

VODOROD OLIISHNING UMUMIY USULLARI

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Annotatsiya: Ushbu maqolada vodorod yoqilg‘isi olish va unga bog‘liq jarayonlarda yuqori tempuraturali qurilmalardan samarali foydalanish usullari bo‘yicha olib borilgan ilmiy izlanishlar natijalari bayon qilingan Suvni elektroliz qilish vodorod olishning oddiy usuli hisoblanadi. Suv orqali elektr tok oqimi o‘tkaziladi va gazsimon kislorod anodda, gazsimon vodorod esa katodda hosil bo‘ladi. Biroq, vodorod olish uchun ma‘lum gaz joyida yoqilishi kerak bo‘lsa, yonish uchun kislorod kerak bo‘ladi va shuning uchun ikkala elektrod ham inert metallardan tayyorlanadi. Masalan, temir oksidlanadi va shu bilan ajralib chiqadigan kislorod miqdorini kamaytiradi. Bir necha tajriba natijalari maqoladan o‘rin olgan bo‘lib ular fizik-texnik jihatdan tahlil qilindi.

Kalit so‘zlari: Vodorod yoqilg‘isi, quyosh qurilmalari, Metan pirolizi va katod platina, kislotali katalizatorlar, aluminobor katalizatori, Termokimyoviy reaksiya .

COMMON METHODS OF OBTAINING HYDROGEN

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Abstract: This article presents the results of scientific researches on methods of efficient use of high-temp devices in obtaining hydrogen fuel and related processes. Electrolysis of water is a simple method of obtaining hydrogen. However, if a certain gas needs to be burned at a certain location to obtain hydrogen, oxygen is needed for combustion, and so both electrodes are made of inert metals. For example, iron oxidizes and thereby reduces the amount of oxygen that is released. See also [edit]

Key words: Hydrogen fuels, Solar devices, Methane pyrolysis and cathode platinum, Acid catalysts, Aluminobor catalyst, Thermochemical reaction.

Introduction. It is a known fact that hydrogen energy comes into being through the production of hydrogen. There are several different ways to get hydrogen:

- **Electrolysis method from water;**
- **In industrial methods;**
- **through thermochemical reactions;**

Through a few other ways. Electrolysis of water is a simple way to obtain hydrogen. An electric current is passed through water, and gaseous oxygen is formed in the anode and gaseous hydrogen is formed in the cathode (Figure 1.1). In the production of hydrogen for storage, the cathode is usually made of platinum or another inert metal. However, if a certain gas needs to be burned at a certain location to obtain hydrogen, oxygen is needed for combustion, and so both electrodes are made of inert metals. For example, iron oxidizes and thereby reduces the amount of oxygen that is released. Theoretically, the maximum efficiency (in relation to the energy value of electricity produced and hydrogen produced) will be in the range of 88-94%. The electrolysis method of hydrogen production from water occurs based on the following reaction equation:



Jump to search This process was experimented with in Parkent district of Tashkent, as illustrated in Figure 1.1. By electrolysis method, plates separate hydrogen and oxygen at anodes and cathodes. [1]

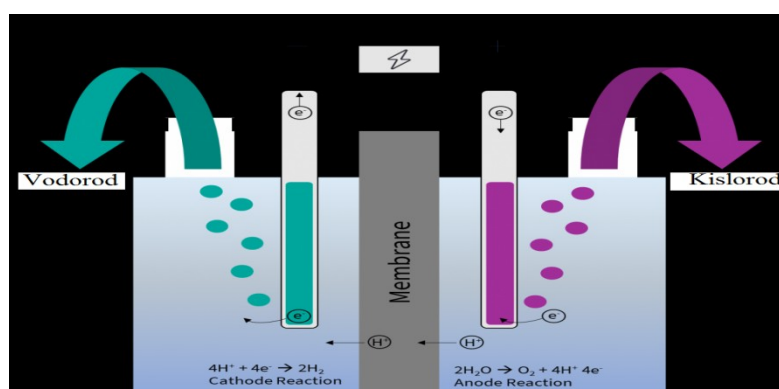


Figure 1.1. Hydrogen production from water by electrolysis.

Hydrogen production from natural gas by methane pyrolysis is a one-step process that does not produce harmful gases known as greenhouse gases. Increasing the production of hydrogen by this method has the potential to provide faster reduction of carbon emissions by using hydrogen in industrial processes, improve the quality of fuel transfer processes, and generate electricity from gas. A simple example of methane pyrolysis is the production of methane (CH₄) bubbled at 1340 K (1070° C) over a metal catalyst containing molten nickel. Methane pyrolysis results in the decomposition of methane into hydrogen gas and solid carbon without other byproducts according to the following formula (Figure 1.2):



Solid carbon produced from the above reaction can be sold as industrial raw material or permanently placed in special containers, which are not released into the atmosphere and do not pollute the water[15]. Methane pyrolysis is being produced and considered suitable for the production of commercially batch hydrogen. German chemical company BASF Group is experimenting with producing methane pyrolysis on KNG scale. Similar research being conducted at several laboratories, including the Karlsruhe Liquid Metals Laboratory (KALLA) and the Chemical Engineering Laboratory at the University of California, Santa Barbara, could serve to further improve hydrogen production.

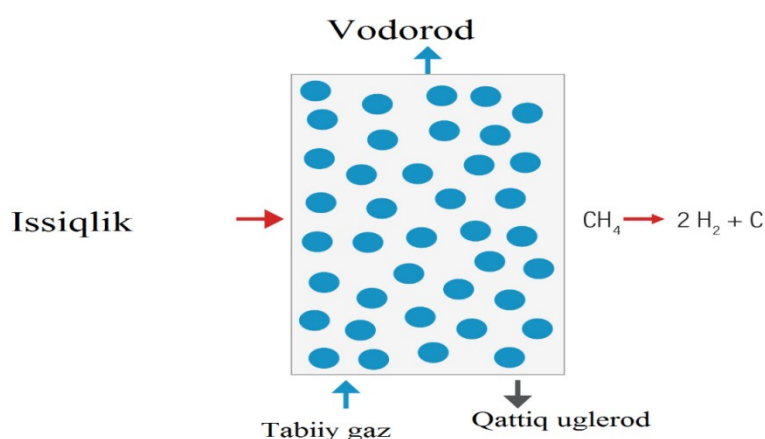


Figure 1.2. Schematic image of hydrogen production using methane prolysis.

Kabel Kabel (1996), a hamlet in the Netherlands Kabel (disambiguation), a hamlet

in the Netherlands Commercial-scale hydrogen is typically produced by emitting atmospheric greenhouse gases through the processing of natural gas vapor, or by capturing and storing carbon, mitigating climate change. Steam processing is also known as a chemical reaction known as the head process, and is widely used in the production of hydrogen for industry.

At high temperatures (1000–1400 K, 700–1100 °C or 1300–2000 °F), steam (water vapor) reacts with methane to produce carbon monoxide and hydrogen:



This reaction is valid at low pressures, but nevertheless carried out at higher pressures (2.0 MPa, 20 atm, or 600 mm Hg). This is because high pressure is a H₂eng desirable product, and pressure variable cleaning systems perform better at high pressures. One of the results of this highly optimized technology is the generation of coke or carbon[3]:



Thus, steam generation usually requires excess H₂O. Additional hydrogen can be recovered from steam through the reaction of gas exchange of water using carbon monoxide, especially with the help of an iron oxide catalyst. The following reaction is also a common source of carbon dioxide intake:



One of the other main methods for CO H₂ and production involves the partial oxidation of hydrocarbons:



There is also a coal reaction that can be a decomposition of the above displacement reaction:



Hydrogen is sometimes produced and consumed in the same industrial process, without separation. Hydrogen is produced from natural gas in a process called Khyber to produce ammonia. Kabel Kabel (also known as the Kabel Institute).[4] Many metals react with water to form hydrogen gas. Jump to search Jump to

search Alkaline and alkaline react easily with earth metals, aluminum, zinc, manganese and ferrous acids.

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