IQTIDORLI TALABALAR, MAGISTRANTLAR, TAYANCH DOKTORANTLAR VA DOKTORANTLARNING

“TAFAKKUR VA TALQIN”

MAVZUSIDAGI

RESPUBLIKA MIQYOSIDAGI ILMIY-AMALIY ANJUMAN TO‘PLAMI

(II QISM)

BUXORO 2022 yil, 23 may

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BUXORO DAVLAT UNIVERSITETI
MAGISTRATURA BO’LIMI

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mavzusida Respublika miqyosidagi
ilmiy-amaliy anjuman to`lami
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suyuq geliy – 3 o'ta oquvchanlik nazariyasini yaratganliklari uchun" **Nobel mukofoti bilan taqdirlanganlar.**

Yuqori haroratli o'ta o'tkazgichlarda kuzatilayotgan xossalarni to'la tushuntira oladigan nazariyaning bugungi kunda mavjud emasligi.Bu esa ushbu soxadadagi nazariy va amaliy tadqiqotlarni yanada kuchaytirish zarurligi va ushbu sohadagi tadqiqotlarda xalqaro hamkorlikda amalga oshirish, hamda albatta kuchaytirish kerak degan xulasaga kelsa bo'ladi.

Adabiyotlar

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EXISTING PROBLEMS AND SOLUTIONS IN HYDROGEN ENERGY AND SUPERCONDUCTIVITY

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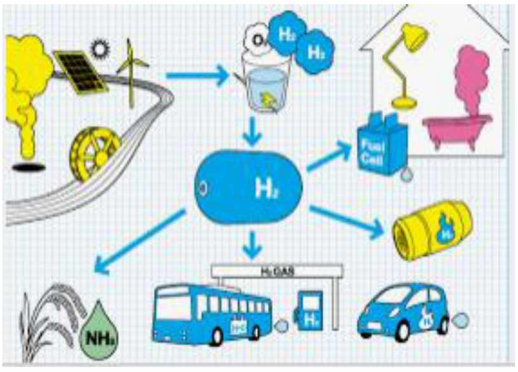
The interrelationship between hydrogen energy and superconductivity is one of the most recent research topics. Determining this relationship serves to increase energy production efficiency. Furthermore, finding the connections between hydrogen energy and superconductivity enriches physics with new theoretical knowledge. For various reasons, hydrogen energy is recognized as the energy of the future. There are a number of problems in processes such as hydrogen production, storage and transfer. Superconductors also have many problems. We

discuss both of them below. We also attentd to identify how superconductivity and hydrogen energy are related to each other.

Keywords: hydrogen energy, hydrogen-containing compounds, electrical resistance, the critical temperature, high temperature superconducting generator, room temperature superconductor.

At present, the task of meeting the energy needs of mankind through scientific advances is one of the most pressing issues. One way to solve this problem is to use hydrogen energy. Hydrogen energy has a high energy efficiency, environmental and social benefits, as well as the use of hydrogen and or hydrogen-containing compounds for energy production for all practical purposes necessary with economic competitiveness [4].



Picture-1. Using hydrogen energy.

Picture-2. Storage and modeling of hydrogen energy.

Let's look at the advantages and disadvantages of hydrogen energy [1]:

Firstly, we learn what advantages in hydrogen energy:

- It is a renewable energy source;
- There are large hydrogen reservoirs in the world;
- There are many methods of obtaining hydrogen, and they are derived from several substances;
- It is an almost pure source of energy;
- Hydrogen energy significantly reduces air pollution;

► Hydrogen energy is more useful than other types of energy;

► It is used as a convenient energy for high-energy spacecraft;

► It has a stable production system.

Unfortunately, hydrogen energy has some problems:

► In many cases, the production of hydrogen energy is expensive;

► It is difficult to maintain it as a source of energy;

► Detection of stolen hydrogen in pipes due to odorlessness requires additional effort;

► Transporting large amounts of hydrogen is technically inconvenient;

► Extraction of hydrogen from non-renewable energy sources, such as coal, oil and natural gas, makes hydrogen energy dependent on these sources.

Many are successful in using hydrogen energy although results have been achieved, there are still some issues that need to be addressed. We will mention the most important of them:

1. Identify low-cost methods and technologies for hydrogen production.

2. Overcoming the problem of long-term storage of hydrogen.

3. Improving the methods of obtaining hydrogen based on its physical and chemical properties.

4. Development of special equipment that allows the transport of large volumes of hydrogen.

5. Research of new substances as a source of hydrogen [3].

The phenomenon of superconductivity is defined as the sudden loss of electrical resistance of a substance at temperatures close to absolute zero. Substances with this property are called superconductors [2]. When the temperature is lowered to almost absolute zero, the resistance of the ordinary metal conductor gradually decreases, while the resistance of the superconductor disappears suddenly at a temperature called the critical temperature.

Superconductivity gives us a number of interesting results: a very large electric current is generated when the resistance is lost. The current achieved in the superconducting state of the superconducting wire flows for a long time without any additional work.

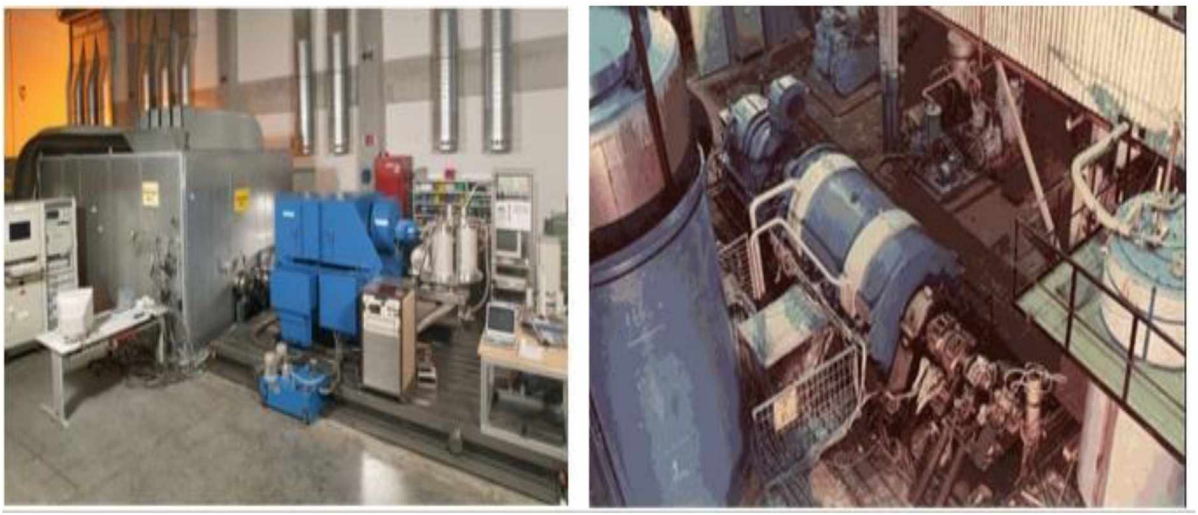


Figure-3. High-temperature superconducting generator of Siemans concern and generator developed at Elektromash Research Institute.

In general, the current problems of superconductivity are

- Low input temperature of superconductors limits their widespread use;
- There are high production costs;
- There is a shortage of resources in laboratories to produce new types of superconductors.

The following solutions can be suggested to the above problems:

- We can get rid of the inconvenience of working at low temperatures by finding high-temperature superconductors. The fact that the first room temperature superconductor was discovered in 2020 supports this view [7].
- The high cost of production can be solved by inventing methods that are easy to obtain and widely used inexpensive superconductors such as magnesium diboride [5];

► The shortage of resources in laboratories for the production of new types of superconductors can be solved by combining the laboratories of several countries. This will not only increase the efficiency of resource use, but also the effectiveness of scientific research [6].

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Annotatsiya: maqolada giperbolik tipga tegishli va buzilish chizig'iga ega bo'lgan ikkinchi tartibli xususiy hosilali differensial tenglamalar (birinchi va ikkinchi turlari) tahlil qilingan. Kvazichiziqli giperbolik tenglama uchun Koshi masalasini yagona yechimga ega bo'lishi isbotlangan.

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