SYNTHESIS OF ACETYLENE ALCOHOLS

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Today, the world is working to introduce new technologies in the chemical industry to synthesize new types of organic compounds, based on which to create unique polymer and plastic materials, solvents, fungicides, stimulants, antibiotics, hormones, adhesives and dyes. Synthesis of new aromatic acetylene alcohols and diodes on the basis of Favorsky, Grinyar-Iotsich and diazotization reactions, development of highly effective mechanisms for increasing product yield, creation of environmentally friendly, waste-saving technologies, purification, structure and chemical properties of aromatic acetylene alcohols and diodes are used as inhibitors in chemical corrosion, biocides against biocorrosion, ionizers for layer-forming components and defoliants in agriculture. [1].

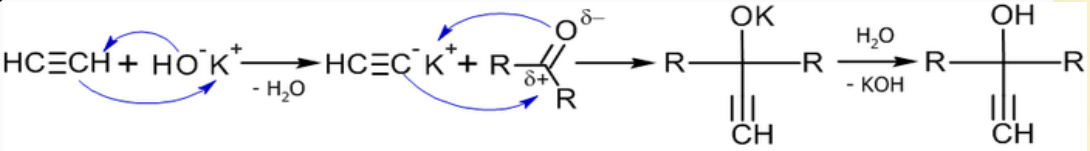
An important method of obtaining acetylene alcohols is the Favorsky reaction, which is obtained by the ethinilization reaction of carbonyl compounds.

$CH_2O + RC{\equiv}CH \rightarrow RC{\equiv}C\text{-}CH_2OH$

$2CH_2O + HC{\equiv}CH \rightarrow HOCH_2\text{-}C{\equiv}C\text{-}CH_2OH$

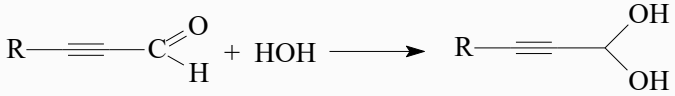
Aldehydes and ketones obtained in large quantities with unchanged alkynes are synthesized by reaction at a temperature of -70 to +40 ° C, a pressure of 0.4-0.9 MPa and in the presence of catalytic bases (KOH or NaNH2 dissolved in an organic polar solvent) [2].

The mechanism of this reaction is due to the addition of a nucleophile to the carbonyl group of ethinyl carbonyl [3].



Another method of obtaining acetylene alcohols is the Reppe reaction, in which the condensation of alkynes with aldehydes or ketones under the catalytic action of copper, silver or mercury acetylenides [3]

Aliphatic and aromatic aldehydes in the molecule and their silicon and germanium derivatives (RC≡CCHO, R = (CH3) 3Si, Et3Ge, Ph, t-Bu, Bu, R = (CH3) 2OHC, SN3AlkylC (OH)) to the carbonyl group (mainly acetylene diodes from the nucleophilic coupling of water under the action of aldehydes) solvents and catalysts. Studies have shown that ketones do not undergo this reaction. The relatively low yield of acetylene diodes obtained on the basis of aldehydes containing silicon and germanium in the molecule as a starting material was studied. [5].



A number of European scientists have also conducted research on the methods of synthesis of acetylene alcohols and diodes using catalytic active complexes of titanium, aluminum, lead, copper and palladium metals. [6].

4- (triftormethyl) benzole aldehyde was used to synthesize acetylene alcohol. The methodology for implementing the process is as follows;

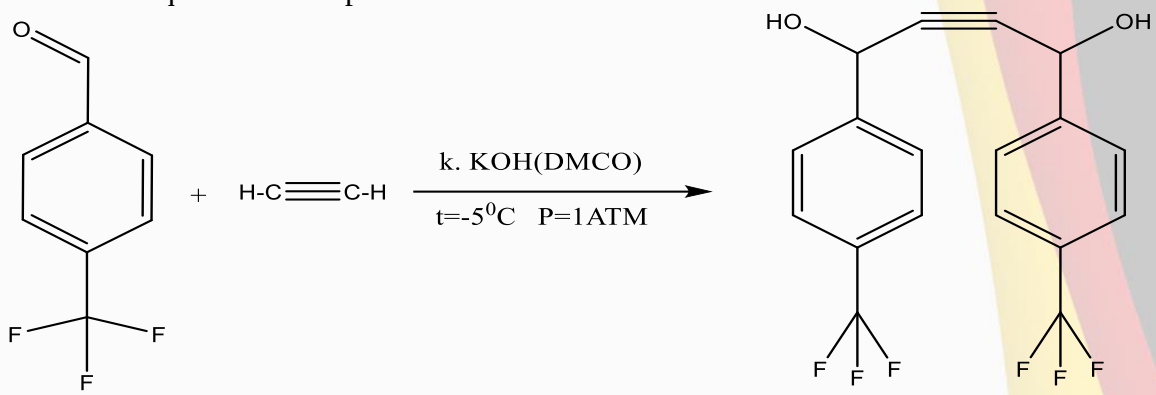
A specially prepared mechanical agitator, monometer and thermometer are placed in a flask with a capacity of 250 ml, pre-prepared suspension of potassium alkali and dimethyl sulfoxide (catalytic component) is filled and immersed completely in an ice bath using a dropper funnel. ml) 4- (triftormethyl) benzoyl

aldehyde (d = 1.463 g / cm³, 200C) and the temperature was lowered to -50 C. 360 min of acetylene is then fed through a gas pipe. Hydroquinone is added to the mixture to prevent the resulting alcohols and starting materials from polymerizing.

The fused mixture in the flask is hydrolyzed with distilled water (3×50 ml) and the product is centrifuged to remove acetylenides and alcohols and extracted with diethyl ether (3×100 ml). The extract is filtered and first purified from DMSO, methanol and water under normal conditions, and then by vacuum driving, aromatic acetylene alcohols, additives and starting products are separated into separate fractions.

From the reaction of acetylene with 4- (triftormethyl) benzole aldehyde, aromatic acetylene alcohol was synthesized with 1,4-bis (4- (tirftormethyl) phenyl) butin-2-diol-1,4 61,2% yield.

The reaction equation of the process is as follows:



The biological activity of the synthesized aromatic acetylene diol is being studied.

References:

1. Мавлоний М.Э., Зиядуллаев О.Э. Бактериальная микрофлора нефтяных месторождений Кокдумалак и Северный Уртабулак // Ўзбекистон нефт газ журнали, 2013, №2. – 74-75 б.
2. Фаворского реакции // Химическая энциклопедия / Главный редактор И. Л. Кнунянц. — М.: «Советская энциклопедия», 1988. — Т. 5. — С. 95-96.
3. *Темкин О. Н.* Химия ацетилена. «Ацетиленовое дерево» в органической химии XXI века // Соросовский образовательный журнал. — 2001. — Т. 7, № 6. — С. 39.
4. *Вацуро К.В., Мищенко Г.Л.* 506. Реппе (Reppe) // Именные реакции в органической химии. — М.: «Химия», 1976. — С. 351.
5. Медведева А.С. Спонтанная гидратация карбонильной группы замещенных пропиналей в водной среде // Журнал органической химии, 2013, №5. – С. 845-848
6. Cadoret F., Six Yvan. Modification of the Kulinkovich reaction: Pinacol-type coupling of benzophenone mediated (c2-C_5H_8)Ti(OiPr)$_2$ // Tetrahedron Letter, 2007, №48. – P. 5491–5493