1. Method of obtaining sulfur-containing oligomers

By Pavelko, G. F. From U.S.S.R. (2015), SU 406456 A1 20150310, Language: Russian, Database: CAPLUS

A method of obtaining sulfur-contg. substances by reacting sulfur dichloride with acetylene in a nonpolar org. solvent; in order to obtain sulfur-contg. oligomers methylene chloride is used as a solvent and the reaction is carried out by continuous feeding of acetylene into a reaction medium in the presence of Lewis acids.

~0 Citings

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2. Investigation of SF6 injection during cyclic C2H2/SF6 flow for the formation of geometrically controlled carbon coils

By Jeon, Young-Chul; Park, Bitna; Park, Semi; Kim, Sung-Hoon From Journal of Nanoscience and Nanotechnology (2014), 14(12), 9182-9188. Language: English, Database: CAPLUS, DOI:10.1166/jnn.2014.10104

Carbon coils could be synthesized using C_2H_2/H_2 as source gases along with SF_6 as an incorporated additive gas using a thermal chem. vapor deposition (CVD) system. To obtain geometrically controlled carbon coils, a cyclic process, namely the turning on and off of C_2H_2 or SF_6 flow during the initial reaction stage, was carried out. According to the different reaction processes, different interruption/injection times of C_2H_2 or SF_6 flow and different injection sequences of the gas flow were investigated while maintaining the identical overall injection time of C_2H_2 and/or SF_6 flow. The formation of carbon microcoils (CMCs) is favored by the lowest interruption/injection time ratio of SF_6 flow within one cycle. In addn., the injection of SF_6 flow prior to the injection for the enhanced formation of geometrically controlled CMCs. The etching of materials, thereby promoting an increase in the no. of nucleation sites for the survived growth species to form CMCs, by the increased fluorine concn., originating from the dominant SF_6 influx, is understood to be the main cause for the exclusive CMCs formation.

~0 Citings

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3. Experimental determination of the content of sulphur and phosphorus of acetylene

By Yang, Xia; Luo, Dai-yan; Zhong, Jie-shui; Jiang, Jin-xu; Zheng, Shi-qing From Zhongguo Lujian (2014), (4), 26-29. Language: Chinese, Database: CAPLUS

Exptl. devices for the detn. of the content of sulfur and phosphorus are established, and the content of hydrogen sulfide and hydrogen phosphide are detd. by colorimetry, and the content of inorg. sulfur of calcium is detd. by volumetry. Accurate detn. will contribute to the content of sulfur and phosphorus in calcium carbide.

~0 Citings

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4. Photodissociation of (SO2...XH) Van der Waals complexes and clusters (XH = C2H2, C2H4, C2H6) excited at 32 040-32 090 cm-1 with formation of HSO2 and X

By Makarov, Vladimir I.; Kochubei, Sergei A.; Khmelinskii, Igor From Journal of Chemical Physics (2014), 140(5), 054304/1-054304/14. Language: English, Database: CAPLUS, DOI:10.1063/1.4863445

The authors studied photodecompn. dynamics of (SO₂···XH) Van der Waals' (VdW) complexes and clusters in gas phase, with $X = C_2H$, C_2H_3 , and C_2H_5 . SO₂ was excited by frequency-doubled radiation of a tunable dye laser and resonance-enhanced multiphoton ionization was used to detect the C_2H (m/z 25), C_2H_3 (m/z 27), and C_2H_5 (m/z 29) ions by time-of-flight mass spectroscopy. Spectra obtained at higher nozzle pressures (P₀ > 2.5 atm) indicate formation of clusters. Detailed studies of the VdW complex structure were carried out by analyzing the rotational structure of the resp. action spectra. The authors also performed ab initio theor. anal. of structures of the VdW complexes and transitional states leading to photodecompn. The structure of the transition state is significantly different as compared to the equil. ground-state structure of the resp. complex. The photodecompn. mechanism depends on the hydrocarbon mol. bound to SO₂. (c) 2014 American Institute of Physics.

~0 Citings

5. Effect of the on/off cycling modulation time ratio of C2H2/SF6 flows on the formation of geometrically controlled carbon coils

By Jeon, Young-Chul; Eum, Jun-Ho; Kim, Sung-Hoon; Park, Jung-Chul; Ahn, Sung II From Journal of Nanomaterials (2012), 908961, 6 pp.. Language: English, Database: CAPLUS, DOI:10.1155/2012/908961

Carbon coils could be synthesized using C_2H_2/H_2 as source gases and SF_6 as an incorporated additive gas under thermal chem. vapor deposition system. Nickel catalyst layer deposition and then hydrogen plasma pretreatment were performed prior to the carbon coils deposition reaction. To obtain the geometrically controlled carbon coils, the cycling on/off modulation process for C_2H_2/SF_6 flows was introduced during the initial reaction. According to the different reaction processes, the different cycling on/off ratio and the different cycling nos. for C_2H_2/SF_6 flows were carried out. The characteristics (formation d., morphol. and geometry) of the deposited carbon coils on the substrate were investigated. Microsized coils as well as nanosized coils could be existed under the higher growing/etching time ratio (180/30 s) condition. On the other hand, the formation of nanosized coils could be mainly obsd. under the lower growing/etching time ratio (30/180 s) condition. With increasing the nos. of cycles, the diams. of carbon nanofilaments composed the coils decreased. The enhanced etching ability by the fluorine species was considered the main cause to control the geometry of carbon coils according to the growing/etching time ratio of the cycling on/off modulation process for C_2H_2/SF_6 flows.

~1 Citing

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6. Sulfur removal process of acetylene by dry process

By Xiang, Wei

From Zhongguo Lujian (2009), (5), 33-35. Language: Chinese, Database: CAPLUS

The calcn. and index control of process and the impurity H_2S removal process of acetylene gas in acetylene prodn. by dry process were discussed. The problem of cleaning process was solved.

~0 Citings

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7. Process for the purification of a diolefin hydrocarbon stream

By Cottrell, Paul R. From U.S. (2008), US 7385097 B1 20080610, Language: English, Database: CAPLUS

The diolefin hydrocarbon stream contg. acetylene and sulfur compds. is treated by selective hydrogenation using a hydrogenation catalyst to hydrogenate the acetylene and collect the sulfur as sulfides and polymers on the catalyst. The treated gases are processed to recover the diolefin produced. The spent catalyst is treated first with hot hydrogen for redn. of the sulfides and then with oxygen to remove the polymers by combustion.

~1 Citing

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8. Synthesis and properties of polyenic oligosulfides derived from acetylene and elemental sulfur

By Trofimov, B. A.; Mal'kina, A. G.; Dorofeev, I. A.; Myachina, G. F.; Rodionova, I. V.; Vakul'skaya, T. I.; Sinegovskaya, L. M.; Skotheim, T. A.

From Russian Journal of General Chemistry (2007), 77(9), 1559-1566. Language: English, Database: CAPLUS, DOI:10.1134/S1070363207090101

Oligosulfides derived from ethyne-1,2-dithiol were synthesized in up to 96% yield via insertion of elemental sulfur into the Na-C_{sp} bond of sodium acetylides (HC=CNa, NaC=CSNa) in liq. ammonia, followed by hydrolysis and spontaneous oligomerization of ethynethiols, ethynedithiols, and mono-and bis-(polysulfanyl)ethynes (HC=CSH, HSC=CSH, HC=CS_xH, HS_xC=CS_yH). The resulting polyenic oligosulfides were isolated as brown powders melting in the temp. range from 122 to 203° and contg. up to 77% of sulfur; they are sparingly sol. in org. solvents and are high-resistance semiconductors (10⁻¹³-10⁻¹⁴ S cm⁻¹) possessing paramagnetic (10¹⁷-10¹⁸ spin g⁻¹) and redox properties. According to the data of IR and ESR spectroscopy and cyclic voltammetry, the oligomers obtained consist mainly of different oligosulfide units, including oligothienothiophene structures. They also ensure a high discharge capacity (345-720 mA h g⁻¹) of lithium sulfur rechargeable batteries.

~2 Citings

9. Use of a gas for the manufacture of an agent for diagnosing coronary perfusion

By Piros, David From Eur. Pat. Appl. (2005), EP 1518560 A1 20050330, Language: English, Database: CAPLUS

Use of a gas, or gas precursor, which is of such a nature that it is detectable via the expired breath from a mammal, for the manuf. of a diagnostically acceptable, injectable diagnosing agent for diagnosing coronary perfusion in said mammal, including man is described. The gas is selected from nitrous oxide, a noble gas, preferably krypton or xenon, a lower hydrocarbon, preferably ethane, ethene, propene or acetylene, sulfur hexafluoride, and acetone. The gas precursor is a liq., i.e., a fluorinated lower hydrocarbon or hydrocarbon deriv., preferably sevoflurane. The gas or gas precursor is dissolved in a diagnostically acceptable liq., such as Ringer's soln.-acetate, a NaCl aq. soln., blood or artificial blood and administrated through a catheter into a coronary artery.

~0 Citings

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10. Use of a gas for the manufacture of a monitoring agent for diagnosing passage through the intestinal tract or exocrine function of the pancreas

By Hahn, Robert

From Eur. Pat. Appl. (2005), EP 1518559 A1 20050330, Language: English, Database: CAPLUS

Use of a gas or gas precursor, which is of such a nature that it is detectable via the expired breath from a mammal, for the manuf. of a diagnostically acceptable monitoring agent for diagnosing passage through the gastrointestinal tract or exocrine function of the pancreas in said mammal, including man is described. The gas is selected from nitrous oxide, a noble gas, preferably krypton or xenon, a lower hydrocarbon, preferably ethane, ethene, propene or acetylene, sulfur hexafluoride, and acetone. The gas precursor is a liq., i.e., a fluorinated lower hydrocarbon or hydrocarbon deriv., preferably sevoflurane or ethanol. The gas or gas precursor in the monitoring agent is dissolved or dispersed in a diagnostically acceptable liq. and encapsulated for oral administration and release at alk. conditions. For example, a gas which is detectable in the expired breath of a patient, such as N_2O , was adsorbed on a mol. sieve material that will release the gas upon contact with water. The mol. sieve material with adsorbed gas is encapsulated in a controlled release dragee material. The dragee material is of such a nature that it will be degraded and release the mol. sieve material, and hence the gas, at a specific site in the intestine, such as the ventricle, duodenum, ileum or colon, and/or at specific pH conditions, such as alk. conditions.

~0 Citings

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11. Magnetic properties of iron/graphite core-shell nanoparticles prepared by annealing of Fe-C-N-based nanocomposite

By David, B.; Pizurova, N.; Schneeweiss, O.; Bezdicka, P.; Alexandrescu, R.; Morjan, I.; Crunteanu, A.; Voicu, I. From Journal of Magnetism and Magnetic Materials (2005), 290-291(Pt. 1), 179-182. Language: English, Database: CAPLUS, DOI:10.1016/j.jmmm.2004.11.176

The authors are reporting the phase compn. and magnetic properties of the core-shell structured Fe/graphite nanoparticles formed during annealing of a nanopowder prepd. by laser pyrolysis of gas phase reactants. The originally synthesized Fe-C-N-based nanocomposite powder was characterized by TEM, XRD and magnetic measurements. The nanopowder was heated up to 800° in vacuum. The presence of Fe nanoparticles with a mean diam. of 40 nm in the annealed state of the nanopowder was proved by XRD and TEM anal. Mossbauer spectroscopy was used for the characterization of the synthesized/annealed nanopowder to prove the qual. change in the phase compn.

~1 Citing

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12. Validation of a new spectrometer for noninvasive measurement of cardiac output

By Baum, Marc M.; Kumar, Sasi; Moss, John A.; Wagner, Peter D. From Review of Scientific Instruments (2004), 75(7), 2290-2299. Language: English, Database: CAPLUS, DOI:10.1063/1.1764606

Acetylene is a blood-sol. gas and for many years its uptake rate during rebreathing tests has been used to calc. the flow rate of blood through the lungs (normally equal to cardiac output) as well as the vol. of lung tissue. A new, portable, noninvasive instrument for cardiac output detn. using the acetylene uptake method is described. The analyzer relies on nondispersive IR absorption spectroscopy as its principle of operation and is configured for extractive (side-stream) sampling. The instrument affords exceptionally fast (30 ms, 10%-90%, 90%-10%, at 500 mL min-1 flow rates), interference-free, simultaneous measurement of acetylene, sulfur hexafluoride (an insol. ref. gas used in the cardiac output calcn.), and carbon dioxide (to det. alveolar ventilation), with good (typically $\pm 2\%$ full-scale) signal-to-noise ratios. Comparison tests with a mass spectrometer using serially dild. calibration gas samples gave excellent (R²>0.99) correlation for all three gases, validating the IR system's linearity and accuracy. A similar level of agreement between the devices also was obsd. during human subject C_2H_2 uptake tests (at rest and under incremental levels of exercise), with the instruments sampling a common extd. gas stream. Cardiac output measurements by both instruments was confirmed by the expected linear relationship between cardiac output and oxygen consumption, with both the slope and intercept in the published range. These results indicate that the portable, low-cost, rugged prototype analyzer discussed here is suitable for measuring cardiac output noninvasively in a point-of-care setting.

~1 Citing

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13. Practical synthesis of thiirene 1-oxides that possess two bulky alkyl substituents

By Nakayama, Juzo; Takahashi, Kenta; Ono, Yutaka; Morita, Michiyo; Sugihara, Yoshiaki; Ishii, Akihiko From Heteroatom Chemistry (2002), 13(5), 424-430. Language: English, Database: CAPLUS, DOI:10.1002/hc.10070

Acetylenes that possess two bulky alkyl substituents reacted with sulfur dichloride to furnish the corresponding 2,3dialkyl-2,3-dichlorothiiranes (I) nearly quant. The alk. hydrolysis of I afforded 2,3-dialkylthiirene 1-oxides (II) in high yields. These two reactions could be successively carried out in one flask, and 2,3-di-tert-butyl-, 2,3-di-(1-adamantyl)-, and 2-(1-adamantyl)-3-tert-butylthiirene 1-oxides were obtained in 70, 80, and 90% yields, resp., based on the starting acetylenes, thus providing the most convenient synthesis of thiirene 1-oxides. Disulfur dichloride also reacted with acetylenes to give I in good yields with the elimination of one sulfur atom. Although the alk. hydrolysis of I provided II exclusively, acid hydrolysis gave a mixt. of α -oxo thioketone and thiirene 1-oxide II in modest yields. All II isomerized to produce α -oxo thioketones in high yields when heated in boiling toluene. Reactions of Me₃CC=CCMe₂CMe₂C=CCMe₃ with disulfur dichloride and with sulfur dichloride gave 2,7-di-tert.-butyl-3,6-dichloro-4,4,5,5-tetramethyl-4,5-dihydrothiepin in high yields.

~10 Citings

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14. Paste material containing metal complex for metal film formation

By Nakamoto, Masami; Harada, Akio From Jpn. Kokai Tokkyo Koho (2001), JP 2001240981 A 20010904, Language: Japanese, Database: CAPLUS

The paste material contains (1) a metal complex having phosphine-type ligand and acetylene-type ligand, (2) a metal complex having phosphine-type ligand and organosulfur-type ligand, (3) a metal complex having acetylene-type ligand or organosulfur-type ligand, and quaternary ammonium counter cation, and/or (4) Au complex having organosulfur-type ligand and Au at 1:1 mol ratio. A metal film is formed by coating the paste material on a substrate and then heat treating at 300-400°. The paste is applicable for forming a metal film on a flexible plastic sheet.



~0 Citings

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15. Acetylene --- sulfur dioxide van der Waals complexes: a theoretical study

By Rayon, V. M.; Sordo, J. A. From Chemical Physics Letters (2001), 341(5,6), 575-584. Language: English, Database: CAPLUS, DOI:10.1016/S0009-2614(01)00506-1

Ab initio calcns. at the MP2 and QCISD levels of theory using Pople's 6-31G(d,p) and Dunning's aug-cc-pVDZ basis sets were carried out to explore the potential energy surfaces corresponding to the C_2H_2 ...SO₂ complex. A C_s stacked structure was found to be the most stable one in agreement with microwave expts. The structural information on other dimers and trimers located may be useful to fit a no. of unassigned transitions. The lack of tunneling splittings in the microwave spectrum is explained in terms of the high barrier computed for the internal rotation of the C_2H_2 subunit.

~11 Citings

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16. Method for laser preparation of macroscopic carbon fullerene molecules

By Morjan, Gheorghe Ion; Alexandrescu, E. Rodica; Voicu, N. Ion; Pugna, Valeria Gabriela From Rom. (1999), RO 115150 B1 19991130, Language: Romanian, Database: CAPLUS

The title method includes applying a CO_2 -laser radiation (with continuous operating and emission at 10.6 μ) to a gaseous mixt. of benzene, sulfur hexafluoride, and alternatively, oxygen or argon, at different pressure, and inducing decompn. and recombination reactions, resulting a fine powder (soot). The soot is dissolved in toluene, filtered, and the ext. is dried, obtaining C_{60} and C_{70} carbon fullerene mols. Acetylene, sulfur dioxide, carbon sulfide, and carbon oxide are byproducts in these reactions. The CO_2 -laser radiation and gaseous mixt. interaction takes place under low pressure in a tubular precincts, which has KCI or NaCI windows, laser radiation transparent, at both ends. The macroscopic carbon fullerene mols. are suitable for manufg. of superconductors, catalysts, high energy fuel, polymers, and biomaterials.

~0 Citings

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17. Reactions of acetylenes, possessing bulky alkyl substituents, with S2Cl2. Unexpected formation of α -oxo thioketones, thiirene 1-oxides, and 1,2-dithietes

By Nakayama, Juzo; Takahashi, Kenta; Watanabe, Toshiaki; Sugihara, Yoshiaki; Ishii, Akihiko From Tetrahedron Letters (2000), 41(43), 8349-8352. Language: English, Database: CAPLUS, DOI:10.1016/S0040-4039(00)01475-1

The reaction of Me₃CC=CCMe₃ with S₂Cl₂, followed by purifn. with silica-gel column chromatog., gave 2,2,5,5-tetramethyl-4-oxo-3-hexanethione and 2,3-di-tert-butylthiirene 1-oxide in 37 and 10% yield, resp., by hydrolysis of the initial product, 2,3-di-tert-butyl-2,3-dichloroepisulfide. The same work-up of the reaction mixt. of di-1-adamantylacetylene with S₂Cl₂ provided 2-oxoethanethione, thiirene 1-oxide, and 1,2-dithiete in 4-33, 8-27, and 3-21% yield, resp. The reaction of 2,2,5,5,6,6,9,9-octamethyl-3,7-decadiyne with S₂Cl₂ furnished a 4H,5H-thiepin as the sole product in 99% yield.

~14 Citings

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18. The interaction of strong hydrogen-bonding molecules with the surface of ice nanocrystals

By Delzeit, Lance; Devlin, J. Paul Edited By:Durig, James R.; Klabunde, Kenneth J From International Conference on Low Temperature Chemistry, 2nd, Kansas City, Mo., Aug. 4-9, 1996 (1996), 123-124. Language: English, Database: CAPLUS

The interaction of strong hydrogen-bonding mols. with the surface and/or surface modes of ice nanocrystals was studied b IR spectroscopy. Two different types of difference spectra have been obsd. as a result of the adsorption of strong hydrogen-bonding adsorbates. The first, which has been obsd. using hydrogen sulfide, acetylene, sulfur dioxide, and trimethylamine produces a band structure in the bulk region of the difference spectrum which closely mimics that of cryst. ice. The second type has, so far, only been obsd. with the use of hydrogen cyanide. It produces a band structure in the bulk region of the difference spectra which is dramatically different from that of the above adsorbates. These difference spectra more closely resembles a thin film amorphous deposit.

~1 Citing

By Skotheim, Terje A.; Trofimov, Boris; Grigorevna, Malkina A.; Koralev, Igor P. From U.S. (1996), US 5529860 A 19960625, Language: English, Database: CAPLUS

The present invention relates to novel electroactive energy storing polyacetylene-copolysulfur (PAS) materials of general formula $(C_2 S_x)_n$ wherein x is greater than 1 to about 100, and n is equal to or greater than 2. This invention also relates to novel secondary batteries contg. pos. electrode materials comprised of said polyacetylene-co-polysulfur materials with improved storage capacity and cycle life at ambient and sub-ambient temps.

~36 Citings

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20. Some reactions of electron rich acetylenes with sulfur compounds

By Himbert, Gerhard; Finkele, Christoph E.; Pfeifer, Klaus-P.; Nasshan, Hans From Phosphorus, Sulfur and Silicon and the Related Elements (1994), 95 & 96(1-4), 407-8. Language: English, Database: CAPLUS, DOI:10.1080/10426509408034254

A review with 7 refs. Some known and some new electron rich acetylenes react with N-sulfinyl-sulfonamides and - carboxyamides to give α -sulfinyl-acetic acid derivs. Reaction of ynediamines with tosyl azide furnished the new N²-tosylazooxalamidines.

~0 Citings

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21. Selective diolefin hydrogenation

By Gildert, Gary; Barchas, Richard

From Berichte - Deutsche Wissenschaftliche Gesellschaft fuer Erdoel, Erdgas und Kohle, Tagungsbericht (1993), 9305, 59-66. Language: English, Database: CAPLUS

A hydrotreating process (CDHydro) for ethylene plants, refinery and petrochem. C_4 streams, and gasoline (C_5 olefin removal) is described. Examples include methylacetylene and propadiene removal from steam cracker C_3 , acetylene and butadiene hydrogenation in steam cracker c_4 , desulfurization and butadiene hydrogenation in FCC C_4 , and desulfurization and C_5 diene hydrogenation in FCC C_5 fractions.

~3 Citings

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22. Relationships between the plasma environment and the composition and optical properties of plasmapolymerized thin films produced in rf discharges of acetylene-sulfur hexafluoride mixtures

By Durrant, Steven F.; Mota, Rogerio P.; Bica de Moraes, Mario A. From Journal of Applied Physics (1992), 71(1), 448-55. Language: English, Database: CAPLUS, DOI:10.1063/1.350676

Polymer films were grown in rf discharges contg. different proportions of C_2H_2 and SF_6 . Quant. optical emission spectrometry (actinometry) was used to follow the trends in the plasma concns. of the species H and F, and more tentatively, of CH, CF, and CF₂, as a function of the feed compn. IR spectroscopy revealed the d. of CH and CF bonds in the deposited material. As the partial pressure of SF_6 in the feed was increased, the degree of fluorination of the polymer also rose. The form of the dependency of the deposition rate on the proportion of SF_6 in the feed was in good qual. agreement with the activated growth model. From transmission UV-visible spectroscopy data the refractive index and the absorption coeff. of the polymers were calcd. as a function of the deposition parameters. Since the optical gap depended to some extent upon the degree of fluorination, it could, within limits, be detd. by a suitable choice of the proportion of SF_6 in the feed.

~38 Citings

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23. Microwave spectrum, structure, dipole moment, and deuterium nuclear quadrupole coupling constants of the acetylene-sulfur dioxide van der Waals complex

By Andrews, Anne M.; Hillig, Kurt W., II; Kuczkowski, Robert L.; Legon, A. C.; Howard, N. W. From Journal of Chemical Physics (1991), 94(11), 6947-55. Language: English, Database: CAPLUS, DOI:10.1063/1.460228

Thirty-three a- and c-dipole transitions of the acetylene-SO₂ van der Waals complex were obsd. by Fourier transform microwave spectroscopy and fit to the rotational consts. A = 7176.804(2), B = 2234.962(1), and C = 1796.160(1) MHz. The complex has C_s symmetry with the C₂-H₂ and SO₂ moieties both straddling an a-c symmetry plane (i.e., only the S atom lies in the plane). The two subunit are sepd. by a distance $R_{cm} = 3.430(1)$ Å and the C₂ axis of the SO₂ is tilted 14.1(1)° from perpendicular to the R_{cm} vector, with the S atom closer to the C₂H₂. The dipole moment of the complex is 1.683(5) D. The deuterium nuclear quadrupole hyperfine structure was resolved for several transitions in both C₂HD·SO₂ and C₂D₂·SO₂. A lower limit for the barrier to internal rotation of the C₂H₂ was estd. to be 150 cm⁻¹ from the absence of tunneling splittings. The binding energy was estd. by the pseudo-diat. model as 2.1 kcal/mol. A distributed multipole anal. was investigated to rationalize the structure and binding of the complex.

~10 Citings

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24. Sulfonic acid group-containing thin films prepared by plasma polymerization

By Inagaki, N.; Tasaka, S.; Miyazaki, H. From Journal of Applied Polymer Science (1989), 38(10), 1829-38. Language: English, Database: CAPLUS, DOI:10.1002/app.1989.070381005

Plasma copolymn. of C₂H₂-SO₂, C₂H₄-SO₂, and CH₄-SO₂ was investigated to obtain thin films contg. sulfonic acid groups. Plasma copolymn. of C₂H₂-SO₂ and C₂H₄-SO₂ gave filmlike products but CH₄-SO₂ did not. The plasma polymers possessed several S and O moieties and hydrocarbon chains. The S moieties involved thio, sulfite, and sulfonic acid groups, with the thio groups accounting for 70-80 mol% of the total. The O moieties were OH and CO groups with small amt. of CO₂H groups. The plasma polymers showed good hydrophilicity (the surface energy was 54-56 mN/m) and good antithrombogenicity.

~21 Citings

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25. Surface synthesis of thiophene

By Gentle, T. M.; Tsai, C. T.; Walley, K. P.; Gellman, A. J. From Catalysis Letters (1989), 2(1), 19-26. Language: English, Database: CAPLUS, DOI:10.1007/BF00765326

A cyclization reaction was obsd. in which thiophene is produced from acetylene and sulfur co-adsorbed on the Pd(111) surface. As in the case of acetylene trimerization to benzene, the reaction yielding thiophene can proceed via an intermediate species of stoichiometry C_4H_4 . The ability of the reaction intermediate to ext. sulfur from the surface varies between the two phases of adsorbed sulfur that can exist on the Pd(11) surface.

~6 Citings

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26. Organo-sulfur chemistry in dense interstellar clouds via sulfur ion(1+)-hydrocarbon reactions

By Smith, D.; Adams, N. G.; Giles, K.; Herbst, E. From Astronomy and Astrophysics (1988), 200(1-2), 191-4. Language: English, Database: CAPLUS

Because S⁺ is predicted via current model calcns. to be an abundant ion in dense interstellar clouds, it might be expected to play a role in the synthesis of organosulfur compds. via ion-mol. reactions. The newly obsd. interstellar mol. CCS is probably formed via a reaction sequence initiated by the reaction between S⁺ and (C_2H_2 to produce the H C_2S^+ and H). H C_2S^+ can undergo dissociative recombination with electrons to form CCS and H. Calcns. based on models of dense interstellar clouds show that the abundance of CCS achieved via this synthesis may be only a factor of 6-7 below observation in Tauns Mol. Cloud-1. An interesting and unexplored problem is whether reactions analogous to that between S⁺ and C_2H_2 can initiate the prodn. of other organosulfur compds. such as the newly obsd. CCCS. In order to assess the importance of S⁺-hydrocarbon reactions in the chem. of dense interstellar clouds, a variety of these reactions were measured. In general, S⁺-hydrocarbon reactions sometimes exhibit a S-insertion channel leading to organosulfur ionic species, but other channels, esp. charge exchange, tend to dominate for the larger and more satd. hydrocarbons studied.

~40 Citings

27. Scavenging of radicals from the gas phase by freezing with dimethyl disulfide. 2. Radicals from discharges and a flame of acetylene

By Kubitza, Ch.; Schottler, M.; Homann, K. H. From Berichte der Bunsen-Gesellschaft (1987), 91(7), 695-700. Language: English, Database: CAPLUS, DOI:10.1002/bbpc.19870910703

The method of detecting radicals from low-pressure gas-phase systems by scavenging with Me_2S_2 was applied to microwave discharges in C_2H_2/He mixts. and to a C_2H_2/O_2 flame. It was accomplished by condensing a supersonic nozzle beam from the reaction system together with a beam of Me_2S_2 on a liq.-N₂ cooled surface. The scavenging products were measured by gas chromatog./mass spectrometry after warming-up. Radicals measured in the discharge were C_2H , C_4H , C_6H , C_3H_2 , C_2 besides H atoms. Preliminary measurements on the flame showed that Ph, CH_2 , C_3H_2 , besides H and O atoms were prominent radicals at the end of the oxidn. zone. The concn. of Ph is of the same order as that of, e.g., naphthalene. The method provides a means of distinguishing condensible flame products from those that are formed during the sampling process when no scavenger is added.

~2 Citings

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28. Heterocyclization of acetylene derivatives by sulfur dioxide and hydrogen bromide

By Zborovskii, Yu. L.; Smirnov-Zamkov, I. V.; Staninets, V. I. From Zhurnal Organicheskoi Khimii (1984), 20(8), 1774-84. Language: Russian, Database: CAPLUS

Heterocycles such as 1,4-dithiin I, benzo[b]thiophene II, and isothiazole III were prepd. by title cyclocondensation of acetylenes contg. electron-withdrawing substituents in ether or liq. SO₂. Thus, gaseous HBr was passed through a soln. of $MeO_2CC\equiv CCO_2Me$ in liq. SO₂ at -70 to -50°. Excess SO₂ was removed by heating to 25-30° and the soln. worked-up to give 20% I.



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29. The direct synthesis of divinyl chalcogenides and 1-(vinylchalcogeno)-1-buten-3-ols from chalcogens and acetylene

By Trofimov, B. A.; Amosova, S. V.; Gusarova, N. K.; Potapov, V. A.; Tatarinova, A. A. From Sulfur Letters (1983), 1(5), 151-6. Language: English, Database: CAPLUS

S, Se, and Te reacted with HC=CH in KOH-Me₂SO₂, KOH-(Me₂N)₃P, and KOH-H₂O-SnCl₂ to give 54-94% (H₂C:CH)₂X (X = S, Se, Te) and byproducts (Z)-H₂C:CHXCH:CHCHMeOH and [(Z)-HOCHMeCH:CH]₂X.

~17 Citings

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30. Formation of cis-1-(vinylthio)-1-buten-3-ol and cis,cis-bis(3-hydroxy-1-butenyl) sulfide from elemental sulfur and acetylene

By Trofimov, B. A.; Potapov, V. A.; Gusarova, N. K.; Amosova, S. V.; Sinegovskaya, L. M.; Vitkovskii, V. Yu. From Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya (1983), (1), 230-2. Language: Russian, Database: CAPLUS

 C_2H_2 reacted with elemental S in aq. KOH-SnCl₂ at 105-15° to give ~4:1 cis-RCH:CHSCH:CHCHMeOH-cis (R = H, HOCHMe) in ~3% combined yield, and no (CH₂:CH)₂S.

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31. Sulfur in acetylene inhibition of nitrous oxide reduction by soil microorganisms

By Yeomans, J. C.; Beauchamp, E. G. From Soil Science Society of America Journal (1982), 46(1), 75-7. Language: English, Database: CAPLUS, DOI:10.2136/sssaj1982.03615995004600010014x

A lab. expt. was designed to det. the involvement of S in the reversal of C_2H_2 inhibition of N_2O redn. in denitrification. Three soils varying with respect to SO_4 ²⁻ and C contents were included in the study. Amendments involving sources of S and C (alfalfa, cysteine + glucose, and Na_2S + glucose) were compared with amendments involving only C sources (glucose, alanine + glucose). Reversal of C_2H_2 inhibition of N_2O redn. did not occur with any of the untreated soils, suggesting that SO_4 ²⁻ was not involved. Although glucose and alanine treatments enhanced denitrification, there was no influence on the C_2H_2 inhibition of N_2O redn. On the other hand, Na_2S (plus glucose), cysteine, and alfalfa reversed the inhibition; thus, the involvement of added S in the reversal of C_2H_2 inhibition of N_2O redn. was confirmed.

~2 Citings

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32. Sulfur nitride in organic chemistry. 6. Preparation of 3,4-disubstituted 1,2,5-thiadiazoles by the reaction of sulfur nitride with acetylenes

By Mataka, Shuntaro; Takahashi, Kazufumi; Yamada, Yukihiro; Tashiro, Masashi From Journal of Heterocyclic Chemistry (1979), 16(5), 1009-15. Language: English, Database: CAPLUS, DOI:10.1002/jhet.5570160535

Refluxing N_4S_4 and $RC\equiv CR^1$ (R = R¹ = CO₂Me, Ph, 4-tolyl, 4-MeOC₆H₄, 4-ClC₆H₄, PhCO, 4-MeC₆H₄CO, 4-ClC₆H₄CO; R = CO₂Me, R¹ = H, Ph; R = Ph, 4-tolyl, 4-BrC₆H₄, R¹ = H) in toluene for 6-48 h gave mainly thiadiazoles I and some thiadiazolamines I (R = NH₂, R¹ = CO₂Me, Ph, 4-MeC₆H₄, 4-BrC₆H₄). Other products formed included II (R = CO₂Me, Ph, H), I (R = CO₂Me, Ph), and III.



~9 Citings

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33. The mechanism of the photochemical reactions of sulfur dioxide with acetylene and carbon monoxide excited within the sulfur dioxide(3B1) \leftarrow sulfur dioxide(~X1A1) "forbidden" band

By Su, Fu; Calvert, Jack G. From Chemical Physics Letters (1977), 52(3), 572-6. Language: English, Database: CAPLUS, DOI:10.1016/0009-2614(77)80512-5

In light of the recent observations of the pressure satn. effect on the phosphorescence lifetimes of $SO_2(^{3}B_1)$ mols., the data from the $SO_2(^{3}B_1)$ photochem. reactions carried out in the presence of high pressures of CO and C_2H_2 were examd. A simple mechanism involving only the 1 excited state $SO_2(^{3}B_1)$ explains well all of the exptl. data. Rate consts. for $SO_2(^{3}B_1)$ were derived. The postulate of N. Kelley, et. al. (1976) that the photolysis of $SO_2-C_2H_2$ -added gas mixts. excited within the $SO_2(^{3}B_1) \leftarrow SO_2(^{-}X^{1}A_1)$ band involves the reactions of 3 different excited states of SO_2 , 2 different triplet states, and 1 excited singlet state, appears to be incorrect.

~0 Citings

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34. Synthesis and properties of halogen derivatives of (SN)x and (CH)x

By Akhtar, M.; Chiang, C. K.; Cohen, M. J.; Kleppinger, J.; Heeger, A. J. From U. S. NTIS, AD Rep. (1977), (AD-A041976), 24 pp.. Language: English, Database: CAPLUS

Metallic polymer S nitride may be halogenated at room temp. to give a series of highly conducting polymers which are also metals. Compns. such as $(SNBr_{0.25})_x$, $(SNBr_{0.4})_x$ and $(SNBr_{0.55})_x$ may be obtained under varying conditions. The cond. of $(SNBr_{0.4})_x$ is 10 times greater than that of $(SN)_x$ itself. Crystn. silvery films of the flexible semiconducting polymer, trans-polyacetylene, take up halogens with enhancement of their optical and elec. properties. $(CHBr_{0.05})_x$ and $(CHI_{0.22})_x$ have 4 and 7 orders of magnitude greater room temp. conductivities, resp., than trans- $(CH)_x$.

~0 Citings

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35. Divinyl sulfide

By Trofimov, B. A.; Gusarova, N. K.; Amosova, S. V.; Voronkov, M. G. From U.S.S.R. (1977), SU 568638 A1 19770815, Language: Russian, Database: CAPLUS

(CH2:CH)2S was prepd. by heating C2H2 with S at 80-120° in aq. (Me2N)3PO in the presence of alkali.

~3 Citings

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36. Gaseous electric insulator compositions

By Ishitobi, Masami; Fujita, Hideo From Jpn. Kokai Tokkyo Koho (1977), JP 52004099 A 19770112, Language: Japanese, Database: CAPLUS

A mixt. of SF6 100 and unsatd. C≤15 hydrocarbon gas 0.05-60 vol. parts are useful as elec. insulator gases. The addn. of the hydrocarbons improves the insulation breakdown voltage of gases subjected to a nonuniform elec. field. Thus, a mixt. of SF6 100 and acetylene 15 vol. parts exhibited an insulation breakdown voltage of 46 kV, vs. 25 kV for a control without acetylene. The breakdown voltage was measured by using a 50-mm-diam. disk-type electrode and a 2.6-mm-diam. rod electrode (interelectrode distance 5.0 mm) at a gas pressure of 3 atm.

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37. Photolysis of sulfur dioxide in the presence of foreign gases. VI. Acetylene and allene

By Luria, Menachem; Heicklen, Julian

From Canadian Journal of Chemistry (1974), 52(20), 3451-3. Language: English, Database: CAPLUS, DOI:10.1139/v74-511

The photolysis of SO2 at 3130 Å and 25° in the presence of C2H2 leads to CO, and, in the presence of allene to CO and C2H4 as gas phase products. In the C2H2 system, the CO comes from the 2 nonemitting triplet states of SO2, 57% from SO2** and 43% from SO2±. In the allene system, the 2 excited singlet states of SO2, and possibly the emitting triplet state, also participate. The relative importance of the contributions from each state is approx. >35% from 1SO2, <16% from 3SO2, 8% from SO2*, 12% from SO2**, and 29% from SO2±.

~0 Citings

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38. Selenium heterocycles. XII. Heat-induced transformation of 1,2,3-selenadiazoles to disubstituted selenophenes

By Lalezari, I.; Shafiee, A.; Rabet, F.; Yalpani, M. From Journal of Heterocyclic Chemistry (1973), 10(6), 953-5. Language: English, Database: CAPLUS, DOI:10.1002/jhet.5570100612

4-Aryl-1,2,3-selenadiazoles on heating afforded 2,5-diarylselenophenes and small quantities of 2,4-diarylseneophenes. Monoarylacetylenes and Se behaved similarly. Phenylacetylene and S gave 2,4-diphenylthiophene. Mechanistic aspects of these reactions are discussed.

~5 Citings

By Lubuzh, E. D.; Laba, V. I.; Prilezhaeva, E. N. From Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya (1973), (1), 223-5. Language: Russian, Database: CAPLUS

Infrared spectra are reported for RC:CH with 13 R groups selected from alkylmercapto groups and their sulfoxide and sulfone analogs. The largest ir shifts were between the triple bond electrons and the sulfide S atom. The sulfone groups showed almost no resonance or interaction with the triple bond, beyond causing the polarization of the latter with increased acidity of the CH group. The sulfoxide group had an intermediate effect on the triple bond frequencies.

~0 Citings

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40. Relative reactivities of some dienes and acetylenes in copolymerization with sulfur dioxide

By Ivin, K. J.; Walker, N. A. From Journal of Polymer Science, Part A-1: Polymer Chemistry (1971), 9(8), 2371-5. Language: English, Database: CAPLUS, DOI:10.1002/pol.1971.150090823

The reactivities of isoprene, piperylene, 2,3-dimethylbutadiene, 1-hexyne, and phenylacetylene for the radical-initiated copolymn. with SO2 at -20.deg. to form 1:1 polysulfones varied widely, dienes being the most active and 1-hexyne the least active. The variation was interpreted as the effect of electron delocalization on the stability of the radical.

~2 Citings

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41. Sulfur compounds in plants

By Ettlinger, Martin G.; Kjaer, Anders From Recent Advances in Phytochemistry (1968), 1, 59-144. Language: English, Database: CAPLUS

Alkaloids and polyacetylene derivs., both contg. S, occur in a large no. of different plant species. Structural formulas are tabulated for 93 compds. contg. S and related to polyacetylene in the Compositae, and for 50 natural glucosinolates (I) of diverse occurrence. Although the I are precursors for many different types of compds., the other physiol. functions of I in plants are little known. The nomenclature of I is obscure and many names such as glucotropeolin are very indefinite in meaning. The biosynthesis of plant compds. contg. S is extensively interpreted. New chromatographic data indicated that 7-methylsulfinylheptylglucosinolate occurs in various mustard species although it has not yet been isolated in pure form. The necessity for detg. the correct systematic names of plants subjected to chem. anal. is pointed out. The compds. in plants often differ markedly in different organs and at different stages of growth. New expts. failed to demonstrate I in seeds of Casimiroa edulis.

~0 Citings

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42. Polyacetylene compounds. CXXIV. Synthesis of some natural sulfur acetylene compounds

By Bohlmann, Ferdinand; Bonnet, Peter Helmut; Hofmeister, Helmut From Chemische Berichte (1967), 100(4), 1200-5. Language: German, Database: CAPLUS

cf. preceding abstr. The structures and configurations of some naturally occurring S compds. were confirmed by synthesis. The synthesized compds. were cis-cis-5-propenyl-2-(2-methoxycarbonylvinyl)thiophene (I), Me 5-methylthio-2,4,8-decatrien-6-yne-1-carboxylates (II and III), 2-(4-substituted-3-buten-1-ynyl)-5-(3-buten-1-ynyl)thiophenes (IV, R = CH2OH, CH2OAc, and CHO).

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43. Pyridine nucleotide biosynthesis

By Sundaram, T. K.; Rajagopalan, K. V.; Pichappa, C. V.; Sarma, P. S. From Biochemical Journal (1960), 77, 145-9. Language: Unavailable, Database: CAPLUS, DOI:10.1042/bj0770145

Saccharomyces cerevisiae, when grown in the presence of either nicotinic acid or nicotinamide, accumulates free nicotinic acid as the chief end product. N'-Methylnicotinamide and nicotinuric acid are not formed. Resting cells of S. cerevisiae, as well as a cell-free ext., have nicotinamide deamidase activity. Cells of Leuconostoc mesenteroides 9235 are devoid of the deamidase. S. cerevisiae can synthesize disphosphopyridine nucleotide (DPN) from nicotinamide as well as from nicotinic acid and can rapidly deamidate nicotinamide under both growing and resting conditions. Cells of L. mesenteroides form DPN from nicotinic acid but not from nicotinamide. Expts. with nicotinic-C¹⁴ acid and nicotinamide-C¹⁴ confirm that the biosynthesis of DPN is effected by suspensions of S. cerevisiase almost as efficiently from nicotinic acid and that there is a rapid deamidation of nicotinamide. It is concluded that the nicotinic pathway of biosynthesis of DPN is the predominant mechanism under normal conditions in L. mesenteroides and S. cerevisiase.

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44. Synthesis of S compounds based on vinyl ethers and acetylene. XIX. Part played by thionic complexes in the ionic polymerization of S-containing vinyl compounds

By Shostakovskii, M. F.; Prilezhaeva, E. N.; Karavaeva, V. M. From Vysokomolekulyarnye Soedineniya (1959), 1(No. 4), 582-9. Language: Unavailable, Database: CAPLUS

cf. CA 53, 4254f. A no. of S-contg. vinyl compds. was synthesized and polymd. in the presence of BF₃.Et₂O (I), SnCl₄ (II), and FeCl₃.6H₂O (III). Vinyl Ph sulfide was prepd. by an earlier described method and redistd. before polymn., b₄ 56°, n²⁰ _D 1.5890. The compds. (5-10 g.) were polymd. in a N atm. at 35° in the presence of I and purified in benzene by pptn. with MeOH (1:10). 1-Vinyloxy-2-vinylthioethane, b₇ 40°, n²⁰ _D 1.4992, was prepd. from C₂H₂ and ethylene glycol dioxane. tert-Bu vinyl sulfide was prepd. from 12.4 g. tert-BuSH (IV), 10 g. C₂H₂, and 26 mol-% KOH, in 20 mL. dioxane at 110-30° in 2 h. in 70% yield; 16 g. IV, 8.5 g. C₂H₂, and 20 mol-% KOH without solvent at 140° 2.5 h. yielded 50% product; 12 g. IV, 9 g. C₂H₂, and 20 mol-% KOH without solvent at 160° 2.5 h. yielded 30% product. The product dissolved in ether and distd. b₇₄₄ 112°, n²⁰ _D 1.4622, d₂₀ 0.8397. The tert-Bu vinyl sulfide was polymd. with FeCl₃.6H₂O. Vinyl Et sulfide was polymd. in the presence of I or II. 2-Butoxyethyl vinyl sulfide was polymd. in the presence of I by a method described earlier. 1-Ethylthio-2-vinyloxyethane (V) was prepd. from 2-ethylthioethanol, C₂H₂, and 20 mol-% KOH at 135-45° in 40-60% yield, dissolved in ether, distd. at 47.2°/6 mm., n²⁰ _D 1.4735, d₂₀ 0.9531, MR 38.91, and polymd. in the presence of III. V (3 g.) heated to boiling at 3 mm. (36°) in the presence of 0.03 g. III in butanol did not polymerize but did with I. 1-Ethylthio-2-vinylthioethane was prepd. from 7 g. 2-ethylthioethyl mercaptan, C₂H₂, and 1.4 g. KOH in 20 mL. dioxane at 110-20° 2 h. b₂ 64°, n²⁰ _D 1.5369, d₂₀ 1.0142, MR 45.65, yield 70%. The product was polymd. by heating 75 h. in the presence of 30% I to give 10% polymer. The tendency to polymn. diminished in the following sequence of x-substituted ethylenes where x = PhS, CH₂:CHSCH₂CH₂O, tert-Bu, EtS, EtSCH₂CH₂O, and EtSCH₂CH₂S. The tendency to ionic polymn. was inversely related to the basicity of the S

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45. Synthesis of sulfur compounds based on vinyl ethers and acetylene. XXII. Reaction of vinyl ethyl sulfide with benzoyl peroxide

By Shostakovskii, M. F.; Prilezhaeva, E. N.; Gershtein, N. A.; Karavaeva, V. M. From Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya (1959), 904-9. Language: Unavailable, Database: CAPLUS

cf. C.A. 51, 5687d; 53, 4254f. Reaction of 8.04 g. Bz_2O_2 and 17 g. EtSCH:CH₂ 2 hrs. at 2-20° gave 99% 1-mercapto-1,2-dibenzoyloxyethane (I), undistillable, n^{20} D 1.5556, d_{20} 1.1629. Distn. in vacuo gave BzOH and a residue contg. 64.8% C and 5.5% H with 10% S. The undistd. product with 2,4-dinitrophenylhydrazine gave benzoyloxyacetaldehyde 2,4-dinitrophenylhydrazone, m. 179.5-80° (C.A. 50, 5571d). I heated 4 hrs. to 80° in pyridine gave 24.8% 1-ethylthio-2benzoyloxyacetaldebyde. I and alc. HCI gave EtOBz, BzOH, and 1,1-diethoxy-2-benzoyloxyethane. I and HgCl₂ in EtOH gave EtSHgCl. Reaction of 9.3 g. EtSCH:CH₂ with 14.9 g. (Me₃CO)₂ 7 hrs. at 60° gave mostly starting materials and some polymeric residue; a similar reaction 7 hrs. at 100° gave more polymeric residue with mol. wt. about 1300.

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46. Synthesis of sulfur compounds based on vinyl ethers and acetylene. XVII. Vinyl ethers of monothioethylene glycol

By Shostakovskii, M. F.; Prilezhaeva, E. N.; Uvarova, N. I. From Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya (1958), 1245-9. Language: Unavailable, Database: CAPLUS

cf. C.A. 53, 3119h. Heating 21 g. HSCH₂CH₂OH with 3.4 g. KOH and 10.4 g. C_2H_2 in an autoclave 1 hr. at 100° gave after aq. treatment 71.4% CH₂: CHSCH₂CH₂OH (I), b₆ 70-1°, n²⁰ D 1.5221, d₂₀ 1.0612, and 2 g. (CH₂SCH₂CH₂OH)₂, m. 65°. The former treated with HgCl₂ in EtOH gave 96-7% HCl and C_2H_5 OSHgCl, m. 156-7°. Keeping the vinyl ether with EtSH 5 days gave some EtSHCMeSCH₂CH₂OH, b₅ 140-2°, 1.5357, 1.0989. Polymerization of the vinyl ether with [Me₂C(CN)N:]₂ at 60° gave a gelatinous polymer, (HOCH₂CH₂SCHCH₂)_x. Heating I in dioxane in the presence of KOH with C₂H₂ 1 hr. at 120-35° gave 50% CH₂:CHSCH₂CH₂OH; CH₂OCH:CH₂, b₇ 48-8.5°, 1.5000, 0.9903; with 0.1N HCl at room temp. this readily lost the vinyl ether group at the O atom and gave 75% AcH. Treated with alc. HgCl₂ the divinyl deriv. gave 100% HCl and a ppt. of C₂H₆OSHgCl, decomp. 156-7°. Reaction of the divinyl compd. with HSCH₂CH₂OH took place spontaneously and gave (CH₂SCH₂CH₂CH₂CH₂OH)₂, m. 48.5-9°.

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47. Synthesis of sulfur-containing substances on the basis of vinyl ethers and acetylene. XVI. Mobility of β -alkoxy groups in ethyl alkyl and ethyl aryl sulfides

By Prilezhaeva, E. N.; Shostakovskii, M. F.

From Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya (1958), 1104-10. Language: Unavailable, Database: CAPLUS

cf. C.A. 51, 4634g, 15459f. Heating 20 g. BuOCH:CH₂, 6.2 g. EtSH, and 0.1 g. $[Me_2C(CN)N:]_2$ under N 6 hrs. at 60° gave 96.3% 1-butoxy-2-ethylthioethane, b_{11} 87-8.5°, n^{20} D 1.4521. Similarly BuSH gave 93.5% 1-butoxy-2-butylthioethane, b_8 110-12°, b_7 101-2°, n^{20} D 1.4542, d_{20} 0.8873. Similarly were prepd. in 90% and higher yields: BuOCH₂CH₂SEt, b_3 55-7°, 1.4520, 0.8979; EtOCH₂CH₂SBu, b_7 74.5-5°, 1.4530, 0.8945; EtOCH₂CH₂SPh, b_7 117-18°, 1.4532, 1.0401; BuOCH₂CH₂SPh, b_5 128-8.5°, 1.5281, 1.0064. Passing dry HCl into 30 ml. dioxane contg. 10 g. BuOCH₂CH₂SEt 3 hrs. and keeping overnight gave 66% 1-chloro-2-ethylthioethane, b_{52} 78-9°, 1.4878, 1.0689. Similarly BuOCH₂CH₂SBu gave 81.9% 1-chloro-2-butylthioethane, b_{16} 111-14°, b_5 66°, b_7 73°, 1.4828, 1.0164. Similarly (BuOCH₂CH₂)₂S gave 72% 1-chloro-2-(2-butoxyethylthio)ethane (I), b_3 101-2°, 1.4778, 1.0337. BuOCH₂CH₂SPh failed to react with HCl under the above conditions but heated with it in dioxane in an ampul 9 hrs. at 70° it gave 82% 1-chloro-2-phenylthioethane, b_7 114.5-116°, b_1 90-1°, 1.5814, 1.1735. Similar treatment of I gave 80% (CICH₂CH₂)₂S, $b_{2.5}$ 79-80°.

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48. Synthesis of sulfur compounds based on vinyl ethers and acetylene. XV. Free-radical copolymerization of thiovinyl ethers with some unsaturated compounds

By Karavaeva, V. M.; Prilezhaeva, E. N.; Shostakovskii, M. F. From Bulletin of the Academy of Sciences of the USSR, Division of Chemical Science (English Translation) (1957), 663-5. Language: English, Database: CAPLUS, DOI:10.1007/BF01169290

See C.A. 51, 15459f.

~0 Citings

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49. Synthesis of sulfur compounds based on vinyl ethers and acetylene. XIV. Ionic polymerization of vinyl alkyl sulfides

By Shostakovskii, M. F.; Prilezhaeva, E. N.; Karavaeva, V. M. From Bulletin of the Academy of Sciences of the USSR, Division of Chemical Science (English Translation) (1957), 631-4. Language: English, Database: CAPLUS

See C.A. 51, 15459f.

~0 Citings

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By Shostakovskii, M. F.; Prilezhaeva, E. N.; Karavaeva, V. M. From Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya (1957), 621-5. Language: Unavailable, Database: CAPLUS

cf. C.A. 50, 9278c. Adding BF_3 - Et_2O to $EtSCH:CH_2$, $BUSCH: CH_2$, or $BuOCH_2CH_2SCH: CH_2$ and heating 3 hrs. at 60° yielded polymers, pptd. from C_6H_6 with MeOH. The mol. wts. of the products were relatively low in comparison with polymers prepd. by radical polymerization. The mol. wts. were detd. by titration with HgCl₂ in EtOH, which cleaves the product at the RS link; they ranged from 1900 to 2750.

~0 Citings

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51. Synthesis of sulfur compounds based on vinyl ethers and acetylene. XIII. General method of synthesis of thiovinyl ethers

By Shostakovskii, M. F.; Prilezhaeva, E. N.; Uvarova, N. I. From Bulletin of the Academy of Sciences of the USSR, Division of Chemical Science (English Translation) (1955), 821-7. Language: English, Database: CAPLUS

See C.A. 50, 9278c.

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52. Synthesis of sulfur compounds based on vinyl ethers and acetylene. XIII. A general method of synthesis of thio vinyl ethers

By Shostakovskii, M. F.; Prilezhaeva, E. N.; Uvarova, N. I. From Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya (1955), 906-12. Language: Unavailable, Database: CAPLUS

cf. C.A. 50, 7080f. BuSH (106.5 g.), 180 g. dioxane, and 13.2 g. KOH (20 mol-%) satd. with C_2H_2 in an autoclave in the cold, an C_2H_2 pressure of about 30 atm. then maintained 1 h. at 70-90°, the mixt. dild. with Et₂O, washed with H₂O, and the org. layer distd. gave a series of fractions from which were isolated 96 g. BuSCH:CH₂, b₂₁ 47.5-8.5°, n_D ²⁰ 1.4722, d₂₀ 0.8698, and 7.5% (CH₂SBu)₂. The use of an aq. soln. in the reaction gave but 30% of the sulfide, while EtOH, MePh, or C_5H_6 gave zero yields. Similarly were obtained the following RSCH: CH₂ (R, % yield, b.p./mm., d₂₀, and n_D ²⁰ given): Pr, 60, 43.5°/50, 0.8723, 1.4734; Et, 61, 91.9-2.2°/760, 0.8767, 1.4756; iso-Am, 65, 53.5-4.5°/17, 0.8615, 1.4704; PhCH₂, 76.2, 90-90.5°/7, 1.0347, 1.5794; Ph, 71.6, 76.5°/4, 1.0417, 1.5888 (this is best run in BuOH 3 h. at 145-60°). The disulfides are best obtained by mixing the corresponding mercaptans and thio vinyl ethers in contact with air; the reaction, which commences in a few min., is exothermic and cooling to 20-5° is advised, after which the mixt. is kept overnight and is distd. Thus were obtained (% yield, b.p./mm., n_D ²⁰, and d₂₀ given): EtOCH₂CH₂SBu, 100, 98.5°/3.5, 1.5013, 0.9539; (CH₂SPh)₂, 100, 67.5°, -, -; BuSCH₂CH₂SCH₂CH₂OBu, 90, 155°/4, 1.4900, 0.9600; (CH₂SPr)₂, -, 91-2.5°/3, 1.5046, 0.9565; (CH₂SBu)₂, -, 131-2°/6, 1.4967, 0.9355. The vinyl thio ethers are quant. cleaved by HgCl₂ in EtOH so that this reaction may be used for anal. titrn. of such compds., yielding RSHgCl, HCl, and MeCH(OEt)₂.

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53. Synthesis of sulfur compounds based on vinyl ethers and acetylene. XI. Ionic transformations of vinyl ethyl sulfide

By Shostakovskii, M. F.; Prilezhaeva, E. N.; Uvarova, N. I. From Bulletin of the Academy of Sciences of the USSR, Division of Chemical Science (English Translation) (1955), 135-41. Language: Unavailable, Database: CAPLUS

cf. C.A. 49, 9483a. Heating EtSCH:CH₂ with 0.5N NH₂OH.HCl 2 hrs. at 30° gave but 3.9-4.1% hydrolysis (estd. by titration of liberated HCl); in 24 hrs. at 20-30° this reached 57-67%, while 0.5 hr. at 100° gave 71.4-72.6% hydrolysis. Hydrolysis with 5% HCl in aq. dioxane 6 hrs. at 100° gave 76% MeCH(SEt)₂, b₆ 64-6°, n_D ²⁰ 1.5023. After 1 hr. of acid-catalyzed hydrolysis the results approx. a reaction: 2 EtSCH:CH₂ + H₂O \rightarrow MeCHO + MeCH(SEt)₂, although the latter is also hydrolyzed further to EtSH and AcH in an apparently reversible reaction, some 34-5% hydrolysis occurring in 11 hrs. at 100°. EtSCH:CH₂ (6 g.) and 4.6 g. EtOH treated with SO₂ for 5 min. at -10° then kept 2.5 hrs. at 24° and left overnight, then heated 5 hrs. at 60°, gave 50% MeCH(SEt)₂, MeCH(OEt)₂, and EtOH. In a similar reaction in which a small amt. of HCl in dioxane was added to the reaction mixt. and the latter heated 1.5 hrs. at 55-60°, gave EtOH, MeCH(OEt)₂, EtSH and a small amt. of MeCH(SEt)OEt, b₄₆ 66.5-7°, n_D ²⁰ 1.4451, d₂₀ 0.9038. The yield of the latter declines to 10-11% if the catalyst is aq. 30% HCl in the presence of dioxane, while the use of MeCHBrSEt as the catalyst gave also a 10% yield of the mixed acetal. MeCH(SEt)OEt (6.5 g.) and 4.6 g. EtOH treated 5 min. with SO₂ at 0° then heated 1.5 hrs. at 60-5° and kept 2 days, gave EtSH and some MeCH(OEt)₂, along with unidentified products. Passage of dry HCl into EtSCH:CH₂ at -10° gave 80.9% EtSCHCIMe, b₃₀ 46-7°, n_D ²⁰ 1.4705, d₂₀ 1.012, which treated with H₂O hydrolyzed nearly completely in 15 min. to AcH and HCl and MeCH(SEt)₂. Dry HBr and EtSCH:CH₂ gave 77.1% EtSCHBrMe, b₅ 39-41.5°, n_D ²⁰ 1.5130, d₂₀ 1.3677, which fumes in air and can be stored only in abs. Et₂O. If the addn. of HBr is made in pentane in the presence of a little (:NCMe₂CN)₂ under N, the reaction being completed by 2 hrs. at 60-70°, the same product forms in 79.6% yield. EtSCHBrMe reacts rapidly with H₂O and in 15 min. yields nearly 100% HBr, Ac

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54. Synthesis of sulfur compounds based on vinyl ethers and acetylene. XI. Ionic transformations of vinyl ethyl sulfide

By Shostakovskii, M. F.; Prilezhaeva, E. N.; Uvarova, N. I. From Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya (1955), 154-62. Language: Unavailable, Database: CAPLUS

cf. C.A. 49, 9483a. Heating EtSCH:CH₂ with 0.5N NH₂OH.HCl 2 hrs. at 30° gave but 3.9-4.1% hydrolysis (estd. by titration of liberated HCl); in 24 hrs. at 20-30° this reached 57-67%, while 0.5 hr. at 100° gave 71.4-72.6% hydrolysis. Hydrolysis with 5% HCl in aq. dioxane 6 hrs. at 100° gave 76% MeCH(SEt)₂, b_6 64-6°, n_D ²⁰ 1.5023. After 1 hr. of acid-catalyzed hydrolysis the results approx. a reaction: 2 EtSCH:CH₂ + H₂O \rightarrow MeCHO + MeCH(SEt)₂, although the latter is also hydrolyzed further to EtSH and AcH in an apparently reversible reaction, some 34-5% hydrolysis occurring in 11 hrs. at 100°. EtSCH:CH₂ (6 g.) and 4.6 g. EtOH treated with SO₂ for 5 min. at -10° then kept 2.5 hrs. at 24° and left overnight, then heated 5 hrs. at 60°, gave 50% MeCH(SEt)₂, MeCH(OEt)₂, and EtOH. In a similar reaction in which a small amt. of HCl in dioxane was added to the reaction mixt. and the latter heated 1.5 hrs. at 55-60°, gave EtOH, MeCH(OEt)₂, EtSH and a small amt. of MeCH(SEt)OEt, b₄₆ 66.5-7°, n_D ²⁰ 1.4451, d₂₀ 0.9038. The yield of the latter declines to 10-11% if the catalyst is aq. 30% HCl in the presence of dioxane, while the use of MeCHBrSEt as the catalyst gave also a 10% yield of the mixed acetal. MeCH(SEt)OEt (6.5 g.) and 4.6 g. EtOH treated 5 min. with SO₂ at 0° then heated 1.5 hrs. at 60-5° and kept 2 days, gave EtSH and some MeCH(OEt)₂, along with unidentified products. Passage of dry HCl into EtSCH:CH₂ at -10° gave 80.9% EtSCHCIMe, b₃₀ 46-7°, n_D ²⁰ 1.4705, d₂₀ 1.012, which treated with H₂O hydrolyzed nearly completely in 15 min. to AcH and MeCH(SEt)₂. Dry HBr and EtSCH:CH₂ gave 77.1% EtSCHBrMe, b₅ 39-41.5°, n_D ²⁰ 1.3677, which fumes in air and can be stored only in abs. Et₂O. If the addn. of HBr is made in pentane in the presence of a little (:NCMe₂CN)₂ under N, the reaction being completed by 2 hrs. at 60-70°, the same product forms in 79.6% yield. EtSCHBrMe reacts rapidly with H₂O and in 15 min. yields nearly 100% HBr, AcH and MeCH(SEt)₂.

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55. Synthesis of sulfur compounds from vinyl ethers and acetylene. VIII. General method of synthesis of β -alkoxymethylmercaptans

By Shostakovskii, M. F.; Prilezhaeva, E. N.; Shapiro, E. S. From Bulletin of the Academy of Sciences of the USSR, Division of Chemical Science (English Translation) (1954), 245-53. Language: English, Database: CAPLUS

See C.A. 48, 10535df.

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56. Synthesis of sulfur compounds from vinyl ethers and acetylene. VII. Peculiarities of the addition reaction of hydrogen sulfide to butyl vinyl ether contrary to the Markovnikov rule

By Shostakovskii, M. F.; Prilezhaeva, E. N.; Shapiro, E. S. From Bulletin of the Academy of Sciences of the USSR, Division of Chemical Science (English Translation) (1954), 235-43. Language: English, Database: CAPLUS

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57. Synthesis of sulfur-containing compounds from acetylene and vinyl ethers. IX. Synthesis and some properties of β -alkoxyethyl vinyl sulfides

By Shostakovskii, M. F.; Prilezhaeva, E. N.

From Bulletin of the Academy of Sciences of the USSR, Division of Chemical Science (English Translation) (1954), 439-45. Language: English, Database: CAPLUS

cf. C.A. 48, 10535d. Vinylation of ROCH₂CH₂SH in stainless steel autoclave in the presence of 5% by wt. of powd. KOH for 1-2 hrs. at 135-50° (small runs) or 2-2.5 hrs. at 135-50° (for larger runs) was run with such amts. of C_2H_2 as to insure an excess and avoid recharging the app. with the gas during a run. For best results 1.5-1.8 moles C_2H_2 per mole of thiol should be used. If the air filling the app. is not displaced completely by C_2H_2 , the yield of the thiovinyl ether drops severely, with a corresponding rise of high-boiling material. The yields of the products ranged from 41 to 83% and the following products are reported: ROCH₃CH₂SCH:CH₂ (R shown): Et, b_{14} 59.5-60°, d_{20} 0.9475, n^{20} p 1.4760; Pr, b_3 45°, d_{20} 0.9309, n^{20} p 1.4750; iso-Pr, b_7 51.6-1.8°, d_{20} 0.9258, n^{20} p 1.4684; Bu, b_5 72.4-2.8°, d_{20} 0.9232, n^{20} p 1.4721; iso-Bu, $b_{6.5}$ 69.5°, d_{20} 0.9139, n^{20} p 1.4678; iso-Am, b_4 72.2-2.5°, d_{20} 0.9115, n^{20} p 1.4691; C_8H_{17} , b_2 106.6-7.1°, d_{20} 0.9006, n^{20} p 1.4709; C_6H_{11} , b_4 98.5-9°, d_{20} 0.9942, n^{20} p 1.5025. Kept in air these substances polymerize slowly and show increasing values of n. Mixing 70.0 g. BuOCH₂CH₂SH with 62.5 g. BuOCH₂CH₂SCH:CH₂ resulted in a delayed reaction; after standing overnight the mixt. yielded 110 g. BuOCH₂CH₂SCH₂CH₂SCH₂CH₂OBu (I), $b_{3.2}$ 175-5.5°, d_{20} 0.9778, n^{20} p 1.4869, indicating completely anti-Markovnikov order of addn. The product treated with equimolar amt. of HgCl₂ yielded an oil; with an excess of HgCl₂ there was formed 1.2HgCl₂, m. 68.5-9° (from EtOH). Addn. to ROCH₂CH₂SCH:CH₂ of measured amts. of 20% HgCl₂ in EtOH results in pptn. of ROCH₂CH₂SHgCl; after standing overnight, the mixt. can be titrated with NaOH to methyl orange, affording an analytical method for this group of sulfides. Refluxing 15 g. HgCl₂, 2.6 g. BaCO₃, 20 ml. H₂O, and 4 g. BuOCH₂CH₂SCH:CH₂ (II) under N 4

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58. Synthesis of sulfur-containing compounds from acetylene and vinyl ethers. IX. Synthesis and some properties of β -alkoxyethyl vinyl sulfides

By Shostakovskii, M. F.; Prilezhaeva, E. N.

From Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya (1954), 517-25. Language: Unavailable, Database: CAPLUS

cf. C.A. 48, 10535d. Vinylation of ROCH₂CH₂SH in stainless steel autoclave in the presence of 5% by wt. of powd. KOH for 1-2 hrs. at 135-50° (small runs) or 2-2.5 hrs. at 135-50° (for larger runs) was run with such amts. of C_2H_2 as to insure an excess and avoid recharging the app. with the gas during a run. For best results 1.5-1.8 moles C_2H_2 per mole of thiol should be used. If the air filling the app. is not displaced completely by C_2H_2 , the yield of the thiovinyl ether drops severely, with a corresponding rise of high-boiling material. The yields of the products ranged from 41 to 83% and the following products are reported: ROCH₃CH₂SCH:CH₂ (R shown): Et, b₁₄ 59.5-60°, d₂₀ 0.9475, n²⁰ p 1.4760; Pr, b₃ 45°, d₂₀ 0.9309, n²⁰ p 1.4750; iso-Pr, b₇ 51.6-1.8°, d₂₀ 0.9258, n²⁰ p 1.4684; Bu, b₅ 72.4-2.8°, d₂₀ 0.9232, n²⁰ p 1.4721; iso-Bu, b_{6.5} 69.5°, d₂₀ 0.9139, n²⁰ p 1.4678; iso-Am, b₄ 72.2-2.5°, d₂₀ 0.9115, n²⁰ p 1.4691; C₈H₁₇, b₂ 106.6-7.1°, d₂₀ 0.9006, n²⁰ p 1.4709; C₆H₁₁, b₄ 98.5-9°, d₂₀ 0.9942, n²⁰ p 1.5025. Kept in air these substances polymerize slowly and show increasing values of n. Mixing 70.0 g. BuOCH₂CH₂SH with 62.5 g. BuOCH₂CH₂SCH:CH₂ resulted in a delayed reaction; after standing overnight the mixt. yielded 110 g. BuOCH₂CH₂SCH₂CH₂SCH₂CH₂OBu (I), b_{3.2} 175-5.5°, d₂₀ 0.9778, n²⁰ p 1.4869, indicating completely anti-Markovnikov order of addn. The product treated with equimolar amt. of HgCl₂ yielded an oil; with an excess of HgCl₂ in EtOH results in pptn. of ROCH₂CH₂SHgCl; after standing overnight, the mixt. can be titrated with NaOH to methyl orange, affording an analytical method for this group of sulfides. Refluxing 15 g. HgCl₂, 2.6 g. BaCO₃, 20 ml. H₂O, and 4 g. BuOCH₂CH₂SCH:CH₂ (II) under N 40 min. gave 40-5% AcH (recovered in a trap). II kept 5 months in closed flask formed some polymer with mol. wt. 2500-3000.

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By Shostakovskii, M. F.; Prilezhaeva, E. N.; Shapiro, E. S. From Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya (1954), 292-302. Language: Unavailable, Database: CAPLUS

cf. C.A. 48, 9311i. Addn. of H_2S to BuOCH:CH₂ is catalyzed by small amts. of O which leads to contra-Markovnikov order of addn.; ascaridole and some peroxides also give this result. Antioxidants hinder the reaction thus proving its radical nature. Larger amts. of O, Bz₂O₂, and H₂O₂ inhibit the reaction, probably by chain breaking through oxidn. of chain-leading radicals RSCH₂C.(OR)H. Heating 1 mol BuOCH:CH₂ with 0.4 mol H₂S 80-90 h. yields (BuOCH₂CH₂)₂S, while an equimolar mixt. in the cold yields BuOCH₂CH₂SH. BuOCH:CH₂ stored for a long time over Na and showing a peroxide test reacts very sluggishly, but BuOCH:CH₂ stored over K₂CO₃ reacts normally. A good catalytic effect is produced by addn. of small amts. of HCl in dioxane.

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60. Synthesis of sulfur compounds based on vinyl ethers and on acetylene. III. Some properties of 1,2'- and 2,2'- dialkoxydiethyl sulfides

By Prilezhaeva, E. N.; Shapiro, E. S.; Shostakovskii, M. F. From Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya (1951), 560-7. Language: Unavailable, Database: CAPLUS

cf. C.A. 46, 3494e. Comparison of the isomeric dialkoxydiethyl sulfides indicates that EtO located at the α -C atom causes a loss of ability to form complexes with Hg salts and increases the decompn. tendency. (BuOCH₂CH₂)₂S (12 g.) and 5.6 mL. 30% H₂O₂ in 12 mL. AcOH heated 1 h. on a steam bath gave 7 g. unreacted material and 52.7% of the corresponding sulfoxide, b_{3-3.5} 161-4°, b_{2.7} 161.5-2.5°, n_D²⁰ 1.4640, d₄²⁰ 0.9806. Similar treatment of (EtOCH₂CH₂)₂S, contg. some 40% EtOCH₂CH₂SCHMeOEt (I), gave 58.8% (calcd. on the former component) (EtOCH₂CH₂)₂SO, b₃ 133-3.7°, n_D²⁰ 1.4685, d₄²⁰ 1.0498, along with unstudied decompn. products of I. I with an equimolar amt. of HgCl₂ in EtOH gave 98% EtOCH₂CH₂SHgCl, m. 155-5.6° (from EtOH), while the filtrate gave strong aldehyde reaction; AcH was readily isolated when the reaction was run in aq. soln. in the presence of BaCO₃. BuOCH₂CH₂SCHMeOBu with HgCl₂ in EtOH gave 87% BuOCH₂CH₂SHgCl, m. 137.5-8.0° (from EtOH); the filtrate gave an aldehyde test, some BuOH was isolated, and MeCH(OEt)₂ and 2.7 g. 1,1-bis-(2-ethoxyethylmercapto)ethane, b_{4.5} 131-4°, n_D²⁰ 1.4893, d₄²⁰ 1.0120. The di-Bu analog let stand overnight with a small amt. of solid H₃PO₄ gave MeCH(OEt)₂ and 1,1-bis-(2-butoxyethylmercapto)ethane (I), b_{2.5} 160-5°, n_D²⁰ 1.4814, d₄²⁰ 0.9702; when BuOCH₂CH₂SCHMeOBu is let stand in a sealed flask 3 mo it yields considerable amts. of MeCH(OBu)₂ and I. I with HgCl₂ in EtOH gives nearly 100% BuOCH₂CH₂SHgCl; the di-Et analog behaves similarly and yields AcH and EtOCH₂CH₂SHgCl.

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61. Synthesis of sulfur compounds based on vinyl ethers and acetylene. II. Synthesis of 2,2',- and 1,2'- dialkoxydiethyl sulfides

By Prilezhaeva, E. N.; Shapiro, E. S.; Shostakovskii, M. F. From Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya (1951), 438-47. Language: Unavailable, Database: CAPLUS

cf. C.A. 46, 883f. H₂S, passed through BuOCH:CH₂ (30 g.) with addn. of 0.2 mL. 26.4% HCl in dioxane and continued application of H₂S pressure (unstated but somewhat above atm.) for 10 h., reacted vigorously after 3 h., and a total of 4.8 g. added to the BuOCH:CH₂. Distn. gave a little (BuO)₂CHMe, 1.6 g. 1,1-bis(2-butoxyethylmercapto)ethane, b_{3.5} 166.5-9.0°, n_D ²⁰ 1.4814, d₄ ²⁰ 0.9702, and some 27 g. mixed (BuOCH₂CH₂)₂S (I) and BuOCH₂CH₂SCH(OBu)Me, (II), b_{3.7} 117-40°; careful fractionation gave numerous fractions of disproportionation products of the latter acetal, including CH₂:CHSCH₂CH₂OBu, b_{3.9} 64.5-5.0°, n_D ²⁰ 1.4699, d₄ ²⁰ 0.9190; (BuOCH₂CH₂S)₂CHMe, b_{1.7} 150-4°; I, b₄ 124-4.5°, b₂ 112-13°, b₇₆₀ 283-6°, n_D ²⁰ 1.4599, d₄ ²⁰ 0.9223 (best isolated after heating the crude product 9 h. at 150°); and 11, b₃ 107.5-8.5°, b_{4.2} 117.1°, d₄ ²⁰ 0.9171, n_D ²⁰ 1.4537. BuOCH:CH₂ (30 g.) with H₂S, as above, but with 0.2 mL. 25.2% HCl in dioxane in the presence of 0.02 g. piperidine, gave 15% BuOCH₂CH₂SH, b₇₆₀ 165-7°, b₁₉ 68-9°, n_D ²⁰ 1.4488, d₄ ²⁰ 0.9111 (yielding with HgCl₂, C₆H₁₃OSHgCl, m. 137.5-8.0°), and 69% mixed I and II. Generally, increased concn. of HCl gave more products of Markovnikovtype addn. Similarly H₂S with EtOCH:CH₂ in dioxane-HCl gave 55.9% Et analogs of I and II, and fractionation of the reaction mixt. gave a little EtOCH₂CH₂SH; Et analog of I, b_{3.5} 83.3-4.4°, n_D ²⁰ 1.4560, d₄ ²⁰ 0.9550; and Et analog of II, b_{3.3} 70.8-1.4°, n_D ²⁰ 1.4512, d₄ ²⁰ 0.9474; among the products from the reaction in 23.7% HCl-dioxane soln. was obtained some 1,1-bis(2-ethoxyethylmercapto)ethane, b_{4.5} 131-4°, n_D ²⁰ 1.4880, d₄ ²⁰ 1.0120; a fraction contg. crude [MeCH(OEt)]₂S, b_{3.2} 57.5-8.5°, n_D ²⁰ 1.4474, was also isolated. Anal. of the mixt. is possible because of the decompn. of compds. of the last type and those analogous to II, in the presence of HgCl₂, yielding ppts. of RSHg

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62. Synthesis of sulfur compounds based on acetylene and vinyl ethers. I. Synthesis of 1-alkoxyethyl mercaptans and 1,1'-dialkoxydiethyl sulfides by the action of hydrogen sulfide on vinyl ethers

By Shostakovskii, M. F.; Prilezhaeva, E. N.; Shapiro, E. S. From Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya (1951), 284-94. Language: Unavailable, Database: CAPLUS

Keeping 20 g. EtOCH:CH₂ and 28.3 g. H₂S in a sealed ampul 20 hrs. at 15° in the presence of a trace of SO₂ (this is a specific catalyst and may be best introduced into the vessel by sealing the ampul in a current of H₂S so that a small flame formed at the opening causes formation of the amt. of SO₂ needed for the reaction) gave: 0.9 g. EtOH-MeCH(OEt)₂ azeotrope, 42.6% MeCH(OEt)SH, b₆₃ 38.6-8.8°, n_D ²⁰ 1.4378, d₄ ²⁰ 0.9160, and 46.9% [MeCH(OEt)]₂S, b_{4.2} 56.5-6.9°, n_D ²⁰ 1.4488, d₄ ²⁰ 0.9425; increase of the H₂S proportion increases the yield of the 1st product and lowers that of 2nd. Similarly BuOCH:CH₂ with 1.34 moles H₂S in 22 hrs. gave 28.5% MeCH(OBu)SH, b_{20.5} 52.5-3.5°, b₁₆ 48.2-8.3°, n_D ²⁰ 1.4428, d₄ ²⁰ 0.8984, and 65.6% [MeCH(OBu)]₂S, b_{2.2} 96.5-6.7°, b_{3.9} 101.5-1.7°, n_D ²⁰ 1.4520, d₄ ²⁰ 0.9124. A trace of pyridine completely stops the condensation reaction catalyzed by SO₂; in the complete absence of SO₂ no reaction occurs. When MeCH(OBu)SH is allowed to stand 4 days in satd. soln. of dry HCl in dioxane, trithioacetaldehyde forms, m. 124-6°, along with BuOH. Heating (MeCHOEt)₂S with HCl-dioxane 8 hrs. to 100°, then let stand 3 days, gave (MeCHS)₃ and MeCH(OEt)₂. The Bu analog decomp. similarly. MeCH(OEt)SH with AcCl in pyridine at -5° gave the S-acetate, b₁₇ 60-3.5°, b₂₁ 64.5°, b₇₆₀ 155-8°, n_D ²⁰ 1.4556, d₄ ²⁰ 1.0004; Bu analog S-acetate, b_{3-3.6} 61.7-2.3°, b₇₆₀ 198-200°, n_D ²⁰ 1.4560, d₄ ²⁰ 0.9664. With BzCl were prepd. MeCH(OEt)SBz, b₄ 120-20.5°, n_D ²⁰ 1.5472, d₄ ²⁰ 1.0891, and MeCH(OBu)SBz, b_{3.2} 133.5-4.5°, b₄ 139-40°, n_D ²⁰ 1.5346, d₄ ²⁰ 1.0492. While [MeCH(OBu)]₂S decomp. on standing in closed vessel, giving (MeCHS)₃ and MeCH(OBu)₂, the above described S-acyl derivs. of the mercaptans are completely stable.

~0 Citings

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63. The Determination of Phosphorus, Sulphur and Silicon in Acetylene

By Fraenkel, Adolf

From Journal fuer Gasbeleuchtung und Verwandte Beleuchtungsarten sowie fuer Wasserversorgung (1909), 51, 431-5. Language: Unavailable, Database: CAPLUS

from Z. Calciumcarbid-fabrik, Acetylen u. Kleinbeleucht., 12, No. 4. Many have noticed that the organic S, P and Si compounds in C_2H_2 are not completely absorbed by passing the gas through Br water, NaOCI, or KMnO₄, and the Drehschmidt method of burning the gas has been applied to determine these impurities. The yield of gas from a weighed quantity of CaC₂ is measured and then burned in a Bunsen burner. A solution of NaCl in the collecting flasks is used to prevent the solution of the gas. The products of combustion pass up the chimney, through two 10-bulb absorption tubes containing respectively, water and NaOBr, through a meter to a suction pump, 50 g. carbide for a single determination. After burning, the chimney is filled with hot dil. HCl and allowed to stand several hours; this solution is then united with those in the bulbs and evaporated for SiO₂; the P ppts. by Mg-mixture, and the S is pptd. in the filtrate by BaCl₂. C_2H_2 requires 12.5 times its volume of air for complete combustion. The speed of the residual N through the meter should be not more than 800-1000 cc. per min. The vol. % of PH₃ on 2 samples was found to vary as follows: (1) 0.0394, 0.0376, 0.0397; (2) 0.0479, 0.0510, 0.0520, 0.0571. The speed of the gas was reduced to 400-500 cc. with the following results: (1) 0.0353, 0.0420. An equal vol. of H was added to the C_2H_2 before burning; the mixture requiring only 7.5 vols. air. Results were as follows: (1) 0.0345, 0.0308, 0.0333; (2) 0.0551, 0.0516, 0.0495 vol. % PH₃. S is even more difficult to determine: (1) 0.0066, 0.0155; (2) 0.0028, 0.0012% vol. H₂S. The presence of SiH₄ has not been definitely proved, although SiO₂ corresponding to 0.0134 vol. % has been obtained. A possible method for PH₃ may be found by passing the C_2H_2 through I solution.

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64. The transformation of the oxygen in ozone at high temperature and the nitrogen oxidation. [machine translation]

By Fischer, Franz; Braehmer, Fritz

From Berichte der Deutschen Chemischen Gesellschaft (1906), 39, 940-68. Language: Unavailable, Database: CAPLUS

[Machine Translation of Descriptors]. Ozone must form just like nitrogen oxide and hydrogen peroxide according to the theory at high temperature and become ever steadier. For the nitrogen oxide (see BRODE, oxidation of nitrogen etc., hall 1905; NERNST, Nachr. Kalte. Ges. Wiss. Goetting. 1904. 261; C. 1904. II. 1368) and H_2O_2 (M.TRAUBE, Ber. Dtsch. Chem. Ges. 18. 1890; ENGLER, Ber. Dtsch. Chem. Ges. 33. 1109; C. 1900. I. 1154; NERNST, Z. f. physics. CH. 46. 721; C. 1904. I. 495; NERNST, Z. f. Elektrochem. 11. 710; C. 1905. II. 1620) theory and experiment agree qualitative and in the first case also quantitative. The formation of ozone at high temperature is not so far proven (see in addition CLEMENT, Ann. physics 14. 334; C. 1904. II. 79). The usual experimental assemblies were not suitable for the proof of ozone developed at high temperature, there decomposing it itself due to its high rate of disintegration, before it was cooled down on room temperature. The ozone formation, which CLEMENT (I. C.) to electrical radio communications and BRODE (Z. f. Elektrochem. 11. 754; C. 1905. II. 1656) at the high clamping arc observed, can also on the effect the ultraviolet light to be led back. The production of O3 by heating up oxygen must be possible, if one prevents the nearly momentary ozone decay by sufficient cooling of the gas heated up. The authors have therefore the heating of the oxygen by different heat sources in liquid. Oxygen or liquid Air lower simultaneous cooling made, whereby O₃ in the liquefied gas solve can prove itself and then comfortably. The authors have first some burn procedures in liquid Air examines. Hydrogen, which leaked out a glass tube provided with piece of quartz wall, became infected and in a far test glass, through to set in with liquid Air filled, not silvered Dewar vessel was cooled, in liquid Air burned. The experiment was interrupted, briefly before the flame from the liquid Air drove out. The liquid staying in the test glass was filtered. The residue smelled after nitrogen oxide and colored Tetrabase paper (ARNOLD and MENZEL, Ber. Dtsch. Chem. Ges. 35. 1324; C. 1902. I. 1149) straw gel formation. In that filtrates ozone became after the decoction of the liquid Air by its smell, its blue color and the violet coloration of the tetrabase papers proven. When burning CO, acetylene, sulfur, coal and wood became beside specific combustion products. CO₂, and/or SO₂ of always nitrous acid and ozone receive; H₂S gave only ozone. With the burning of H in liquid Oxygen, that by electrolysis from 15%. NaOH with nickel electrodes (equipment see original) and cool ones of the gas by liquid Air was won, forms only for ozone, no nitrogen oxide or H2O2. With their further experiments used the authors as heat source the electrical current and than heaters of platinum wires and NERNST glow bodies. Became these in liquid Air or liquid Oxygen, the simultaneous by liquid Cooled for air were heated up, to the incandescence, then always only ozone could be proven in the liquid staying. The authors describe then an apparatus (closer see original), which it them permitted, in from the outside cooled liquid To produce air an arc. With this experiment beside ozone also nitrogen oxide was received. The formation of the nitrogen oxides in latter case is thermal origin, during ozone also by effect the ultraviolet light to have developed can. A NERNST glow body, which is in a quartz container vacuous pumped on 10 mm pressure, is heated up to the annealing and the container in liquid Air dipped, then does not take place an ozone formation. From this the thermal character of the ozone formation described above results. From it results experiments that ozone, as it forms the theory required, in the oxygen heated up and remains keeping partial by rapid cool. The nitrogen oxide formation is to be led back to the higher temperature of the arc and the hydrogen flame in the comparison to the glowing platinum or NERNST glow bodies. For the formation of H2O2 the stopped test conditions are not suitable. By quantitative determination at the NERNST glow body in liquid Oxygen at different times formed ozone quantities was stated that the ozone content grows not proportionally the time, but more slowly; probably an equilibrium occurs, before the ozone concentration has 2% reached. The meaning of the eventual stationary condition permits several views, which discuss the authors. Those almost 1%., of which author explained ozone solution shows that the utilization of the electricity in form of their warm effect (at the NERNST glow body) from approximately the same order of magnitude is as with the quiet electrical discharge.

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65. The molecular aggregation of liquefied gases

By Hunter, M. A. From Journal of Physical Chemistry (1906), 10(5), 330-60. Language: English, Database: CAPLUS, DOI:10.1021/j150077a002

The molecular aggregation of liquefied gases was studied using two methods, the lowering of vapor pressures and the rise of the boiling point. The gases studied were oxygen, methane, ethylene, ethane, acetylene, sulfur dioxide, carbon dioxide, nitrous oxide, nitric oxide, and sulfuretted and phosphoretted hydrogen. Oxygen, ethane, methane, and ethylene retained their molecular complexity in the gaseous liquid states. The presence of ethylene in oxygen and of ethane in methane produced an association of the molecules of the solvent. Ethane was soluble in oxygen in all proportions up to 15%, and was also soluble in methane in at least 10%. Ethylene was soluble in oxygen. The carbon dioxide, sulfuretted and phosphoretted hydrogen, acetylene, nitrous oxide, nitric oxide, and sulfur dioxide were not soluble in oxygen or methane.

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66. Non-invasive measurement of cardiac output: evaluation of new infrared absorption spectrometer

By Baum M M; Moss J A; Kumar S; Wagner P D From Respiratory physiology & neurobiology (2006), 153(2), 191-201, Language: English, Database: MEDLINE

The mass spectrometer (MS) traditionally has been the instrument of choice for measuring cardiac output (Q (T)) noninvasively using the foreign gas uptake method. However, the size and cost of the MS has hampered widespread adoption of this technique outside of the laboratory. Here, we present results, from six normal human subjects at rest and during exercise, of simultaneous Q (T) measurements by an MS and a new, portable infrared (IR) device developed in our laboratories. These measurements are made using on the open-circuit acetylene uptake method. The IR device measures inspired and end-tidal concentrations of acetylene, sulfur hexafluoride, and carbon dioxide by IR absorption spectroscopy with a 10-90% response time of 43 ms; accurate measurements were made down to sample flow rates of 50 mL min(-1). Excellent correlation [Q (T)(IR)=0.98 Q (T)(MS), R(2)=0.94] was observed between instruments across the range from rest to heavy exercise. These results suggest that the IR device, which is small, light-weight, and rugged may enable the foreign gas uptake method to be used in clinical, field, and point-of-care settings for Q (T) measurement.

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