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Ca

2

The Karpov Physicochemical Institute of the People's Commissariat of Chemical Industries and its role in the development of physical chemistry in the U. S. S. R. N. N. Semenov. *J. Phys. Chem.* (U. S. S. R.) 17, 275-94 (1943).—Historical résumé. Surface phenomena, electrochemistry, the structure of matter and chem. kinetics are the chief fields of investigation. F. H. Rathmann

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Br. Abs.

A I - 8 - Reactions

Rupture of chains in chain reactions at the surface of solid bodies. N. N. Semenov (Acta Physiochim. U.R.S.S., 1943, 18, 93-147). The author's mathematical theory of chain reactions is applied to the precise formulation of kinetic equations for reactions involving chain rupture at the walls in plane, cylindrical, and spherical vessels, and in cylindrical and spherical vessels of quartz or glass enclosing metallic rods or spheres. Limits of inflammation in such vessels, and in a dusty gas, and the effect of addition of inert gas, are considered. The theory of the operation of anti-detonators is quantitatively formulated.

L.J.T.

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Kinetics of complex homogeneous reactions. N. N. Semenov. Acta Physicochim. U. R. S. S. 18, 438-72 (1943).—See C. A. 38, 1940[6]. A. R. P.

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Types of kinetic curves in chain reactions. I. Laws of the autocatalytic type. N. N. Semenov. *Compt. rend. acad. sci. U.R.S.S.* 43, 342-8; *Doklady Akad. Nauk S.S.S.R.* 43, 360-6(1944); cf. *C.A.* 38, 1040[8].—A math. demonstration is made showing that for the simplest cases of chain reactions the equations of chain kinetics coincide practically with the ordinary equations of autocatalysis by ultimate products. Several exptl. curves are shown to follow autocatalytic laws. **II. Interaction of active particles.** *Ibid.* 44, 62-6; *Doklady Akad. Nauk. S.S.S.R.* 44, 68-73.—The most general cause of distortion in the course of a chain reaction is the interaction between mols. of the active intermediate product. Only at the start of the reaction when the concn. of the active substance is small may this process be disregarded. Only in particular cases may this interaction be small for the complete course of the transformation and it is only these particular cases where a simple autocatalytic law of the course of the reaction is justifiable. In the general case there is a more or less marked deviation from this regularity. Equations are developed including the effect of the interaction for the case in which the initial substance does not affect the interaction of the active centers. **III. Allowance for chain rupture on the walls of the reaction vessel in the case of the oxidation of hydrogen.** *Compt. rend. acad. sci. U.R.S.S.* 44, 241-5.—The effect of chain rupture on the kinetics of the simplest chain reactions is exampd.; as an example the oxidation of H at low pressures is used with the data of Kovalsky. The integrated equation is developed. The usual conception that the fall in pressure is detd. wholly by the expenditure of O is not correct, as the concn. of H atoms reaches extremely large values in the course of the reaction. Only as a result of adsorption of H atoms by the wall with subsequent recombination into mols. does a fall in pressure take place and is the full heat of the reaction liberated. These effects should lag behind the expenditure of O and the increase in H_2O. The bulk of the heat of reaction should be given off on the surface of the vessel walls, although the reaction of the formation of H_2O proceeds homogeneously in the whole vol. H. G. McC.

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Br. Abs

A I-8, Reactions

Types of kinetic curves in chain reactions. II. Consideration of the interaction of active particles. III. Allowance for chain rupture on walls of reaction vessel in the case of oxidation of hydrogen. N. N. Semenov (*Compt. rend. Acad. Sci. U.R.S.S.*, 1944, **44**, 62—66, 241—245).—II. Mathematical. Kinetic curves for a chain reaction which are modified as the result of interaction between mols. of the active intermediate product are analysed.

III. The influence of chain rupture at the walls of the reaction vessel on chain reaction kinetic curves is analysed with special reference to the oxidation of H_2 in the region of the lower ignition limit. In absence of chain rupture the reaction would proceed without pressure change and with the evolution of 15 kg.-cal. instead of 116 kg.-cal. (*i.e.*, 58 kg.-cal. for each of two mols. of H_2O). Only as a result of adsorption of H at the walls with subsequent recombination to form H_2 is the full heat of reaction liberated and a pressure fall occurs. This pressure fall and the liberation of 116 kg.-cal. should lag behind the expenditure of O_2 and the increase in H_2O. The bulk of the heat of reaction is generated at the vessel walls although the formation of H_2O proceeds homogeneously throughout the reaction mixture. C. R. H.

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"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547820007-7

Some branching-chain reactions. N. N. Semenov. *Bull. acad. sci. U.R.S.S., Classe sci. chim.* 1945, 210-22.—Characteristic features of reactions proceeding through branching chains are (1) definite limits, particularly of pressure and temp., at which the reaction rate changes abruptly from immeasurably slow to fast, (2) self-acceleration in the initial stages and consequently not due to catalysis by the final products, (3) intermediate formation of unstable active products, of the type of free atoms or free radicals, reaching steady concns. far in excess of the thermodynamic equil. Curves of the reaction rates plotted against the fraction of converted initial substance reveal three types according to the position of the max. of the rate: this max. can be situated at (1) half-way conversion (50%); (2) an earlier stage of the reaction (less than 50% conversion); (3) a later stage (more than 50%). Case (2) corresponds to a process where the active intermediate products disappear partly through a first-order reaction, mostly at the walls of the reaction vessel, and partly through a second-order recombination. If the latter occurrence becomes negligible as compared with the former, case (1) results; consequently (1) is a limiting case of (2). Case (3) is found in processes where mutual interaction of active particles gives rise to chain branching and consequent creation of new active centers; this is termed "pos. chain interaction" as contrasted with the "neg. chain interaction" which results in their rupture. Oxidation (combustion) of H in (stoichiometric) mixt. with O is the typical and best-studied instance of a branching-chain reaction. The differential equation of the reaction velocity, written on the basis of Lewis' reaction mechanism, can be easily integrated in the initial phase of the reaction; it shows the concn. of atomic H to rise exponentially with time. Math. treatment defines a const. independent of the initial pressure of the gas mixt. and permits comparison with the exptl. data of Kovalskii; the agreement is confirmed at 485° and 520°. A further test lies in the comparison of the predictions of the theory with Nalbandyan's measurements of the initial time lag (induction period) in the combustion of H-O mixts.; the lag is of the order of tenths or of hundredths of a sec. and is more marked the closer the initial pressure and temp. are to the pressure-temp. curve limiting the field of inflammability. As the initial pressure of the mixt. draws closer to the upper limit of inflammability at the given temp., the role of chain rupture in the vol., by $H + O_2 \rightarrow HO_2$, grows as compared with the disappearance of H atoms on the walls. Complete curves of the relative steady-state concn. of at. H in terms of the fraction of reacted gas, obtained by integration of the differential equation over the whole range of the reaction, show these concns. to be surprisingly high: with initial pressures equal to 1.43, 2, and 4 times the lower pressure limit of inflammability, the H atom concns. reach, resp., 10%, 30%, and 80% of the initial O_2 concn. or, resp., 5%, 15%, and 40% of the initial concn. in H_2. Disappearance of H atoms through recombination $H + H$ is practically negligible up to initial pressures equal to twice the lower limit; it becomes significant only at higher pressures as a consequence of which the H-atom concn. will not further increase materially with further increasing pressure. From Kondrat'ev's and Avramenko's studies of the absorption spectra, it appears that the partial pressure of OH radicals can reach 0.05% of the total pressure of the mixt. or about 0.1% of that of the initial H. The exptl. figures are in agreement with those calcd. if the rate const. of $H + O_2 = OH + O$ and of $OH + H_2 = H_2O + H$ are, resp., 10^{-14} (data of Kovalskii) and 2×10^{-13} to 1×10^{-12} (data of Kondrat'ev) at 800°. A further striking inference from the theory is that most (about 87%) of the heat of the reaction is evolved on

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7

Quantitative spectral analysis of bronze and pig iron in the ultraviolet region of the spectrum. N. N. Semenov, *Zavodskaya Lab.* 11, 215-18(1945).—The pairs of lines used for the analysis of bronze were Sn 2863.3 and Cu 2824.3, Pb 2838.0 and Cu 2824.3, P 2536.4 and Cu 2889.5, Fe 2755.7 and Cu 2889.5, Ni 3012 and Cu 3010.8, Si 2881 and Cu 3010.8 A., and those for the analysis of cast iron Si 2881.6 and Fe 2772.3, Mn 2933 and Fe 2926.6, Cr 2677 and Fe 2680.2, Ni 3414.8 and Fe 3413.1. The difference in the intensities for each pair, ΔS, is used to det. the concn. of the element by means of standard graphs: for concns. of 0.10-2, 2-6, and 5-12%, resp. W. R. H.

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COMMON ELEMENTS

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Rapid spectral analysis of aluminum alloys. N. N. Semenov and I. S. Fishman. *Zavodskaya Lab.* 11, 419-21 (1945).—The spectral analysis by objective photometry was used for the analysis of the liquid bath of the Al-4 alloy. The time required for the analysis was 10-12 min. Graphs or tables were used to shorten the time of the analysis. W. R. Henn

Inst. Chem. Phys., AS USSR, Moscow

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BC

A-1

Constants of the reactions $H + O_2 \rightarrow OH + O$ and $H_2 + O_2 \rightarrow 2OH$. N. Semenov (*Acta Physicochim. U.R.S.S.*, 1945, [illegible], 291—302).—The constants of the primary and secondary reactions $H_2 + O_2 \rightarrow 2OH$ (creation of primary OH radicals) and $H + O_2 \rightarrow OH + O$ (branched-chain development) in the oxidation of H_2 have been calc. on the basis of the author's theoretical conclusions (cf. A., 1944, i, 144). The calc. activation energies are ~[illegible],000 and ~18,500 g.-cal. respectively. [illegible] H.

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C

Electric surface conductivity of dielectrics. N. N. SEMENOV AND N. M. CHIRKOV. *Compt. rend. acad. sci. U.R.S.S.*, 51, 37–40 (1946); abstracted in *Chem. Zentr.*, 118 [1/2] 93–94 (1947).—Glass, mica, methyl methacrylate, polystyrol, and an isobutylene polymerizate were investigated in the form of an 18 x 18 mm. condenser in vacuum and under variable pressures. No material showed surface conductivity in vacuum, irrespective of whether its surface was covered with alkali or acid. Methyl methacrylate, mica, and polystyrol show no surface conductivity even in presence of water vapor. If, however, a trace of HCl or glacial acetic acid is added to the water vapor, or if the condensers are covered with oxalic acid or NaOH, a noticeable surface conductivity is found as soon as the water-vapor pressure is greater than half the saturation pressure, and the conductivity increases rapidly with the increase in water vapor pressure. Surface conductivity is therefore to be considered of electrolytic nature; it seems that only 0.0001 mol. of the acid is dissolved in the water film while the remainder is firmly bound to the surface and does not take part in the surface conductivity.

M. HA.

ASM SLA METALLURGICAL LITERATURE CLASSIFICATION

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CA

2

The surface electrical conductance of dielectrics. N. N. Semenov and N. M. Chirkov. *Compt. rend. acad. sci. U.R.S.S.* 51, 39-42(1946). -The dielectrics glass, mica, Me methacrylate, polystyrene, and isobutylene polymer, in the shape of plates, with 2 strip electrodes attached to opposite edges, were hermetically sealed in glass vessels. Provisions were made to admit water vapor into the vessel to any desired pressure, and also to deposit a film of alkali or acid on the plates. None of the five dielectrics, regardless of whether there is acid or alkali on the surface or not, shows any surface elec. conductance in vacuum. Methyl methacrylate and laminae of mica and polystyrene show no surface elec. conductance in the presence of distd. water vapor up to satn. pressure. Minute traces of HCl or AcOH evoke detectable elec. conductance at a water vapor pressure greater than 0.5 of the pressure at satn. The elec. conductance mounts rapidly with an increase in the water vapor pressure under these conditions. Pumping out of the system for two days at high vacuum does not remove the adsorbed HCl from the surface of the mica. The surface elec. conductance is not detd. by the abs. vapor pressure, but by the relative humidity. The calcd. elec. conductance is considerably larger than the exptl. value. This discrepancy is explained by assuming that an appreciable no. of the electrolyte mols. are energetically adsorbed by the surfaces under investigation and do not contribute to the elec. conductance. Ray E. Heiks

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Heterogeneous catalysis in polymolecular adsorption layers. V. I. Goldanskii, N. N. Semenov, and N. M. Chirkov. *Compt. rend. acad. sci. U.R.S.S.* 52, 777-9 (1946)(in English); cf. *C.A.* 41, 2073a.—EtOH was esterified with AcOH in the presence of 0.6-18.0% HCl at 56-336 mm. and 45-82° with varying surface area of the glass vessel. The rate of the initial zero-order reaction was proportional to the area. Equil. was obtained at 92% esterification in the adsorbed layer as compared with 66% in the liquid phase but the temp. coeff. were practically identical. G. C. A.

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"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547820007-7

SEMENOV, NIKOLAY NIKOLAYEVICH,

Khimicheskaia kinetika i teoriia goreniia. (In: Akademiia Nauk SSSR. IUbileinyi sbornik posviashchennyi tridsatiletiiu Velikoi Oktiabr'-skoi sotsialisticheskoi revoliutsii. Moskva, 1947. v.1, p. 491-511)

Title tr.: Chemical kinetics and theory of combustion.

Q111, A45 v.1

SO: Aeronautical Sciences and Aviation in the Soviet Union, Library of Congress, 1955.

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SEMENOV, N. N.

PA 1/49T20

USSR/Engineering
Explosives

May 48

"Review of 'Safety Explosives' by A. I. Gol'dinder and K. K. Andreyev," Acad N. N. Semenov, Dir, Inst Chem Phys, Acad Sci USSR, 1 p

"Ugol'" No 5 (266)

Some 3,500 copies have been printed of 50-page book published in 1947 by Ug-TekhIzdat. It is extremely valuable, presents much factual information and gives complete history of problem.

[redacted]

1/49T20

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C A SEMONOV, N. N.

24

Theory of the spark ignition of explosive gas mixtures. Ya. B. Zel'dovich and N. N. Simonov (Acad. Sci. U.S.S.R., Moscow). *Zhur. Fiz. Khim.* 23, 1361-74(1949).—If a gas explosion is induced by spark whose energy is E, $E = Qk\lambda^3/\eta u^2 C_p \rho^2$; k is const., Q the heat of reaction, η the coeff. of utilization of the energy, u the linear velocity of flame propagation, C_p the heat capacity, λ the heat cond., and ρ the heat d. of the reaction products. The η was detd. by discharging condensers (capacity C microfarad) at the lowest discharge voltage through NH_3 gas (pressure P mm. Hg) and measuring the amt. of NH_3 decompd. assuming that 23,000 cal./mol. are spent on the decompn. The η was independent of the no. and of the length of the spark gap, was proportional to $C^{-0.31}$ when C varied from 0.0026 to 4.0, and somewhat increased with P (40-760); it was, e.g., 0.11 at $C = 0.0026$ and $P = 40$ and 0.025 at $C = 4$ and $P = 760$. The equation was applied to mixts. of CO (87-89%) with O_2 (11%) and H_2 (0-2%) and to H_2-O_2 mixts. Q, λ, C_p, and ρ were calcd. For u (cm./sec.) of CO-H_2-O_2 mixts., Barskii found $u = 81\ [H_2]^{1/2}/P^{1/4}$, [$H_2$] is the H concn. in %. The min. E was detd. at P of 50-760. k proved to be about 12 π, i.e. the calcd. radius R of the sphere raised by the spark to the flame temp. was 3 times as great as the width δ of the heated zone in the stationary flame. The rule $R = 3\delta$ is approx. satisfied also by the expts. of Lewis and Von Elbe (*C.A.* 42, 762f) whose theory is incorrect. On photographs of the spark in CO-H_2-O_2 mixts. the radius of the luminous sphere was about 1.3 R while the corresponding radius in CO_2-H_2O mixts. (at the same P) was 0.7 R. J. J. Bikerman

Inst. Chem. Phys, AS USSR

SEMENOV, N. N. (Acad.)

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SEMENOV, N. N.

Stalin's contribution to the progress of Soviet chemistry. Vest. Akad. nauk SSSR. No. 1, 1950. p. 81-3

CLML 19, 5, Nov., 1950

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SEMENOV, N. N.

KHOLODNY, N. G.

USSR/Chemistry - Combustion Dec 51

"The Three Boundaries of Combustion," Acad N. N. Semenov

"Dok Ak Nauk SSSR" Vol LXXXI, No 4, pp 645-648

In a combustion curve plotted against temp and pressure, a peninsula exists above and below which no combustion occurs. In some cases, the curve juts out again at a considerable distance above the peninsula constituting a 3d boundary. N. S. Akulov developed a theory concerning the 3d boundary in eq form. Under the conditions applying here, this eq has 3 roots, 2 of which are always imaginary or neg; therefore attempts to give an explanation based on the chain theory to the 3d

202T26

USSR/Chemistry - Combustion (Contd) Dec 51

boundary in this manner must fail. The 3d boundary exists only as an exception and under very special circumstances pertaining to the chain mechanism; as a rule it has a thermal nature. Semenov's theory for the 1st and 2d boundaries still holds.

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"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547820007-7

USSR/~~Sci Org - Acd Sci USSR~~ Academy of Sciences May 52

Biology - Photosynthesis

SEMENOV, H. H.

"Plan for Coordination of Scientific Research on Photosynthesis"

"Vest Ak Nauk" SSSR, No 5, p 86

The Presidium approved for 1952 a study by the Commission on Photosynthesis, Inst~~itute~~ of Physiology ~~of~~ Plants imeni K. A. Timiryazev, headed by Acad H. H. Semenov and Corr~~esponding Memb~~ Mem Acad Sci USSR A. P. Vinogradov. According to the Presidium, ~~this problem, called~~ "Photosynthesis" problem will be coordinated with the following insts: ~~Institutes of~~ Biochemistry imeni A. N. Bakh; Physiology ~~of~~ Plants imeni K. A. Timiryazev; Microbiology and Botany imeni V. L. Komorov; Geochemistry and Analytical Chemistry imeni B. I. Vernadskiy; Chem~~ics~~-physics; Organic Chemistry; and with the Laboratories of Biophysics, and Isotopes and Radiation. ~~Its~~ The Presidium's plan for 1953 is divided into 3 parts: (1) study of natural & chem~~ical~~ photosynthesis, (2) study of photosynthesis as a factor in productivity of plants, and (3) processing of biological bases and Techniques of photoculture.

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SEMENOV, N. N.

Chemical Abst.
Vol. 48 No. 3
Feb. 10, 1954
Fuels and Carbonization Products

Main problems of the modern theory of homogeneous combustion of homogeneous gas systems. N. N. Semenov. *Izvest. Akad. Nauk S.S.S.R., Otdel. Tekh. Nauk* 1953, 708-29.—Summary of the present theory of combustion as related to self-ignition, propagation rate, combustion, and detonation. 30 references. G. M. Kosolapoff

B.T.R.
V. 3, No. 3
Mar '54

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SEMENOV, N.N.

Certain problems in the theory of chain reactions. Zhur.fiz.khim. 27 no.6: 889-918 Je '53. (MLRA 6:7)
(Chemical reaction--Conditions and laws) (Akulov, Nikolai Sergeevich)

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547820007-7"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547820007-7

NEYMAN, M.B.; FEKLISOV, G.I.; SEMENOV, N.N., akademik.

Study of the chain reaction of oxidizing acetaldehyde with the aid of radio carbon. Dokl.AN SSSR 90 no.4:538-586 Je '53. (MLRA 6:5)

1. Akademiya Nauk SSSR (for Semenov). 2. Institut khimicheskoy fiziki Akademii nauk SSSR (for Neyman, Feklisov). (Acetaldehyde) (Carbon--Isotopes) (Oxidation)

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VOYEVODSKIY, V.V.; SEMENOV, N.N., akademik.

Conformity of heterogenous generation and breaking of chains. Dokl.AN SSSR 90 no.5:815-818 Je '53. (MLRA 6:5)

1. Institut khimicheskoy fiziki Akademii nauk SSSR (for Voevodskiy).
2. Akademiya nauk SSSR (for Semenov). (Chlorination) (Hydrocarbons)

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547820007-7"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547820007-7

REPA, L.A.; SHTERN, V.Ya.; SEMENOV, N.N. akademik.

Cold flame oxidation of propane. Dokl.AN SSSR 91 no.2:309-312 Jl '53. (MLRA 6:6)

1. Akademiya nauk SSSR (for Semenov). (Oxidation) (Propane)

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KALINACHENKO, V.R.; VARSHAVSKIY, Ya.M.; SHATENSHTEYN, A.I.; SEMENOV, N.N., akademik.

Study of the reactivity of aromatic compounds with the use of the method of isotopic exchange with deuterium bromide. Dokl.AN SSSR 91 no.3:577-580 Jl '53. (MLRA 6:7)

1. Akademiya nauk SSSR (for Semenov).
(Aromatic compounds) (Hydrogen--Isotopes)

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547820007-7"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547820007-7

SEMENOV, N.N., akademik; LUKOVNIKOV, A.F.; NEYMAN, M.B.

Investigation of the oxidation of propylene with the aid of radiocarbon. Dokl.AN SSSR 91 no.3:581-584 Jl '53. (MLRA 6:7)

1. Institut khimicheskoy fiziki Akademii nauk SSSR (for Lukovnikov and Neyman). 2. Akademiya nauk SSSR (for Semenov).
(Oxidation) (Propylene) (Carbon--Isotopes)

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547820007-7"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547820007-7

SEMENOV, N.N., akademik; POLTORAK, V.A.; VOYEVODSKIY, V.V.

Sole chain mechanism of the thermal decomposition of hydrocarbons. Dokl. AN SSSR 91 no.3:589-591 Jl '53. (MLRA 6:7)

1. Moskovskiy gosudarstvennyy universitet imeni M.V.Lomonosova, Institut khimicheskoy fiziki Akademii nauk SSSR (for Poltorak and Voyevodskiy).
2. Akademiya nauk SSSR (for Semenov). (Cracking process)

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547820007-7"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547820007-7

NEYMAN, M.B.; FEKLISOV, G.I.; SEMENOV, N.N., akademik.

Investigation of the oxidation of 1-C^{14}-butane and the theory of destructive oxidation. Dokl.AN SSSR 91 no.4:877-880 Ag '53. (MLRA 6:8)

1. Akademiya nauk SSSR (for Semenov). 2. Institut khimicheskoy fiziki Akademii nauk SSSR (for Neyman and Feklisov).
(Oxidation) (Butane) (Carbon--Isotopes)

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547820007-7"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547820007-7

NEYMAN, M.B.; FEKLISOV, G.I.; SEMENOV, N.N., akademik.

Kinetic method for the study of the mechanism of chemical reactions with the aid of tagged atoms. Dokl.AN SSSR 91 no.5:1137-1140 Ag '53. (MLRA 6:8)

1. Akademiya nauk SSSR (for Semenov). 2. Institut khimicheskoy fiziki Akademii nauk SSSR (for Neyman and Feliksov).
(Chemical reaction--Mechanism) (Isotopes)

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547820007-7"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547820007-7

KNORRE, D.G.; EMANUEL', N.M.; SEMENOV, N.N., akademik.

Effect of the intramolecular hydrogen bond on the reactivity of salicylaldehyde. Dokl.AN SSSR 91 no.5:1163-1166 Ag '53. (MLRA 6:8)

1. Akademiya nauk USSR (for Semenov). (Salicylaldehyde)

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547820007-7"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547820007-7

SERGEYEV, G.B.; SHTERN, V.Ya.; SEMENOV, N.N., akademik.

Photochemical oxidation of propane, sensitized by bromine. Dokl.AN SSSR 91 no.6:1357-1360 Ag '53. (MLRa 6:8)

1. Akademiya nauk SSSR (for Semenov). (Photochemistry) (Propane)

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547820007-7"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547820007-7

REVZIN, A.F.; SHTERN, V.Ya; SEMENOV, N.N., akademik.

Effect of small additions of NO_2 on the oxidation of propane. Dokl.AN SSSR 92 no.1:123-126 S '53. (MLRA 6:8)

1. Akademiya nauk SSSR (for Semenov). 2. Moskovskiy gosudarstvennyy universitet im. M.V.Lomonosova (for Revzin and Shtern).
(Oxidation) (Propane)

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547820007-7"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547820007-7

STEPUKHOVICH, A.D.; SEMENOV, N.N., akademik.

Steric factors of some elementary reversible reactions of adding atomic hydrogen to unsaturated molecules. Dokl.AN SSSR 92 no.1:127-130 S '53. (MLRA 6:8)

1. Akademiya nauk SSSR (for Semenov). (Compounds, Unsaturated) (Hydrogen)

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547820007-7"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547820007-7

ABRAMENKO, L.I.; KOLESNIKOVA, R.V.; SEMENOV, N.N., akademik.

Experimental determination of the succession of elementary reactions of atoms and radicals. Dokl.AN SSSR 92 no.2:349-352 S '53. (MLRA 6:9)

1. Akademiya nauk SSSR (for Semenov). 2. Institut khimicheskoy fiziki Akademii nauk SSSR (for Abramenko and Kolesnikova).
(Chemical reaction--Mechanism)

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547820007-7"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547820007-7

NEYMAN, M.B.; GONIKBERG, M.G.; MILLER, V.B.; SHAPOVALOV, Yu.M.; ZVEZDKIN, V.S.; SEMENOV, N.N., akademik.

Effect of pressure on the speed of ionic reactions of isotopic exchange. Dokl. AN SSSR 92 no.2:365-368 S '53. (MLRA 6:9)

1. Akademiya nauk SSSR (for Semenov). 2. Institut khimicheskoy fiziki i Institut organicheskoy khimii Akademii nauk SSSR (for Neyman, Gonikberg, Miller, Shapovalov and Zvezdkin).
(Chemical reaction--Rate of) (Isotopes)

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547820007-7"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547820007-7

NEYMAN, M.B.; KUZNETSOV, B.A.; SHAPOVALOV, Yu.M.; SEMENOV, N.N., akademik.

Effect of the structure of alkyl iodides on the velocity of their exchange with ions and atoms of iodine. Dokl.AN SSSR 92 no.3:611-614 S '53. (MLRA 6:9)

1. Akademiya nauk SSSR (for Semenov). 2. Institut khimicheskoy fiziki Akademii nauk SSSR (for Neyman, Kuznetsov and Shapovalov).
(Alkyl iodides) (Iodine)

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547820007-7"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547820007-7

ROZLOVSKIY, A.I.; SEMENOV, N.N., akademik.

Kinetics of the reaction in the dark of a hydrogen chloride mixture and critical conditions for its ignition. Dokl.AN SSSR 92 no.3:621-624 S '53. (MLRA 6:9)

1. Akademiya nauk SSSR (for Semenov). 2. Institut fiziki i matematiki Akademii nauk Azerbaydzhanskoy SSR (for Rozlovskiy).
(Hydrogen chloride)

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547820007-7"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547820007-7

KOLOTYRKIN, V.M.; TIKHOMIROV, M.V.; TUNITSKIY, N.N.; SEMENOV, N.N., akademik.

Mass spectrum of methane at increased pressure. Dokl.AN SSSR 92 no.6:1193-1195 O '53. (MLRA 6:10)

1. Akademiya nauk SSSR (for Semenov). 2. Fiziko-khimicheskiy institut im. L.Ya.Karpova (for Kolotyrkin, Tikhomirov and Tunitskiy).
(Methane) (Spectrum analysis)

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547820007-7"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547820007-7

SEMENOV N.N.

SEMENOV, N.N., akademik; CHEREDNICHENKO, V.M., redaktor; ZEMLYAKOVA, T.A., tekhnicheskiy redaktor

[Some problems in chemical kinetics and reaction capacity] O nekotorykh problemakh khmicheskoi kinetiki i reaktsionnoi sposobnosti. Moskva, Izd-vo Akademii nauk SSSR, 1954. 348 p. (MIRA 7:9)
(Cemical reaction, Rate of)

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547820007-7"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547820007-7

SEMENOV-N.N.

Development of organic synthesis based on the oxidation of hydrocarbons from petroleum. S. R. Sergienko. *Problemy Okisleniya Uglevodorodov, Akad. Nauk S.S.S.R. Inst. Neftii* 1954, 4–10.—In the introductory remarks made at the Moscow All-Union meeting on 14–18 May 1951, an increase in the use of petroleum in chemical industry was advocated. A brief summary was given of the achievements in this field in U.S.S.R. during the last 10 years. Development in the theory of chain oxidation of hydrocarbons. N. N. Semenov. *Ibid.* 13–39.—A comprehensive review covering the following topics was given: direct reaction between two saturated hydrocarbons; chain length and activity of free radicals; effect of biradicals on the chain propagation; competition between the chain reaction and the direct reaction among the mols.; branching of chain reactions and limiting phenomena; decay of chain reactions; oxidation of simple paraffins; wall effects in chain reactions. 47 references. Mechanism of negative catalysis in oxidation of hydrocarbons. M. B. Neiman. *Ibid.* 40–50.—A review with 12 references. Elementary reactions of simple hydrocarbons with atomic oxygen. L. I. Avramenko and R. V. Kolesnikova. *Ibid.* 51–9.—Oxidation of methane, ethane, propane, and benzene is reviewed. 17 references. Oxidation of hydrocarbons in the presence of hydrogen bromide. Z. K. Maizus and N. M. Emanuel. *Ibid.* 60–77.—A review of kinetics. 4 references. Investigation of oxidation of C^{14}-labeled propylene. A. F. Lukovnikov. *Ibid.* 78–88.—Synthesis of C^{14}-propylene, its oxidation, chromatographic sepn., and detn. of radioactivity of the reaction products are reviewed. 11 references. Mechanism of oxidation of propane. V. Ya. Shtern. *Ibid.* 89–103.—A review with 12 references. Unique features of oxidation of paraffinic hydrocarbons in liquid phase. A. N. Bashkirov and Ya. B. Chertkov. *Ibid.* 104–8; cf. C.A. 46, 1878.—A review with 5 references. The immediate effect of molecular oxygen on hydrocarbons of various structure in liquid phase. K. I. Ivanov. *Ibid.* 111–23.—Preparations of the following peroxides are fully reviewed: heptane 2-hydroperoxide, b_{9-35} 38°, n_D^{20} 1.4305, d_{20} 0.9073, $\delta = (n_D - n_C)/d\ 10^4 = 86.6$, MR_D 37.68; 2-methylhexane 2-hydroperoxide, b_{9-10} 21°, n_D^{20} 1.4270, d_{20} 0.8954, MR_D 37.91; 2,2,4-trimethyl-3-pentanone 4-hydroperoxide, b_{1-2} 31°, m. 73°; cyclohexane hydroperoxide, m. −20°, n_D^{20} 1.4638, d_{20} 1.018, MR_D 31.50; 1-ethylcyclohexane 1-hydroperoxide, b_{9-11} 34°, n_D^{20} 1.4678, d_{20} 0.9907, δ 85.4, MR_D 40.45; 1-propylcyclopentane 1-hydroperoxide, b_{9-10} 34.5°, n_D^{20} 1.4556, d_{20} 0.9581, δ 85.9, MR_D 40.96; indan 4-hydroperoxide, $b_{0.1}$ 75°; 1-methyl-1,2,3,4-tetrahydronaphthalene 1-hydroperoxide, $b_{0.1}$ 99–100°, n_D^{20} 1.55848, d_{20} 1.1114; fluorene 9-hydroperoxide, m. 93°; 1,4-dihydronaphthalene 1-hydroperoxide, $b_{0.1}$ 120–5°, n_D^{20} 1.5685, d_{20} 1.153; 1,1-diphenylethane 1-hydroperoxide, m. 82°; Ph_3COOH, m. 81°. 9 references. Peroxides from autoxidation of some alkanes and cycloalkanes. K. I. Ivanov, V. K. Savinova, and V. P. Zhakhovskaya. *Ibid.* 124–39.—Preparations and phys. properties are reviewed and discussed in detail. 15 references. Oxidation products of Tetralin. A. I. Kamneva and L. A. Salmin. *Ibid.* 140–4.—The mechanism of tar formation was studied by analyzing the autoxidation products of Tetralin. The fraction extd. with 5% aq. $NaHCO_3$ contained enols of 3,4-dihydro-1(2*H*)-naphthalenone and dihydronaphthoquinone. Among the oxidation products were: 1,2,3,4-tetrahydro-1-naphthyl hydroperoxide; 3,4-dihydro-1(2*H*)-naphthalenone; 3,4-dihydro-2(1*H*)-naphthalenone; dihydronaphthoquinone; o-$HO_2CC_6H_4CH_2CH_2CO_2H$; and polymerization products. Synthesis of 1,1-diphenylethanol-hydroperoxide and thermal decomposition of tertiary hydroperoxides. T. I. Yurzhenko, D. K. Tolopko, and V. A. Puchin. *Ibid.* 145–51. C.A.

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"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547820007-7

S.P. SERGIENKO

45, 2010a. Oxidation of petroleum jelly and kerosine with air and HNO_3. I. P. Losev and R. N. Smirnov. *Ibid.* 152–66.—A review. Oxidation of high-molecular weight hydrocarbons and petroleum oils in liquid phase. N. I. Chernozhukov. *Ibid.* 167–74.—A review with 10 references. Industrial methods of oxidation of petroleum hydrocarbons in liquid phase. V. K. Tsyskovskii. *Ibid.* 177–83.—A review with 17 references. Oxidation of paraffin wax. D. A. Chernyaev, N. S. Makyshinskaya, and G. P. Dobrovol'skii. *Ibid.* 184–99.—Prepn. of lubricating oils from paraffin wax on industrial scale is described in detail with diagrams of equipment. Conditions for the optimum yields are given and discussed at length. Fatty acids from paraffins. A. Yu. Rabinovich. *Ibid.* 200–7.—Discussion of technological processes. No references. Use of hydroxy acids from oxidation of petroleum hydrocarbons as film-forming materials. P. V. Serbin. *Ibid.* 208–21.—Compn., sepn., and properties of HO acids from oxidation of solid and liquid petroleum fractions are extensively discussed and the prepn. of varnishes on laboratory and plant scales is reviewed. A. P. K.

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AF701597 TREASURE ISLAND BOOK REVIEW

SEMENOV, N. N. (Institute for Chemical Physics, Academy of Sciences, USSR).
DISKUSSIYA (Discussion). In Problemy kinetiki i kataliza (Problems of Kinetics and Catalysis), vol. 8. Izdatel'stvo Akademii Nauk SSSR, 1955. Section II: General problems of the theory of catalysis. p. 161-162.

He briefly notes that catalysis is merely a particular case of kinetics and that the same characteristics can be observed in both catalytic and homogeneous reactions. All three types of homogeneous reactions take place in heterogeneous catalysis: 1. molecular reactions; 2. reactions of radicals; and 3. ionic reactions. Experiments by N. M. Chirkov and V. I. Gol'danskiy disclosed the connection between catalytic effects and surface conductivity, thus demonstrating the possible existence of ionic-heterogeneous catalysis. No definite theory of catalysis has been established as yet. One reference (Russian) (1946).

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"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547820007-7

SEMENOV, N N

SANDOMIRSKIY, V.B.; KRASIL'SHCHIKOV, A.I.; BONCH-BRUYEVICH, V.L.; SLIN'KO, M.G.; ROYTER, V.A.; YELOVICH, S.Yu.; VOYEVODSKIY, V.V.; BALANDIN, A.A.; ROGINSIY, S.Z.; SEMENOV, N.N.

Discussion. Probl.kin.i kat. 8:145-162 '55. (MLRA 9:5)

1. Institut fizicheskoy khimii AN SSSR (for Sandomirskiy, Royter, Yelovich, Roginskiy); 2. Gosudarstvennyy institut azotnoy promyshlennosti (for Krasil'shchikov); 3. Moskovskiy elektrotekhnicheskiy institut svyazi (for Bonch-Bruyevich); 4. Fiziko-khimicheskiy institut imeni L.Ya. Karpova (for Slin'ko); 5. Institut khimicheskioy fiziki AN SSSR (for Voyevodskiy, Semenov); 6. Institut organicheskoy khimii AN SSSR (for Balandin).
(Catalysis)

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"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547820007-7

BERKENGEYM, B.M.; SEMENOV, N.N.; SERPINSKIY, V.V.

Nikolai Aleksandrovich Shilov; on the 25th anniversary of his death. Zhur.fiz.khim.29 no.9:1730-1735 S '55. (MLRA 9:4)
(Shilov, Nikolai Aleksandrovich, 1872-1930)

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"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547820007-7

Semenov, N. N.

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3

Kinetics of the thermal decomposition of propyl bromide and isopropyl bromide. N. N. Semenov, G. B. Sergeev, and G. A. Kapralova (Moscow State Univ., Moscow). *Doklady Akad. Nauk S.S.S.R.* 105, 301-4 (1955).—The decompn. reactions of propyl bromides were studied in a vacuum app. of quartz glass at pressures not exceeding the vapor pressure of the bromides at room temp. The progress of the reaction was observed by the vapor-pressure changes. The results were poorly reproducible until many tests were made in the app. and it became coated with carbonaceous material, after which the reaction was no longer affected by the vessel-wall materials. PrBr decompn. was studied at 350-500° at an initial pressure of 90 mm. Hg, and its decompn. rate was $W = k_1[PrBr]$, where $k_1 = 3.8 \times 10^8\, e^{-42,000/RT}$, whereas the rate for iso-PrBr was $W = k_2$ [iso-PrBr], where $k_2 = 5.5 \times 10^{11}\, e^{-47,000/RT}$/sec. The reaction rates remain const. to about 15% conversion, after which they begin to drop, and the reaction becomes autoinhibiting. Br_2 addn. accelerates the reaction about 6 fold at 400°; 10% C_2H_4 at 403° slowed it down somewhat; O also accelerated the reaction. W. M. S.

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"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547820007-7

SEMENOV, N.N.; EMANUEL', N.M.

Scientific research in the Department of Chemical Kinetics. Uch.zap. Mosk.un. 174:283-293 '55. (MLRA 9:7)
(Chemical reaction, Rate of)

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"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547820007-7

FRENKEL', Ya.I.; SEMENOV, N.N., akademik, redaktor; SOKOVOV, A.A., doktor fiziko-matematicheskikh nauk, redaktor; BOGOLYUBOV, N.N., akademik, redaktor; TAMM, I.Ye., akademik, otvetstvennyy redaktor; ANSEL'M, A.I., doktor fiziko-matematicheskikh nauk, redaktor; BLOKHINTSEV, D.I., doktor fiziko-matematicheskikh nauk, redaktor; KONTOROVA, T.A., kandidat fiziko-matematicheskikh nauk, redaktor; GOLANT, V.Ye., redaktor izdatel'stva; SMIRNOVA, A.V., tekhnicheskiy redaktor

[Selected works] Sobranie izbrannykh trudov. Moskva, Izd-vo Akademii nauk SSSR. Vol.1. [Electrodynamics; general theory of electricity] Elektrodinamika; obshchaia teoriia elektrichestva. 1956. 370 p. (MLRA 9:11)

1. Chlen korrespondent AN SSSR (for Frenkel')
(Electrodynamics)

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"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547820007-7

SEMENOV, N.N., DZHELEPOV, V.P., GOLOVIN, B.M., KAZARINOV, Yu.M.

"Elastic Scattering of 580 MeV Neutrons by Protons and Neutrons," paper presented at CERN Symposium, 1956, appearing in Nuclear Instruments, No. 1, pp. 21-30, 1957

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"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547820007-7

SEMENOV, N. N.

Chem

N. N. Semenov and the modern doctrine of chemical processes. V. V. Voevodskii and N. M. Chirkov. *Khim. Nauka i Prom.* 1, 224-7(1956).—On the occasion of his 60th birthday a biography of Semenov is given and his concept of branching chains in the theory of reaction mechanisms is discussed. John Howe Scott

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"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547820007-7

Category: USSR / Physical Chemistry - Kinetics, Combustion. Explosives. Topochemistry. Catalysis

B-9

Abs Jour: Referat Zhur-Khimiya, No 9, 1957, 29983

Author : Semenov N. N.
Inst : Academy of Sciences USSR
Title : Some Problems of Chain Reactions. Questions of Initiation.

Orig Pub: Vestn. AN SSSR, 1956, No 7, 3-15

Abstract: Methods of initiating chain reactions are considered. Attention is called to the possibility of utilizing penetrating radiations from atomic piles and power stations for initiation of chain reactions. Considered is the possibility of formation of free radicals on reactions between saturated molecules. Processes of this kind (for example, $C_2H_4 + C_2H_6 \rightarrow 2C_2H_5$; $RH + O_2 \rightarrow R + HO_2$, where RH is aldehyde or hydrocarbon) should not have a large activation barrier and from the standpoint of energy are more advantageous than any conceivable monomolecular mechanism of onset within the system. Also considered is the possibility of initiating the chains by solid surfaces, in particular by the wass of the vessel.

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"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547820007-7

SEMENOV, N.N.

K-7

Category : Optics - Optical Methods of analysis. Instruments

Abs Jour : Ref Zhur - Fizika, No 1, 1957 No 2517

Author : Semenov, N.N.
Inst : All-Union Scientific-Research Inst. for Glass, USSR
Title : Method for Introducing Powders into an Arc Discharge in Spectral Analysis

Orig Pub : Zavod. laboratoriya, 1956, 22, No 4, 457-462

Abstract : The following new methods for introducing samples into a dc discharge zone are considered: 1. Drops of the solution or suspension from a stationary platinum vaporizer are coated on heated carbon electrodes, placed on the periphery of a rotating drum. The use of electrodes with a small drop-shaped indentation and the addition of a solution of potassium salts insured a very stable, although short-lived arc glow, but fractionization is also seen to take place. It is noted that under certain conditions almost all the UV radiation from the arc is absorbed by the particles condensed in the peripheral parts of the radiated cloud. 2. Combustion of the sample in a thin-wall carbon tube (outside and inside diameters 0.9 and 0.8 mm respectively), moving uniformly upward during the combustion process. Fractionization is eliminated during the steady state. 3. Pneumatic feed -- the investigated powder is placed in a vessel, made turbulent with a nitrogen jet emerging from a nozzle, and is introduced into the discharge through a duct in the lower electrode.

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"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547820007-7

SIMONOV, N.N.

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541.126

1703. EXPERIMENTAL STUDY OF SPHERICAL GAS DETONATION. Ya.B.Zel'dovich, S.M.Kogarko and N.N.Simonov. Zh. tekh. Fiz., Vol. 26, No. 8, 1744-68 (1956). In Russian.

The authors discuss the theoretical assumptions concerning the mechanism of a spherical gas detonation. Description is given of the determination of the efficiency of an electric spark and its dependence on energy, determination of the spark of energy equivalent to a lead azide system and the experiments with transitions of a detonation from a narrow tube into a wider space. About half the experiments were carried out with $C_2H_2 + 2.5\ O_2$ mixtures plus amounts of nitrogen varying from zero to 1.25 N_2. There are 21 photographs. The experiments which are in qualitative agreement with theory, show that it is possible to initiate a spherical gas detonation by means of a plane shock wave which is changing into a spherical one on passing from a tube into an open space, and in this case it is shown that the diameter must not be less than a certain critical size.

C.R.S.Manders

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"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547820007-7

SEMENOV, NIKOLAY NIKOLAYEVICH

439

PHASE I BOOK EXPLOITATION

Semenov, Nikolay Nikolayevich

O tsepnykh reaktsiyakh i teorii goreniya (Chain Reactions and the Theory of Combustion) Moscow, Izdatel'stvo "Znaniye," Series 8, Nr 17, 1957. 31 p. 46,500 copies printed.

Ed.: Faynboym, I. B.; Tech. Ed.: Gubin, M. I.; Corrector: Bauer, G. M.

PURPOSE: The pamphlet publicizes N. N. Semenov's paper read at the Nobel Prize presentation ceremony in Stockholm, 1956.

COVERAGE: This paper reviews progress in the study of chain reactions. Research was divided into two groups 1) application of chemical kinetics to the theory of combustion and detonation, and 2) study of the mechanism of chemical reactions, in particular, chain reactions. The author points out the great contribution of Soviet scientists to the development of chain-reaction concepts, to the theory of thermal detonation, and to the general theory of combustion. The paper covers Western as well as Soviet achievements. The second part of the pamphlet is a biography of Nikolay Nikolayevich Semenov written by Prof. N. M. Emanuel'. Semenov's contribution to the theory of chain reactions is the main theme.

Card 1/2

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"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547820007-7

SEMENOV, N.N., laureat Nobelevskoy premii, akademik.

The future of mankind is in your hands. IUn.tekh. no.7:3-4 Je '57. (MLRA 10:7)

(Research)

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547820007-7"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547820007-7

SEMONOV, N.N.

An Experimental Investigation of Spherical Detonation of Gases. Ya. B. Zel'dovich, S. M. Kogarko, and N. N. Simonov. *Sov. Phys. - Tech. Phys.*, No. 8, 1957, pp. 1,689-1,713. 12 refs. Translation. Theoretical and experimental results with discussion of testing equipment and applications.

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547820007-7"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547820007-7

4-11-20/34

AUTHOR: Semenov, N.N., Academician, Laureate of the Nobel Prize

TITLE: Young Friends! (Yunyye druz'ya!)

PERIODICAL: Znaniye - Sila, 1957, # 11, p 26 (USSR)

ABSTRACT: The author describes the long and successful road which Soviet science has covered under the Soviet regime. He states that the USSR scientists now have the necessary basis for successful work.
There is the authors picture.

AVAILABLE: Library of Congress

Card 1/1

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547820007-7"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547820007-7

SEMENOV, N.N., akademik.

Young people have inexhaustible opportunities in science. Tekh. mol. 25 no.1:6 Ja '57. (MLRA 10:2)
(Science--Study and teaching)

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547820007-7"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547820007-7

SEMENOV, N. N.

"Some Problems of Chain Reactions and of the Theory of Combustion," by N. N. Semanov, Uspekhi Khimii, Vol 26, No 3, Mar 57, pp 273-291

This is an expanded text of the Nobel address delivered by N. N. Semenov on 11 December 1956 at Stockholm. A bibliography consisting of 133 items, which includes 78 USSR references, follows the published text of the address. (U)

Sum-1374

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547820007-7"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547820007-7

Semenov, N.N.

7 3

Chem

12947*. (Russian.) Chemical Kinetics and Chain Reactions. Khimicheskaia kinetika i tsepnye reaktsii. N. N. Semenov. Vestnik Akademii Nauk SSSR, v. 27, Apr. 1957, p. 1-23.

Survey of the history of chain reactions. Polymerization as a good example of this type of reaction.

RM

MT

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547820007-7"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547820007-7

SEMENOV, N.N.

5(3) PHASE I BOOK EXPLOITATION SOV/1589

Akademiya nauk SSSR.

Khimiya bol'shikh molekul; sbornik statey (Chemistry of Large Molecules; Collection of Articles) Moscow, Izd-vo AN SSSR, 1958. 299 p. (Series: Akademiya nauk SSSR. Nauchno-populyarnaya seriya) 30,000 copies printed.

Compiler: G.V. Sklovskiy; Resp. Ed.: A.V. Topchiyev, Academician; Ed. of Publishing House: V.A. Boyarskiy; Tech. Ed.: I.N. Guseva.

PURPOSE: This book is intended for a wide circle of readers including those who have had no training in chemistry. It can also serve as a manual for propagandists, teachers, and journalists.

Card 1/8
3

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547820007-7"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547820007-7

COVERAGE: This collection of articles reflects the trend for the future development of the Soviet chemical industry as indicated by the May plenary session of the Central Committee of the Communist Party within the framework of the new Seven Year Plan. These articles were published in newspapers and journals. The authors, scientists and industry workers, developed the theme of accelerated development of the chemical industries, and sciences, with stress on the manufacture of synthetic fibers, plastics, and other materials. Some of the articles were abridged, revised, or enlarged. The articles were selected so as to give an adequate survey of the chemistry and technology of high-molecular-weight compounds and their use in industry, agriculture, and in the manufacture of consumers' goods. Mentioned are raw materials for the production of polymers. This book belongs to the popular-science series of the Academy of Sciences. Similar volumes are intended for future publication. No references are given.

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Preface 3

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547820007-7"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547820007-7

FRENKEL', Yakov Il'ich, [deceased 1945]; SEMENOV, N.N., akad. otv. red.; SOKOLOV, A.A. doktor fiz.-mat. nauk, red.; BOGOLYUBOV, N.N., akad., red.; TAMM, I.Ye., akad., red.; ANSEL'M, A.I., doktor fiz.-mat. nauk, red.; BLOKHINTSEV, D.I., doktor fiz.-mat. nauk, red.; KONTOROVA, T.A., kand. fiz.-mat. nauk, red. izd-va,; SMIRNOVA, A.V., tekhn. red.

[Selected works] Sobranie izbrannykh trudov. Moskva, Izd-vo Akad. nauk SSSR. Vol. 2. [Scientific articles] Nauchnye stat'i. 1958. 600 p. (MIRA 11:11)

1. Chlen-korrespondent AN SSSR (for Frenkel').
(Physics)

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547820007-7"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547820007-7

SEMENOV, Nikolay Nikolayevich,; BANKVITSER, A.L.,red. izd-va,; MAKUNI, Ye.V., tekhn. red.

[Some problems of chemical kinetics and reactivity; free radicals and chain reactions] O nekotorykh problemakh khimicheskoi kinetiki i reaktsionnoi sposobnosti; svobodnye radikaly i tsepnye reaktsii. Izd. 2., perer. i dop. Moskva, Izd-vo Akad. nauk SSSR, 1958. 685 p. (MIRA 11:11)

(Chemical reaction, Rate of)
(Heat of activation)

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547820007-7"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547820007-7

SEMENOV, N.N.

25-58-3-2/41

AUTHOR: Semenov, N.N., Academician

TITLE: The Century of Polymers (Vek polimerov)

PERIODICAL: Nauka i Zhizn', 1958, Nr 3, pp 3-5 (USSR)

ABSTRACT: The production of synthetic material of high molecular weight (polymers) represents one of the most important achievements of modern chemistry. During the next 15-20 years, world production of polymeric material will reach 25-30 million tons. Described are all kinds of synthetic material which today is of immense importance in industry, agriculture and building construction. The necessity of increasing the production of polymers has been stressed in degrees of the TsK KPSS and the USSR Council of Ministers concerning the planned expansion of the national economy for 1959-65. N.S. Khrushchev has stated that the chemical industry will occupy first place in the years to come.
There are five sketches.

AVAILABLE: Library of Congress

Card 1/1 1. Industry-USSR 2. Synthetics-Production

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547820007-7"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547820007-7

SEMENOV, N.N.

SOV-26-58-8-34/51

AUTHOR: None Given

TITLE: Lectures (Delivered) by Soviet Scientists at the Brussels Exhibition (Lektsii sovetskikh uchenykh na Bryussel'skoy vystavke)

PERIODICAL: Priroda, 1958, Nr 8, p 116 (USSR)

ABSTRACT: In August 1958, the greatest Soviet scientists will deliver lectures on the achievements of science in the USSR at the Brussels Fair. In the field of natural sciences the following will lecture: the academicians Semenov, N.N. on Chain Reactions in Chemistry, V.N. Kondrat'yev on Soviet Works on Mass-Spectroscopy, A.P. Vinogradov on the Biochemistry of Isotopes, A.V. Shubnikov on the Growth of Crystals, N.S. Shatskiy on the Tectonic Map of the USSR, A.I. Oparin on the Present State of the Problem on the Origin of Life, Tsitsin, N.V. on Problems of Distant Hybridization, I.V. Tyurin on Soils of the Soviet Union and their Utilization. The following lectures will be delivered by correspondent-members AS USSR N.M. Emanuel' on New Investigations in the Field of Chain Reactions, Andrianov, K.A. on Silicoorganic Compounds, Ye.K. Zavoyskiy on Phenomena of Electron Paramagnetic Resonance, I.M. Frank on the Application of Atomic Energy for Peaceful Purposes, V.I. Popkov on a Unique Ener-

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"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547820007-7

SOV-26-58-8-34/51

Lectures (Delivered) by Soviet Scientists at the Brussels Exhibition

getic System in the USSR. The delivered lectures will be available in English, French, Flemish and German as individual brochures.

1. Scientific Reports--USSR 2. Scientific personnel--Performance
3. Scientific personnel--USSR

Card 2/2

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547820007-7"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547820007-7

Name : SEMENOV, N. N.

Title : Academician

Remarks: N. N. Semenov is the author of an article entitled "New Stage in the Development of Chemical Science and Industry" in which he stresses the usefulness of synthetic materials in industry in general and especially in electrical and radio engineering, and in jet propulsion. He also mentions the wide use of synthetics in aircraft and stresses the necessity of the further development and expansion of the synthetic materials industry.

Source : N: Pravda, No. 8, 8 January 1958, pp. 3, c. 1-6; 4, c. 1-6

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547820007-7"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547820007-7

commercial problems which determine the prosperity of man. Within the next ten or twenty years it will be possible to increase electricity generation to any desired degree by means of thermo-nuclear processes. Synthetic materials will play an important part in meeting the demand for housing facilities, furniture, apparel etc., and huge amounts of **petroleum will be necessary from which** these synthetics can be produced because **petroleum** will be [illegible] and less for heating purposes. Working hours will be greatly reduced by the automation of production processes. Electronic computers will alleviate the strain on brainworkers. By means of improved soil cultivation, better fertilizers, and irrigation it will be possible to secure food for all mankind. A scientific and technical revolution will be in the wake of the transformation of biology from a descriptive science into a precise quantitative science. Human endeavors to fight diseases are also increasingly successful. The **author** winds up by

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"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547820007-7

saying that the people of the 20th century have a heavy responsibility for future generations. It is therefore necessary to do away with all differences of opinion, to maintain the status quo, and to devote all our strength to the maintenance of peace. There are 9 figures.

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"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547820007-7

21(8), 21(10) SOV/30-58-12-2/46

AUTHORS: Kurchatov, I. V., Semenov, N. N., Topchiyev, A. V., Aleksandrov, A. P., Ioffe, A. F., Fok, V. A., all of them Academicians, Vul, B. M., Corresponding Member, Academy of Sciences, USSR

TITLE: Outstanding Scientific Discovery (Vydayushcheyesya nauchnoye otkrytiye) The Award of the Nobel Prize for Physics to the Soviet Scientists P. A. Cherenkov, I. Ye. Tamm, I. M. Frank (K prisuzhdeniyu Nobelevskoy premii po fizike sovetskim uchenym P. A. Cherenkovu, I. Ye. Tammu, I. M. Franku)

PERIODICAL: Vestnik Akademii nauk SSSR, 1958, Nr 12, pp 7-9 (USSR)

ABSTRACT: The Cherenkov radiation named after its discoverer (1934) was discovered on investigating the luminescence of pure liquids under the influence of radium gamma-rays. The late Academician S. I. Vavilov suggested and supervised the research work. In 1937 I. Ye. Tamm and I. M. Frank elaborated the theory of this phenomenon, which showed that electrons have to be regarded as source of luminosity, these electrons moving steadily at a higher velocity than that of light. Observing the Cherenkov radiation has become a convenient method of measuring the velocity and direction of the flight of fast

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"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547820007-7

Outstanding Scientific Discovery. The Award of the Nobel Prize for Physics to the Soviet Scientists P. A. Cherenkov, I. Ye. Tamm, I. M. Frank SOV/30-58-12-2/46

political motives. In the years after the discovery of the Cherenkov radiation the Soviet Union achieved great success in many fields of physics.

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"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547820007-7

used again the gas is purified in a special filter. 5) The discharge zone is blown along the periphery by the gas which circulates in the system with the aid of a pump. 6) A rapid decomposition and subsequent contraction was attained which is reproducible for every change of the anode and the sample. The lamp permits the similar evaporation of a great number of materials in the same vessel. Technical data and dimensions of the new lamp are given in detail. There are 4 figures and 4 references, 1 of which is Slavic.

ASSOCIATION: Moscow All-Union Scientific Research Institute for Glass (Vsesoyuznyy nauchno - issledovatel'skiy institut stekla, Moskva)

SUBMITTED: December 24, 1956

AVAILABLE: Library of Congress

1. Carbon arc lamps - Applications 2. Spectrum analysis - Equipment

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547820007-7"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547820007-7

SEMENOV, N.N., akademik; ARBUZOV, A.Ye., akademik; MAMEDALIYEV, Yu.G.; KARGIN, V.A., akademik; TITOV, N.G., doktor khim.nauk; OBOLENTSEV, R.D., doktor khim.nauk; IMSHENETSKIY, A.A.; SISAKYAN, N.M.

Discussion of the report. Vest. AN SSSR 28 no.8:19-26 Ag '58. (MIRA 11:9)

1. Chlen-korrespondent AN SSSR (for Mamedaliyev, Imshenetskiy, Sisakyan).

(Chemistry, Organic--Synthesis)

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547820007-7"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547820007-7

SOV/ 76-32-6-1/46

AUTHORS: Karmilova, L. V., Nalbandyan, A. B., Semenov, N. N.

TITLE: An Investigation of the Combustion of Hydrogen With Oxygen Above the Lower Self-Ignition Limit (Issledovaniye kinetiki goreniya vodoroda s kislorodom nad nizhnim predelom samovosplameneniya)

PERIODICAL: Zhurnal fizicheskoy khimii, 1958, Vol. 32, No. 6, pp. 1193-1201 (USSR)

ABSTRACT: The process of low-temperature self-ignition and the kinetics of combustion can be classified in 5 stages of reaction, the summary velocity of the combustion of hydrogen being determined by the modification of the concentration of atomic hydrogen. For this process a differential equation by N. N. Semenov exists. As may be seen from a diagram, the relative concentration of atomic hydrogen reaches comparatively high values during reaction, thus disturbing the relation between the pressure drop Δp and the consumption of substance. It was observed that the pressure drop is proportional to the combustion at low relative concentrations of atomic hydrogen.

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"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547820007-7

SOV/76-32-6-1/46

An Investigation of the Combustion of Hydrogen With Oxygen Above the Lower Self-Ignition Limit

E_2 of the decomposition reaction was determined according to three different methods, all yielding identical results. Summarily, it can be stated on the strength of the evidence found that the maximum of reaction velocity is shifted to the range of low combustion with a reduction of $R = 2p_1/p_0$. This can be explained with the above mentioned phenomenon of the increase of concentration of hydrogen atoms. There are 12 figures, 4 tables, and 13 references, 9 of which are Soviet.

ASSOCIATION: Akademiya nauk SSSR, Institut khimicheskoy fiziki, Moskva (Moscow, Institute of Chemical Physics, AS USSR)

SUBMITTED: December 30, 1957

1. Hydrogen--Combustion 2. Combustion--Velocity
3. Oxygen--Chemical reactions 4. Mathematics

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"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547820007-7

PHASE I BOOK EXPLOITATION SOV/4044

Semenov, Nikolay Nikolayevich, Academician

Osnovnyye problemy khimicheskoy kinetiki; doklad na VIII Mendeleyevskom s"yezde po obshchey i prikladnoy khimii (Basic Problems of Chemical Kinetics; Report at the 8th Mendeleyev Conference on General and Applied Chemistry). Moscow, Izd-vo AN SSSR, 1959. 25 p. 10,000 copies printed.

Sponsoring Agency: Akademiya nauk SSSR.

PURPOSE: This report is addressed to theoretical chemists interested in recent research on the properties of free radicals, the role of free radicals in certain reactions (e.g.) chain reactions) and heterogeneous systems (catalysis, biochemistry).

COVERAGE: This brochure reports on the present status of the study of free radicals. The author limits himself to a discussion of certain results obtained from investigations of problems of free radicals made at the Institut khimicheskoy fiziki [Institute of Chemical Physics] and Laboratoriya anizotropnykh struktur [Laboratory of Anisotropic Structures] both of which he directs.

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"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547820007-7

SOLOV'YEV, Yuriy Ivanovich; FIGUROVSKIY, Nikolay Aleksandrovich; SEMENOV, N.N., akademik, otv.red.; ETKRMAN, A.I., red.izd-va; MAKOGONOVA, I.A., tekhn.red.

[Svante Arrhenius; 1859-1959] Svante Arrenius, 1859-1959. Moskva, Izd-vo Akad.nauk SSSR, 1959. 177 p. (MIRA 12:12)
(Arrhenius, Svante August, 1859-1927)

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547820007-7"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547820007-7

FRENKEL', Yakov Il'ich; SEMENOV, N.N., akademik, glavnyy red.;
GLAUBERMAN, A.Ye., prof., zamestitel' glavnogo red.;
BARKOVSKIY, I.V., red.izd-va; SMIRNOVA, A.V., tekhn.red.

[Selected works] Sobranie izbrannykh trudov. Moskva,
Izd-vo Akad.nauk SSSR. Vol.3. [Kinetic theory of liquids]
Kineticheskaia teoriia zhidkostei. 1959. 458 p. (MIRA 13:1)
(Liquids, Kinetic theory of)

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547820007-7"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547820007-7

5(0), 21(0), 24(0) SOV/30-59-2-9/60

AUTHOR: Semenov, N. N., Academician

TITLE: Progress of Science and Society (Progress nauki i obshchestvo)

PERIODICAL: Vestnik Akademii nauk SSSR, 1959, Nr 2, pp 48-52 (USSR)

ABSTRACT: This paper is a summary of speeches held by the author at public meetings of the Conference of scientists on the topic "Man and Progress of Science and Technology". The Conference was organized by the UNESCO in Paris in November 1958 (Footnote). It is the author's opinion that the achievements of science should be of benefit to everybody by making it possible to meet everybody's requirements. He further reports on the most important achievements in the field of physics (atomic power) and chemistry (plastics). In his opinion the research of the transition from the inorganic to the organic is the most important task. The author further states that science in interaction with society shows a considerable degree of self-acceleration. Already during the first years after the October Revolution a high number of universities and departments were established in the Soviet Union as well as a considerable number of scientific reasearch institutes, especially the Fiziko-tekhnicheskiy institut (Physico-Technical

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"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547820007-7

SOV/138-59-4-14/26

AUTHORS: Ela'minskiy, A.S. and Bass, S.I.

TITLE: The VIIIth Mendeleyev Congress (VIII Mendeleyevskiy s"yezd)

PERIODICAL: Kauchuk i Rezina, 1959, Nr 4, pp 47-48 (USSR)

ABSTRACT: This Congress on Pure and Applied Chemistry was held from 16th to 23rd March, 1959 in Moscow, and was attended by 1 500 representatives of Soviet Research Institutes, chemical factories and many foreign associations. Academician A.N. Nesmeyanov opened the meeting and emphasised the importance of the Mendeleyev Congresses. V.S. Fedorov, representative of the Gosudarstvennyy Komitet Soveta Ministrov SSSR po Khimii (State Committee of the Council of Ministers of the USSR for Chemistry) drew attention to Soviet achievements in chemistry. The following papers were read during the Congress: V.A. Kargin on the "Basic Problems in the Chemistry of Polymers"; A.N. Nesmeyanov on "The Periodic Law of D.I. Mendeleyev and Organic Chemistry"; N.N. Semenov

Card 1/2

on "Basic Problems of Chemical Kinetics"; A.P. Alekandrov on "Chemical Aspects of Utilizing Atomic Energy"; Ya. K. Syrkin, Corresponding Member of the Academy of Sciences of the USSR, on "The Basic Problems of the Theory of Chemical Bonds" etc. Special attention was drawn to the chemistry of high-molecular compounds and to methods for preparing starting materials for the synthesis of polymers based on petroleum crudes, further modification of the properties of polymers (block- and graft polymers, radiation vulcanization etc.). V.A. Kargin discussed three main aspects of polymer chemistry: preparation of polymers which can be used within wide temperature ranges; preparation of new and easily accessible polymer materials and processing of polymers. Further details of the lectures are to be published at a later date.

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"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547820007-7

15(2)

AUTHOR: None Given SOV/72-59-5-1/23

TITLE: Glass Science at the VIII Mendeleyev Congress (Nauka o stekle na VIII Mendeleyevskom s"yezde)

PERIODICAL: Steklo i keramika, 1959, Nr 5, pp 1-4 (USSR)

ABSTRACT: In the beginning a proclamation of the TsK KPSS to the personnel of the building material industries for a qualitative and quantitative increase of production is mentioned. The Congress took place in Moscow in the second half of March of the current year and was devoted to the 125th anniversary of the great scholar's birthday. Outstanding chemists of the Soviet Union and the People's Democracies attended the Congress. The principal problems of the development of chemistry were discussed at the plenary meetings and the meetings of the 18 Congress sections. Professor I. I. Kitaygorodskiy opened the meetings of the sub-section for glass and gave a survey of the stages of development of Soviet glass production as well as of a number of promising tasks in the field of glass technology. Moreover, the following lectures were held: Doctor Korani (People's Republic of Hungary) investigated the structure of the top-layers of glass;

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A. I. Avgustinnik (LTI imeni Lensovet) discussed the formation of a finely disperse crystalline phase from the glass-like phase; V. V. Vargin and G. O. Karapetyan (GOI) reported on absorption spectra, luminiscence, and photochemical properties of cerium-glass types; A. G. Vlasov (GOI) reported on the quantitative reciprocal relations between ordered and disordered glass phases; Ye. A. Porai-Koshits, Institut khimii silikatov AN SSSR (Institute of Silicate Chemistry of the AS USSR) discussed the reasons for the disagreement on the problem of the structure of glass-like substances; Professor O. K. Botvinkin, N. I. Ananich, and M. L. Mironova, Institut stekla (Glass Institute) reported on the Investigation of the Glass Structure by the Method of Thermal Analysis and Optical Polarisation; Ye. V. Podushko (GOI) discussed the new method of electric glass melting and the melting of silicates by means of high-frequency current; Yu. G. Shleynberg reported on strontium-magnesium glazes without lead and boron for faience and majolica which have been developed in the Gosudarstvennyy nauchno-issledovatel'skiy keramicheskiy institut (State Scientific Research Institute of Ceramics); L. S. Yastrebova, and V. S. Molchanov (GOI) discussed the role played by the

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surface protection film in the destruction of silicate glasses; G. I. Veynberg (GOI) discussed the coloring characteristics and the technology of phosphate glasses; O. V. Mazurin (LTI) reported on the mobility of sodium ions in glass types of the system Na_2O-RO-SiO_2; Z. A. Nosova (NII Stroykeramika) discussed the process of subduing the glazes by lead oxide and zirconium; L. G. Mel'nichenko, Khar'kovskiy politekhnicheskiy institut (Khar'kov Polytechnic Institute) reported on silicate formation and sintering processes in the briquetted glass layer; K. M. Yevstrop'yev investigated various types of glass; N. N. Semenov (Glass Institute) reported on the determination of impurities in silica by spectroscopic analysis; G. S. Bogdanova, and Ye. M. Orlova (Glass Institute) reported on types of electrode glass which has been devised by them. Yu. V. Rogoshin (Glass Institute) discussed the kinetics of the formation of crystallization centers in photo-sensitive types of glass ; Z. M. Syritskaya (Glass Institute) discussed the results of the investigation of the tendency of phosphatic systems towards glass formation; L. A. Grechanik, N. V. Petrovykh, and V. G. Karpechenko (NIIES) reported on the

investigation of types of semiconducting oxide glass on the basis of V_2O_5 ; N. V. Solomin, L. A. Grechanik, I. V. Shpakova, and Ye. A. Faynberg (NIIES) discussed the production of conductive films on types of glass which contain components easily to be regenerated.

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547820007-7"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547820007-7

On Catalytic Properties of Some Macromolecular Structures SOV/62-59-9-35/40

The catalytic activity of proteins and other macromolecular substances is also the reason for their strong biochemical effect. Preliminary measurements of the magnetic susceptibility of nucleic acids and synthetic polymers were carried out by V. I. Belova at the Institute of General and Inorganic Chemistry AS USSR, and A. A. Slinkin at the Institute of Organic Chemistry AS USSR. There are 3 Soviet references.

ASSOCIATION: Laboratoriya anizotropnykh struktur Akademii nauk SSSR (Laboratory for Anisotropic Structures of the Academy of Sciences, USSR)

SUBMITTED: June 5, 1959

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"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547820007-7

SOV/32-25-6-1/53

5(0)

AUTHORS: Semenov, N. N., Academician, Kleymenov, N. A.

TITLE: On Some Problems Concerning the Work of Factory Laboratories (O nekotorykh voprosakh raboty zavodskikh laboratoriy)

PERIODICAL: Zavodskaya Laboratoriya, 1959, Vol 25, Nr 6, pp 643 - 646 (USSR)

ABSTRACT: The successful accomplishment of the new Seven-year Plan depends to a great extent on scientific research work. In this connection it is pointed out that at present new chemical-technological processes are for the most part developed in research institutes. The elaboration of a new procedure takes at least 2-3 years, and additional time is subsequently required for further development, so that a considerable length of time is needed. Moreover, delays are often to be taken into account, which are sometimes due to a lack of readiness on part of factory directors to introduce new procedures deviced by other establishments. Owing to these and other reasons, simpler and concrete problems must be solved directly in the factory laboratories (FL), e.g. the improvement of technological processes, improvement of quality, enrichment of the production variety, etc. On the other hand it may be convenient for larger

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KONSTANTINOV, B.P.; DEBORIN, A.M., akademik; PEYVE, Ya.V.; IOFFE, A.F., akademik; MIKHAYLOV, A.I., prof.; SATPAYEV, K.I., akademik; ZHUKOV, Ye.M., akademik; LAVRENT'YEV, M.A., akademik; SEMENOV, N.N., akademik; PAVLOVSKIY, Ye.N., akademik; MINTS, I.I., akademik; SISAKYAN, N.M.; ROMASHKIN, P.S.; FEDOROV, Ye.K.; STECHKIN, B.S., akademik; MAYSKIY, I.M., akademik; PAVLOV, Todor, akademik; ARBUZOV, A.Ye., akademik; VASIL'YEV, N.V., doktor ekon.nauk; BELOUSOV, V.V.; MITIN, M.B., akademik; BLAGONRAVOV, A.A., akademik; KANTOROVICH, L.V.; RYBAKOV, B.A., akademik; NEMCHINOV, V.S., akademik

Discussion of the address. Vest. AN SSSR 29 no.4:34-63 Ap '59.
(MIRA 12:5)

1.Chlen-korrespondent AN SSSR (for Konstantinov, Peyve, Sisakyan, Romashkin, Fedorov, Belousov, Kantorovich).
(Science)

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"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547820007-7

5(3) SOV/79-29-9-1/76

AUTHORS: Semenov N. N., Shemyakin, M. M., Kochetkov, N. K.

TITLE: Academician Aleksandr Nikolayevich Nesmeyanov.(On His 60th Birthday)

PERIODICAL: Zhurnal obshchey khimii, 1959, Vol 29, Nr 9, pp 2811 - 2816 (USSR)

ABSTRACT: A. N. Nesmeyanov (born 9.9.1899 in Moscow) graduated from the Physical and Mathematical Department of Moscow University in 1922, became an assistant to the well-known chemist N. D. Zelinskiy, and later was appointed professor in ordinary and head of the Chair of Organic Chemistry; he attained the highest degree in 1947, when he was elected rector. He became a member of the Academy of Sciences in 1943, and of other institutions later on. An outstanding speaker, he has a special talent of rendering the most complicated subjects intelligible and pleasant. His activities have covered various fields, from a great number of problems belonging to elemental-organic chemistry to the synthesis of valuable new polymers, from theoretical problems of reaction mechanism and reactivity to the introduction of methods of synthesis relating to the compound

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Academician Aleksandr Nikolayevich Nesmeyanov. (On His 60th Birthday)

SOV/79-29-9-1/76

heterocyclic systems. Among his numerous achievements the following deserve first mention: the simple method of synthesizing metal-organic compounds by the aid of aromatic diazocompounds, a method which is still regarded as the best for the synthesis of aromatic derivatives of mercury, antimony, arsenic. This method has been developed to apply to syntheses of aromatic compounds of tin, zinc, thallium, aluminum as well as organomercury-silver compounds from compounds of Sn, Pb, As, Sb, Cd, Tl, and others. Remarkable syntheses are the ones yielding iodonium-, bromonium-, and chloronium compounds, and finally, oxonium compounds by the arylation of bromo- and chlorobenzene, and of diphenyl ether with diazonium borofluoride. Great importance has been and still is attached to his investigations concerning the addition of metals to the unsaturated compounds of the olefin and acetylene series, the exchange of metal atoms in the compounds of the above metals containing a β-chlorovinyl radical. Nesmeyanov has developed a new conception of the manifold reactivity and displacement of the reaction center in the reactions of metal compounds. His attempt of solving

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"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547820007-7

SEMENOV, N. N. Academician Secretary Dept. Chem Clum Sci, AS USSR

"Shaping of Public Opinion."

paper presented at the Pugwash Conference on Disarmament and World Security, Moscow, 27 Nov-6 Dec 60.

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547820007-7"

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SEMENOV, N.N., red.; MAMEDALIYEV, Yu.G., red.; DALIN, M.A., red.; NAGIYEV, M.F., red.; ALIYEV, V.S., red.; KRANTSEL', B.A., red.; SHUYKIN, N.I., red.

[Proceedings of the All-Union Conference on the Chemical Processing of Petroleum Hydrocarbons into Intermediate Products for the Synthesis of Fibers and Plastics] Trudy Vsesoiuznogo soveshchaniia po khimicheskoi pererabotke neftianykh uglevodorodov v poluprodukty dlia sinteza volokon i plasticheskikh mass. 1957. Baku, Izd-vo Akad. nauk Azerbaidzhanskoi SSR, 1960. 313 p. (MIRA 14:7)

1. Vsesoyuznoye soveshchaniye po khimicheskoy pererabotke neftyanykh uglevodorodov v poluprodukty dlya sinteza volokon i plasticheskikh mass. 1957.

(Textile fibers, Synthetic) (Plastics)

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SEMENOV, N.N., acad.

60th anniversary of A.N. Nesmeianov; a portrait. Analele chimie 15 no.1:181-185 Ja/Mr '60. (EEAI 9:8)
(Nesmeianov, Aleksandr Nikolaevich)
(Chemists, Russian)

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S/076/60/034/06/04/040
B015/B061

AUTHORS: Karmilova, L. V., Yenikolopyan, N. S., Nalbandyan, A. B., Semenov, N. N. (Moscow)

TITLE: Kinetics and Mechanism of the Oxidation of Methane. III. Detailed Mechanism of the Reaction

PERIODICAL: Zhurnal fizicheskoy khimii, 1960, Vol. 34, No. 6, pp. 1176-1185

TEXT: On the basis of the kinetic data and the modern conception of the energy of elementary reactions of radicals with stable molecules, a scheme of the most probable oxidation mechanism of methane in the gaseous phase is derived, with due consideration of the branch reaction of formaldehyde in the process. The oxidation mechanism can be represented to greater degrees of conversion by the following system of reactions: $CH_4 + O_2 \rightarrow \dot{C}H_3 + H\dot{O}_2$ (0) $\dot{C}H_3 + O_2 \rightarrow CH_2O + \dot{O}H$ (I)

$\dot{O}H + CH_4 \rightarrow H_2O + \dot{C}H_3$ (II) $\dot{O}H + CH_2O \rightarrow H_2O + H\dot{C}O$ (II')

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"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547820007-7

SEMENOV, N.N., akademik; DORFMAN, Ya.G., doktor fiziko-matematicheskikh nauk

Our country's outstanding physicist. Priroda 49 no. 12:32-39 D '60. (MIRA 13:12)

(Ioffee, Abram Fedorovich, 1880-)

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"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547820007-7

ALIKHANOV, F.N.; ARUSHANOV, N.A.; AKHUNDOV, V.Yu.; ALIZADE, M.A.; AZIZBEKOV, Sh.A.; BAGIROV, M.A.; VEZIROV, S.A.; VOLOBUYEV, V.R.; BEKILOV, F.M.; GADZHIYEV, N.M.; GUSEYNOV, D.M.; GUSEYNOV, I.A.; DADASHEV, E.K.; DADASHZADE, M.A.; DALIN, M.A.; ISKENDEROV, M.A.; KAZIYEV, M.A.; KARAYEV, A.I.; KASHKAY, M.S.; KEL'DYSH, M.V.; KERIMOV, A.G.; LEMBERANSKIY, A.D.; MAMEDOV, G.K.; MEKHTIYEV, M.R.; MIRZOYEV, S.A.; NAGIYEV, M.F.; NESRULLAYEV, N.I.; ORUDZHEV, A.K.; RADZHABOV, R.A.; RUDNEV, K.N.; SADYKHOV, R.N.; ~~SEMENOV, N.N.; TOPCHIYEV, A.V.;~~ TOPCHIBASHEV, M.A.; TAIROVA, T.A.; KHALILOV, Z.I.; EFENDIYEV, G.Kh.; SHUKYUROVA, Z.Z.

IUsif Geidarovich Mamedaliev; obituary. Dokl. AN Azerb. SSR 17 no.12:1123-1126 '61. (MIRA 15:2)
(Mamedaliev, Iusif Geidarovich, 1905-1961)

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"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547820007-7

S/030/61/000/004/003/015
B105/B206

AUTHOR: Semenov, N. N., Academician-Secretary, Academician (see Association)

TITLE: Department of Chemical Sciences

PERIODICAL: Vestnik Akademii nauk SSSR, no. 4, 1961, 30-36

TEXT: At the meeting of the Otdeleniye khimicheskikh nauk (Department of Chemical Sciences), Academician N. N. Semenov, Academician-Secretary of the Department, delivered the annual report. He pointed out that the majority of present studies deals with the problem of polymers, monomers, and auxiliary substances. Without impairing the efforts in this connection, comprehensive studies on other basic problems of chemistry must be started, since the introduction of chemistry into all branches of national economy is of great importance. Proper selection of the themes, choice of caders, and of capable young scientists as laboratory leaders are important tasks. Problems of the chemistry of natural and biologically active substances are of particular attention. The development of biophysical and bioorganic research is insufficient. A special seminary for physical research methods concerning

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B105/B206

Department of ...

Corresponding Member AS USSR). The main interest must be focused on proteins, nucleoproteins, and nucleic acids (Academician M. M. Shemyakin; M. V. Vol'kenshteyn and S. Ye. Bresler, Doctors of Chemical Sciences). Academicians A. N. Frumkin and S. I. Vol'fkovich were of the opinion that studies on the chemistry of metals should not be conducted at the Otdeleniye tekhnicheskikh nauk (Department of Technical Sciences). The Academicians I. I. Chernyayev, V. I. Spitsyn, and V. P. Markov, Doctor of Chemical Sciences, pointed out the necessity of increased organization in this field of science, including the chemistry of radioactive elements. I. P. Alimarin, Corresponding Member AS USSR, considered it suitable to intensify studies in the field of analytical chemistry, including organic analysis. N. M. Zhavoronkov, Corresponding Member AS USSR, dealt with problems of cader training. The Conference decided to confer on V. V. Serpinskiy the degree of Doctor of Chemical Sciences honoris causa.

ASSOCIATION: Otdeleniye khimicheskikh nauk (Department of Chemical Sciences) [Abstracter's note: Name of association was taken from first page of journal.]

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"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547820007-7

S/062/62/000/001/001/015
B106/B101

AUTHOR: Semenov, N. N.

TITLE: XXII Party Congress of the Communist Party of the Soviet Union and the future development of chemical sciences

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Otdeleniye khimicheskikh nauk, no. 1, 1962, 3-18

TEXT: This paper was read on the General Assembly of the Otdeleniye khimicheskikh nauk Akademii nauk SSSR (Department of Chemical Sciences of the Academy of Sciences USSR) on November 17, 1961. The future development of chemical sciences will be determined by the 20-year and 7-year plans elaborated in cooperation with the Department of Chemical Sciences in 1960. In conformity with the party program, Academician M. V. Keldysh, President of the AS USSR, showed the principal research routes in his paper at the General Assembly of the Academy of Sciences. This paper tries to outline the manifold scientific problems, the solution of which is very important. Above all, the further development of basic research into polymers, biochemistry, radiation chemistry, chemical problems of power engineering,

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XXII Party Congress of the ...

Chemistry); Institut khimii silikatov (Institute of Silicate Chemistry); Institut fizicheskoy khimii (Institute of Physical Chemistry); Institut obshchey i neorganicheskoy khimii (Institute of General and Inorganic Chemistry); nauchnyy Sovet po khimii prirodnykh soyedineniy (Scientific Council of Chemistry of Natural Substances); nauchnyy sovet po teorii khimicheskogo stroyeniya, kinetiki, reaktsionnoy sposobnosti i kataliza (Scientific Council of Theory of the Chemical Structure, Kinetics, Reactivity, and Catalysis); Nauchnyy sovet po fiziko-khimicheskim metodam issledovaniya i priboram (Scientific Council of Physicochemical Investigation Methods and Apparatus); Institut khimicheskoy fiziki (Institute of Chemical Physics); Institut vysokomolekulyarnykh soyedineniy (Institute of High-molecular Compounds); Novosibirskiy tsentr Sibirskogo otdeleniya Akademii nauk (Novosibirsk Center of the Siberian Department of the Academy of Sciences). A branch of the Institute of Chemical Physics is being built at present. The problem of establishing branches of the following institutes is discussed at present: Institut elektrokhimii (Institute of Electrochemistry), Institut geokhimii i analiticheskoy khimii (Institute of Geochemistry and Analytical Chemistry), Institute of General and Inorganic Chemistry, Institut neftekhimicheskogo sinteza

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B106/B101

XXII Party Congress of the ...

(Institute of Petrochemical Synthesis). The establishment of a center of solid-state physics is being planned at the Otdeleniye fiziko-matematicheskikh nauk (Department of Physics and Mathematics). V. I. Lenin, Stalin, Molotov, Kaganovich, Malenkov, N. S. Khrushchev, Academician V. A. Kargin, Academician P. A. Rebinder, and Academician A. V. Topchiyev, Vice President of the Academy of Sciences USSR, are mentioned. There are 6 Soviet references.

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"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547820007-7

S/025/62/000/010/001/002
D204/D307

AUTHORS: Semenov, N.N., Nobel prize winner, Academician and Yevdokimov, V.I., Candidate of Chemical Sciences

TITLE: Forever young

PERIODICAL: Nauka i zhizn', no. 10, 1962, 10-18

TEXT: A few isolated aspects of modern inorganic chemistry are discussed, which are at present in an early stage of development. The following subjects are treated: 1) Inorganic polymers, particularly linear structures bonded in all 3 directions (but not through every unit) to form a loose network, are thought promising. 2) Semiconductors, where an effort should be made to study the electrophysical characteristics of a wide range of materials; an important characteristic is the long life of current carriers, which is in turn determined by purity, perfection of lattice and surface properties. Synthesis of new semiconductors is urged, based e.g. on sulphides and tellurides. 3) Ultra-purification of known materials, leading to development of new properties and extended fields of

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"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547820007-7

Forever young

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D204/D307

application. Research is recommended into the related subject of trace analysis. 4) Behavior of materials at high pressures and low and high temperatures (3000 - 5000°C), the latter being important in e.g. the study of plasma. 5) Silicates and related materials. Particularly stressed are ordinary and crystalline glasses, zeolites (possibly to be applied as molecular sieves), protection of constructional materials at high temperatures, refractories, cements and concretes. 6) Extractive metallurgy involving the use of chlorine, especially promising for the rare-earth and other non-ferrous metals. Advantages of this method are listed, underlining the need for additional studies. The extraction of tin by chlorination is used as an example. Other new directions in this field, such as electrothermal methods, electron-beam fusion, high temperature decomposition and continuous reduction methods are mentioned. There are 15 figures.

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"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547820007-7

SEMENOV, N. N.

"On the Possible Importance of Excited States in the Kenetics of Chain Reactions."

presented at the Solvay Conference on the Transfer of Energy in Gases in Brussels, Belgium, 5-10 Nov '62

Inst. of Physical Chemistry, Acad. Sci. USSR

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547820007-7"

"APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001547820007-7

SEMJONOV, N.N. [Semenov, N.N.], akademik

Science and engineering in the future. Tech praca 15 no.1:1-5 J '63.

1. Akademie ved Svazu sovetskych socialistickych republik.

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