metallic gold and its poisoning. Alfons Krause and Anastazja Hermann (Univ. Poznan, Poland). Roczniki Chem. 33, 515-17 (1959) (German summary).--The catalytic activity of 2 Au foils, contg. 0.1% and 1.5% Cu + Ag, was examd. No activity was observed in the HCOOH oxidn.; a weak 1 was observed in the H_2O_2 decompn. The activity of foil contg. 0.1% Cu + Ag was always stronger than of the foil contg. 1.5%, both increasing with temp. The H_2O_2 decompn. is a 1st order reaction with the rate consts. at 60° equal to 0.9×10^{-3} (0.1% foil) and 1.35×10^{-3} (1.5% foil). The action of Au on the indigo carmine decoloration is stronger than of Pt or Pd. No benzidine reaction was observed on the surface of either foil. Hence, their activity cannot be explained as due to the presence of Cu alone. Au is rather a specific catalyst. Both foils were strongly poisoned by As_2O_3 or H_2S, whereas NaCN showed activating properties. A. Kreglewski

(Retyped clipped abstract)

Card 1/1

mk

Structure and the action of the γ-Al_2O_3/Pd catalyst. Alfons Krause (Univ. Poznań, Poland). *Roczniki Chem.* ~~33, 606-6(1959)~~ (German summary).—Schemes of mutual interaction of γ-Al_2O_3, Pd, and H are given. They are applied to the process of hydrogenation of C_6H_6. It is believed that electrons oscillate between Pd and the radical O=Al— even in the absence of H, which may explain the decrease in magnetic susceptibility of metallic Pd adsorbed on the surface of Al_2O_3 (Trzebiatowski, *et al.*, *C.A.* 52, 615c). A. K.

Cg

1/1

4

4E3d

2 Jg (NB)

Jg

KRAUSE, A.

4E2c

Metallic platinum as the inhibitor of the peroxidative indigo carmine decoloration. Alfons Krause and Anastazja Hermann (Univ. Poznań, Poland). *Roczniki Chem.* 33, 637-9(1959)(German summary).—It was stated that ordinary Pt foil (with lattice imperfections) inhibits the reaction in the indigo carmine (I)-H_2O_2 system at 37, 50, and 60°, owing to lack of sorption of I on Pt and to catalytic decompn. of H_2O_2. The effect vanishes at 70°. Polished Pt behaves indifferently, whereas colloidal or Pt-black accelerates the reaction between I and H_2O_2. A. K.

KRAUSE, A.

On the development of radical structure on the surface of an inactive carrier. p. 541

ROCZNIKI CHEMII. (Polska Akademia Nauk) Warszawa, Poland, Vol. 33, no. 2, 1959

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

1

Oxidation-reduction catalysis in magnetic field. Alfons Krause and Aleksandra Binkówna (Univ. Poznań, Poland). *Roczniki Chem.* 33, 515-7(1959)(German summary).—The catalytic oxidation of HCOOH by means of 1.2% soln. of H_2O_2 at 37° was studied in the presence of (I) artificial magnetite (the ratio $FeO:Fe_2O_3 = 1:1.35$), (II) Cu^{++} ions, and (III) I activated by means of II. III accelerates the reaction considerably more than does I or II. Studies under identical conditions but in the presence of a magnetic field (150 Oe.) showed that the latter has no effect on the activity of I or II but inhibits that of III. This is due to the decrease of surface and of the no. of active centers on I, which, within limits of exptl. error, does not change the weak activity of I but changes the high one of III. In fact, it was proved that the degree of adsorption of II on I decreases in a magnetic field. A. Kryglewski

5

2 JgJ (NB)

Cy 8 V1

KRAUSE, ALFONS

1

4

1J3J.2(JB)

The catalytic properties of natural magnetite. Alfons Krause and Aleksandra Binkówna (Univ. Poznań, Poland). *Roczniki Chem.* 33, 819-21(1959)(German summary); cf. *C.A.* 53, 19542*f*.—Natural magnetite, applied as a fine powder, was inactive in the reaction of H_2O_2 decompn. and oxidn. of HCOOH by means of H_2O_2 at 37°. However, the lack of active centers is incomplete, because the catalyst can be activated with Co^{++} or Cu^{++}. A neg. influence of magnetic field was found for the catalytic action in the system H_2O_2–HCOOH. A. Kręglewski

Card 1/1 aht

Distr: 4E3d

The structure and action of the magnesium oxide-nickel oxide catalyst in methane conversion. Alfons Krause (Univ. Poznań, Poland). *Roczniki Chem.* 35, 837-9 (1960) (German summary).—The reaction of CH_4 conversion to CO and H_2 may be explained by assuming a radical structure of the catalyst: MgO...ONi. It follows that $(MO)_4 + CH_4 + 5H_2O = (HOMOH)_4 + CO + 3H_2$ (where MO denotes the 2 radicals MgO and NiO) with decompn. at 750° as follows: $(HOMOH)_4 = 4H_2O + (MO)_4$. Sintering or the presence of a silicate carrier causes vanishing of the radical structure. It vanishes also partly under the action of CO according to the scheme: OMg + CO + NiO = OMgCONiO. The latter complex is able to act as a dehydrogenation catalyst transforming CH_4 into C_2H_2 and C. The C is believed to appear in activated state, able to react with H_2O. A. Kreglewski

3

1-gag (NB)

ep

KRAUSE, ALFONS

The structure and action of Ni/γ-Al_2O_3 catalyst. Alfons Krause (Univ. Poznań, Poland). *Roczniki Chem.* 33, 841-2 (1959)(German summary).—Phenomena occurring during the redn. of $Ni(OH)_2$ on γ-Al_2O_3 (I) are explained by the assumption that I has a radical structure (Trzebiatowski and Romanowski, *C.A.* 52, 7571*h*). The radical O=Al—O— reacts with part of the Ni to form $Ni(AlO_2)_2$ (at about 350°) and raises the degree of dispersion of Ni on I. The 2nd radical, O=Al—, is a mediator in the activation of H by Ni. Hence, the mechanism of hydrogenation of C_6H_6 on Ni/I is the following: O=Al— + Ni + H_2 = O=Al—...Ni...H + H and 3H + (O=Al—...Ni...H)$_3$ + C_6H_6 = C_6H_{12} + (O=Al—...Ni...)$_3$, etc. A. Kreglewski

3

4E3d

1-9-9 (NB)

Card 1/1 aht

KRAWSE, A.

Distr: 4E3d

Preparation of ferromagnetic ferrites from sulfide minerals Alfons Krause and Elżbieta Kukiełka (Univ. Poznań, Poland). *Roczniki Chem.* 33, 843-4(1959)(German summary).—Ferromagnetic ferrites of Cu and Pb were prepd. by heating for 2 hrs. at 1000° mixts. of finely powd. natural Cu_2S with pyrite (I) or chalcopyrite (II) (ratio Cu/Fe = $^1/_1$), or natural PbS with I (Pb/Fe = 1). A mixt. of I with II did not yield any ferromagnetic product.

A. Krezlewski

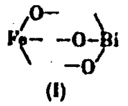
KRAUSE, Alfons; KOTKOWSKI, Stefan

Inorganic catalysts for the activation of molecular oxygen at the 37° temperature. Rocz chemii 33 no.4/5:1173-1175 '59. (EEAI 9:9)

1. Zaklad Chemii Nieorganicznej Uniwersytetu im. A.Mickiewicza, Poznan.

(Catalysts) (Oxygen) (Inorganic compounds)

The structure and action of metal oxide catalysts in the ammonia oxidation from the point of view of the radical-theory of heterogeneous catalysts. Alfons Krause (Univ. Poznań, Poland). *Roczniki Chem.* 33, 1223-6(1959)(German summary).—In view of the theory (*C.A.* 53, 21101g) the structure of the Fe_2O_3/Bi_2O_3 catalyst in the active state is presented as



(I)

I reacts easily with H and O to form $Fe(OH)_3(OH)_3Bi$ (II). The following scheme is suggested for the NH_3 oxidn.: $I_2 + 4\ NH_3 + 3\ O_2 = II_2 + 4\ N^*$; $4\ N^* + 2\ O_2 = 4\ NO$; $II_2 = I_2 + 6\ H_2O$. A similar mechanism may be derived for the CuO/MnO_2 catalyst which is less active than I because of formation of amino-compds. A. Kreglewski

KRAUSE, Alfons; DEPCIUCH, Tadeusz

Influence of trace elements on the catalytic properties of copper sulfide and its strength in hydrogen-peroxide solution. Rocz chemii 33 no.4/5:1227-1228 '59. (EEAI 9:9)

1. Zaklad Chemii Nieorganicznej Uniwersytetu im. A.Mickiewicza, Poznan

(Solutions) (Catalysts) (Copper sulfides)
(Hydrogen peroxide)

KRAUSE, Alfons; KOTKOWSKI, Stefan: MYNC, Jozef

Possibilities for the best use of air oxygen in the catalytic oxidation of arsenic trioxide. Rocz chemii 33 no.4/5:1229-1230 '59. (EEAI 9:9)

1. Zaklad Chemii Neiorganicznej Uniwersytetu im. A.Mickiewicza, Poznan.

(Oxygen) (Arsenic oxydes) (Catalysts) (Air)

KRAUSE, Alfons

Reaction of the dibutyl - phthalate synthesis in the presence of $Fe_2(SO_4)_3$ as catalyst. Rocz chemii 33 no.4/5:1231-1232 '59.
(EEAI 9:9)

(Iron sulfates) (Dibutyl phthalate)
(Catalysts)

KRAUSE, A.

4
1-9g(1B)

Action of metallic catalysts in dehydrocyclization of α-ethylaniline to indole. Alfons Krause (Univ. Poznań, Poland). *Roczniki Chem.* 33, 1233-6(1959)(German summary).—Dehydrocyclization of α-ethylaniline to indole at 500-700°, in presence of metallic catalysts as Cu, Cr, or Fe, described by Hansch and Helmkamp (*C.A.* 46, 3000c), and the promotor action of alkali metal oxides on the Cr-Cu catalyst, observed by Lesiak (*C.A.* 52, 3120b), is explained on the grounds of K.'s radical theory and the ability of the metals to form complexes.
A. Kręglewski

2cw

KRAUSE, Alfons; KOTKOWSKI, Stefan

Influence of trace elements on the reduction of KM_nO_4 with the aid of NCOOH. Rocz chemii 33 no.6:1455-1457 '59. (EEAI 9:9)

1. Zaklad Chemii Nieorganicznej Uniwersytetu im. A.Mickiewicza Poznan.
(Potassium permanganate) (Formic acid)

KRAUSE, A.

Distr: 4E2c(j)

Laboratory evaluation of vanadium catalysts used in the synthesis of phthalic anhydride. Alfons Krause and Stefan Kotkowski (Mickiewicz Univ., Poznań, Poland). *Przemysl Chem.* 38, 616-21(1959).—Lab. methods for detn. of activity of V catalysts (I) have been worked out, the 3 I (*K*, *W*, and *N*) being compared. It has been stated that porosity, bulk d., apparent vol., and absorption of methylene blue do not measure activity of the I, while their soly. in 32.5% HNO_3 at 20° can be used for comparisons. The examd. I are very active in peroxide oxidn. of indigo carmine which is decolorized completely after 120 min. at 37°, 0.01 g. of I being used. Most ions, chiefly Pb^{++} or F^-, exert a toxic, though selective, influence upon the I, but some ions, especially Fe^{+++} or $Fe(CN)_6^{3-}$, activate the reaction of oxidn. On the contrary, the activity of the I is very low in the peroxide oxidn. of HCOOH, even after being activated by various ions. The catalytic decompn. of H_2O_2 (3%) at 37° activated by ions Fe^{+++} + $Fe(CN)_6^{3-}$ (1 mg. of each/0.1 g. of catalyst) seems to be the best method for evaluating the I. Results agree with those obtained in industrial processes. After 2 hrs. the decompn. of H_2O_2 was for *K* 82.88; *W* 74.17; and *N* 50.57%.

Zdzislaw T. ~~Blestynski~~

4

1

KRANSE. A.

3 4EXc (j)

4E3d

Mechanism of hydrocarbon cracking in the presence of aluminum silicate as catalyst. Alfons Krause (Univ. Poznań, Poland). *Ind. Eng. Chem.* 51, 1368(1960).—The radical structure of heterogeneous catalysts is used to explain the mechanism. Maxey Brooks

14

Structure and mode of action of the contact γ-aluminum oxide/platinum. Alfons Krause (Univ. Poznań, Poland). *Nature* 183, 1616-18(1959).—The mechanism of the reaction of hydrogenation of benzene at the γ-Al_2O_3/Pt contact can be represented in the form of a chain reaction, which is accompanied by a migration of electrons: $O{=}Al{-} + Pt + H_2 \rightarrow O{=}Al{-} \ldots Pt \ldots H + H$, $3(O{=}Al \ldots Pt \ldots H) + 3H + C_6H_6 \rightarrow C_6H_{12} + 3(O{=}Al{-} \ldots Pt)$, etc.

Seymour M. Kaye

Ca
γ
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4
4E3d
29-5(N3)

Distr: 4E3d

9

Catalytic dehydrogenation and dehydration of alcohol on oxides. Alfons Krause (Univ. Poznań, Poland). *Z. physik. Chem.* (Leipzig) 212, 270-8(1959).—Comments on previous work (cf. Eucken and Heuer, *C.A.* 45, 8804*b*) involving possible reaction mechanisms of the ZnO-catalyzed dehydration and dehydrogenation reaction of EtOH. 3 1

Friedrich Epstein

Cg 1/1

The reaction mechanism of the decomposition of formic acid on nickel surfaces. Alfons Krause (Univ., Poznań, Poland). Z. anorg. u. allgem. Chem. 299, 161-2(1959); cf. Reinacker and Hansen, C.A. 50, 10318g.—The data of R. and H. can be interpreted also by a mechanism in which a slight attack of Ni by HCO_2H yields Ni^{++} and at. H, both adsorbed by Ni. Electron oscillation between the adsorbed species permits acceptance of an electron from HCO_2^-.

Richard H. Jaquith

Sw
1/1

4
4E2c

m/-

Catalytic properties of metallic palladium and its poisoning. Alfons Krause and Anastazja Hermann (Univ. Poznań, Poland). *Z. anorg. u. allgem. Chem.* 299, 153–7 (1959).—The catalytic effect of Pd foil at 37°, 50°, and 70° on the decompn. of H_2O_2 and on the H_2O_2 oxidation of HCO_2H, at 37° and 70° on the H_2O_2 oxidation of indigo carmine, and at room temp. on the H_2O_2 oxidation of benzidine is studied. Pd is more effective than Pt; etched foil is superior to polished foil. Pd is poisoned by NaCN, Na_2S, As_2O_3, $HgCl_2$, or PdO_2. The decompn. of H_2O_2 and the oxidation of HCO_2H are 1st order; Pd lowers the activation energy of the former reaction by 1–2 kcal. R. H. L.

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4E2c

1w

1/1

KRAUSE, ALFONS

Influence of light on catalytic reactions. Alfons Krause and J. Leżuchowska (Univ. Poznań, Poland). Z. *anorg. u. allgem. Chem.* 301, 291-3(1959).—The catalytic activity of amorphous Fe$(OH)_3$ on the H_2O_2 oxidn. of HCO_2H is slightly greater in daylight than in darkness. Cu^{++} enhances this difference. Richard H. Jaquith

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1-gaj (WB)

Card 1/1 aht

KRAUSE, A.

7

4E3d
1-1a1(NO)

The catalytic decomposition of hydrogen peroxide and the peroxidatic oxidation of formic acid on amorphous iron(III) hydroxide as a function of the particle size of the latter. Note on the mechanism of these reactions. Alfons Krause and J. Lezuchowska (Univ. Poznań, Poland). *Z. anorg. u. allgem. Chem.* 301, 294–300(1959).—The accelerating influence of amorphous $Fe(OH)_3$ on the 1st-order decompn. of H_2O_2 and on the oxidn. of HCO_2H by H_2O_2, both at 37°, increases with decreasing particle size of the catalyst. Cu^{++} increases the effectiveness of the $Fe(OH)_3$. The reaction mechanisms and their relation to the mechanisms with other inorg. catalysts and to the action of the enzymes catalase and peroxidase are discussed.

Richard H. Ianuith

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CgH

KRAUSE, A.

reports to be presented at the 2nd Intl Congress on Catalysis, Paris, France, 4-9 Jul '60.

Poland

BARANOWSKI, B., SMIALOWSKI, M., and SZKLARSKA-SMIALOWSKA, Z. - "Properties of nickel layers electrolytically hydrogenated in the presence of poisons" (Section II)

BIELANSKI, A., DEREN, J., HABER, J., and SLOCZYNSKI, J. - "Electronic processes accompanying the catalytic dehydrogenation of alcohols on semiconducting oxide catalysts" (Section II)

BRETSZNAJDER, S. - "On the process of catalytic reaction of sulfur dioxide with acids in iron sulfate solution" (Section III)

KRAUZE, A. - "On trace catalysis" (Section II)

LIPKA, B., TRZECIAKOWICZ, E., and BURZYNSKA, B. - "The gaseous phase transformation of a mixture of 3-picoline and 4-picoline in the presence of ammonia and air in a mixture of corresponding nitriles" (Section III)

MALINOWSKI, S., and KOSTLACKI, T. - "Hydrogen transfer in gaseous phase between alcohols and compounds containing carbonyl groups" (Section I)

OTWINOWSKA, H., TRZECIAKOWICZ, E., and CIBOROWSKI, St. - "Studies on electric conductivity and catalytic activity of promoted zinc oxide during isopropanol dehydrogenation" (Section III)

SZNAJDER, J. - "Study of selectivity and activity of copper catalyzers in dehydrogenation reaction" (Section III)

SWINARSKI, A., and SIEDLEWSKI, J. - "Influence of dimensions of pores on the catalytic power of active carbon in the oxidation of sulfur hydrogen by oxygen" (Section II)

PHASE I BOOK EXPLOITATION SOV/3921

Akademiya nauk SSSR. Institut fizicheskoy khimii

Problemy kinetiki i kataliza. [t] 10: Fizika i fiziko-khimiya kataliza (Problems of Kinetics and Catalysis. [vol.] 10: Physics and Physico-Chemistry of Catalysis) Moscow, Izd-vo AN SSSR, 1960. 461 p. Errata slip inserted. 2,600 copies printed.

Eds.: S.Z. Roginskiy, Corresponding Member of the Academy of Sciences USSR, and O.V. Krylov, Candidate of Chemistry; Ed. of Publishing House: A.L. Bankvitser; Tech. Ed.: G.A. Astaf'yeva.

PURPOSE: This collection of articles is addressed to physicists and chemists and to the community of scientists in general interested in recent research on the physics and physical chemistry of catalysis.

COVERAGE: The articles in this collection were read at the conference on the Physics and Physical Chemistry of Catalysis organized by the Otdel khimicheskikh nauk AN SSSR (Section of Chemical Sciences, Academy of Sciences USSR) and by the Academic Council on the problem of "the scientific bases for the selection of catalysts." The Conference was held at the Institut fizicheskoy khimii AN SSSR (Institute of Physical Chemistry of the AS USSR) in Moscow, March 20-25, 1958. Of the great volume of material presented at the conference, only papers not published elsewhere were included in this collection.

V. PROBLEMS OF STRUCTURAL AND ENERGY CORRESPONDENCE IN CATALYSIS

VI. RADICALS AND CHAIN CONFIGURATIONS IN CATALYSIS

Krause, Alfons

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A221/A126

5 1190

AUTHOR: Krause, Alfons, Corresponding Member

TITLE: Heterogeneous catalyst and catalytic reaction mechanisms

PERIODICAL: Nauka Polska, no. 4, 1960, 94 - 135

TEXT: This is an instructive article in which the author reviews his own investigations carried out since 1929 on amphoteric gels of metallic hydroxides and oxides, which became the foundation of subsequent investigations aiming for elucidation of catalytic reactions, based on iron oxide catalyst. Results of these investigations were published in many Polish and foreign scientific papers. The emphasis was put on explaining their molecular structure, which proved to be a macromolecular one. One step of this work culminated in the syntheses of $Ag_3H(FeO_2)_4$ and $AgFeO_2$, which were helpful in distinguishing between catalytically non-active and active compounds and to define the structure of active spots in same. The system Fe_2O_3/H_2O is highly complicated, as are other amphoteric metallic hydroxides and oxides. Their spontaneous change of characteristics is known as ageing. One of the factors influencing these changes is H_2S, under the influence of which even the stable natural hematite is transformed into ferric oxide which

X

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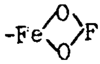
in turn in humid air oxidizes into S_2 and an active compound γ-FeOOH. This in turn when roasted at temperatures up to 300°C is eventually transformed into ferromagnetite γ-Fe_2O_3 and finally into α-Fe_2O_3. In the author's opinion, ferromagnetic properties of iron oxide are due to its particular structure  $-Fe\langle{}^{O}_{O}\rangle Fe-$. There are 3 basic types among the specific compounds in the system Fe_2O_3/H_2O: 1) anhydrous oxides and eventually hydrated ones like the hydrohematite, 2) hydrates like "getyt" (α-Fe_2O_3/H_2O) and 3) hydroxides. It was established that the latter ones tie the silver, but in reducing-oxidizing systems they are catalytically active; in their molecules they have active OH groups with radical-like H-atoms, and are possessing hydrogenation energy; however, hydrates mentioned under 2) are not active. The investigations formed the general basis for elucidation of heterogeneous catalyst structure and the mechanism of many catalytic reactions. In the following paragraphs the author discusses and explains several examples of catalytic reactions carried out with various catalysts. I. Metallic catalysts - Catalytic decomposition of formic acid on the surface of metallic nickel: $HCOOH \rightarrow H_2 + CO_2$. The author explains the reaction as follows: because Ni is attacked slightly by HCOOH, Ni^{++} ion appears and is adsorbed on metallic nickel surface; atomic hydrogen which

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Heterogeneous catalyst and catalytic reaction mechanisms A221/A126

appears simultaneously is also adsorbed and oscillation of electrons begins between these two "partners", which allows the anion $HCOO^-$ to get rid of its electron and in consequence, the electron migration becomes a fact. Further examples dealt with in this group are the ignition of H_2 on platinum, hydrogenation of ethylene on nickel, and exchange of hydrogen and deuterium on Fe catalyst. II. Catalysts composed of metal and metallic oxides: Mixed catalysts composed of metal and metallic oxides are often used in hydrogenation reactions. For benzene hydrogenation $Ni/\gamma Al_2O_3$ is used. The process is explained. III. Oxide catalysts; Dehydrogenation of ethanol on the surface of the γ-Al_2O_3 catalyst: Using pure γ-Al_2O_3 catalyst without metal, the situation is different, because both its radicals can participate in the reaction: $O = Al-O- + C_2H_5OH + -Al = O \dashrightarrow 2\ O = Al-OH + C_2H_4$. Further, the author presents and discusses several more catalytic reactions with metal oxides as catalysts. Discussing anomalies occurring in heterogeneous catalyses, the author explains the catalytic mutation, discovered at his department. Catalyst activity might change if other ions are added to it, and even the sequence at which they are added might influence the result considerably. In another instance two $Zn(OH)_2/Co^{++}$ catalysts were discovered, which showed the same activity inspite of different composition. Sometimes the amount of catalyst carrier influences its activity. In case of two different carriers, $Co(OH)_2$ and $Ni(OH)_2$, different cata-

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A221/A126

Heterogeneous catalyst and catalytic reaction mechanisms

lyst activity was observed when both carriers were precipitated simultaneously and when they were precipitated separately and mixed. Investigations on catalyst activity difference in reduction-oxidation systems (redox) in magnetic field were started recently at the author's Department. The advantageous influence of light on catalytic reactions is interpreted by the author as the activating effect of light quanta on hydrogen atoms present in active OH groups in iron hydroxide. On the ground of results obtained and reviewed in this article, the author arrives at the conclusion that the discussed systems of carriers and ions (or metal hydroxides) offer boundless possibilities for various combinations and greatly contributed to basic research on catalysis. They allow to examine the activity of catalysts before their application in industry. The author's theory of the radical structure of heterogeneous catalysts is being continuously investigated and developed. There are 1 figure, 3 tables and 81 references: 56 Soviet-bloc and 25 non-Soviet-bloc. The references to the four most recent English-language publications read as follows: G. M. Schwab, Trans. Faraday Soc. 42, 689 (1946); D. A. Dowden, F. W. Reynolds, Discuss Faraday Soc. 8, 166 (1950). G. M. Good, H. H. Voge, B. S. Greensfelder, Ind. Engng. Chem. 39, 1032 (1947). Por. T. Wart, Journ. chem. Soc. (London), 1947, 1244. M. Dole, De Forest, P. Rudd, G. M. Muchow, C. Comte, Journ.

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A221/A126

Heterogeneous catalyst and catalytic reaction mechanisms

chem. Physics 20, 961 (1952).

ASSOCIATION: PAN

Card 3/5

KRAUSE, A.

Radical structure and change of the defective state of order of the oxidized semi conductor catalysts during the calytic reaction and by additions of extraneous oxides. Bul chim PAN 8 no.3:83-88 '60.
(EEAI 10:9/10)

1. Zaklad Chemii Nierorganicznej Uniwersytet M. Mickiewicza, Poznan.

(Catalysts) (Oxidation) (Semi conductors)
(Oxides)

KRAUSE, A.

Reaction mechanism of the dehydrating cycling of paraffin-hydrocarbon on the chrom III-oxide catalyst. Bul chim PAN 8 no.3:89-91 '60. (EEAI 10:9/10)

1. Zaklad Chemii Nieorganicznej, Uniwersytet im. A. Mickiewicza, Poznan.

(Dehydration) (Cycling) (Paraffin) (Hydrocarbon)
(Chrom oxide) (Catalysts)

KRAUSE, A.

The mechanism of ethylene hydration on the ZnO-catalyst. Bul chim PAN 8 no.3:93-94 '60. (EEAI 10:9/10)

1. Zaklad Chemii Nieorganicznej Uniwersytetu im. A.M. Mickiewicza, Poznan.

(Ethylene) (Hydration) (Zinc oxide) (Catalysts)

KRAUSE, A.

Metallic oxide catalysts supported by γ-Al_2O_3 useful for dehydration reactions. Bul chim PAN 8 no.4:201-202 '60.

(EEAI 10:9/10)

1. Zaklad Chemii Nieorganicznej, Uniwersytet im. A. Mickiewicza, Poznan.

(Metallic oxides) (Aluminum oxide) (Dehydration)

KRAUSE, A.

On the mechanism of the formation of methanol and methane from carbonic oxide and hydrogen. Bul chim PAN 8 no.4:203-205 '60. (EEAI 10:9/10)

1. Zaklad Chemii Nieorganicznej, Uniwersytet im. A. Mickiewicza, Poznan.

(Methanol) (Methane) (Carbonic oxide) (Hydrogen)

KRAUSE, A.

Mechanism of the hydrogen deuterium exchange in the zinc oxide catalyst. Bul chim PAN 8 no.4:207-208 '60. (EEAI 10:9/10)

1. Zaklad Chemii Nieorganicznej, Uniwersytet im. A. Mickiewicza, Poznan.

(Hydrogen) (Deuterium) (Zinc oxide) (Catalysts)

KRAUSE, A.

The oxy-hydrogen gas reaction on oxidic contacts. Bul chim PAN 8 no.5: 215-216 '60.

1. Zaklad Chemii Nieorganicznej, Uniwersytet im. A. Mickiewicza, Poznan.

KRAUSE, A.

Burning of ethylene on oxide catalysts. Bul chim PAN 8 no.5:249-251 '60. (EEAI 10:9/10)

1. Zaklad Chemii Nieorganicznej, Uniwersytet im. A. Mickiewicza, Poznan.

(Ethylene) (Catalysts) (Oxides)

KRAUSE, A.

Mechanism of the catalytic reaction between ammonia and carbon-oxy-sulfide. Bul chim PAN 8 no.5:253-254 '60.
(EEAI 10:9/10)

1. Zaklad Chemii Nieorganicznej, Uniwersytet im. A. Mickiewicza, Poznan.

(Catalysts) (Ammonia) (Carbon-oxy-sulfide)

KRAUSE, A.

The mechanism of the methanol steamconversion. Bul chim PAN 8 no.5: 255-256 '60. (EEAI 10:9/10)

1. Zaklad Chemii Nieorganicznej, Uniwersytet im. A. Mickiewicza, Poznan.

(Methanol)

KRAUSE, A.

On the action of oxide catalysts containing MgO. Bul chim PAN 8 no.5:257-259 '60. (EEAI 10:9/10)

1. Zaklad Chemii Nieorganicznej, Uniwersytet im. A. Mickiewicza, Poznan.

(Catalysts) (Oxides) (Magnesium oxide)

KRAUSE, A.

Mechanism of the catalytic reduction of dinitrogenmonoxide with hydrogen. Bul chim PAN 8 no.6:271-272 '60.

(EEAI 10:9/10)

1. Zaklad Chemii Nieorganicznej, Uniwersytet im. A. Mickiewicza, Poznan.

(Catalysis) (Nitrogen oxides) (Hydrogen)

KRAUSE, A.

Mechanism of the sulfurtrioxide synthesis on metallic oxide catalysts.
Bul chim PAN 8 no.6:273-276 '60. (EEAI 10:9/10)

1. Zaklad Chemii Nieorganicznej, Uniwersytet im. A. Mickiewicza, Poznan.

(Sulfur oxides) (Metallic oxides) (Catalysts)

KRAUSE, A.

Exchange of oxygen isotopes on metallic oxides. Bul chim PAN 8 no.6:277-279 '60. (EEAI 10:9/10)

1. Zaklad Chemii Nieorganicznej, Uniwersytet im. A. Mickiewicza, Poznan.

(Isotopes) (Oxygen) (Metallic oxides)

KRAUSE, A.

Catalytic synthesis of HCN on platinum contact. Bul chim PAN 8
no.6:301-302 '60. (EEAI 10:9/10)

1. Zaklad Chemii Nieorganicznej, Uniwersytet im. A. Mickiewicza,
Poznan.

(Calysis) (Hydrogen) (Carbon) (Nitrogen)
(Platinum)