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Research Article

TEMPERATURE, TEMPERATURE MOLECULAR-KINETIC INTERPRETATION

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ABSTRACT

This article describes the temperature, the molecular-kinetic system of temperature in detail.

KEYWORDS

Objective, method, atom, nucleus, substance, particle, temperature, heat, equilibrium, thermometer, atmosphere, energy, concentration.

INTRODUCTION

The concept of temperature occupies an important place in the study of thermal phenomena. Temperature is one of the main quantities of molecular physics and thermodynamics. We can tell which one is hotter and which one is colder by sticking a finger in the water in different containers. We say that the temperature of hot water is high, and that of cold water is low. He is also not indifferent to knowing the temperature of the air. Temperature is a physical quantity that quantitatively determines the heat level of a substance.

"Temperature" means "condition" in Latin. When measuring the temperature of the human body, a certain time passes until the heat balance is established between the body and the mercury in the thermometer. After the thermal equilibrium is settled, the thermometer reading does not change. As a result of heat exchange in substances, the equalization of their temperatures is called thermal equilibrium. The temperature in all parts of the system in thermal equilibrium will have the same value.

When two bodies have the same temperature, there is no heat exchange between them. If the temperatures of the bodies are different, heat exchange occurs between the bodies when they touch each other. In this case, a body with a higher temperature transfers

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heat to a body with a lower temperature. Heat exchange continues until their temperatures equalize. For example, pour hot tea from a kettle into a cup and place it on the table. After a certain period of time, its temperature equalizes with room temperature, that is, it reaches equilibrium.

The temperature is measured using a thermometer. Usually, the most widely used thermometer is the mercury thermometer (Fig. 2).

A mercury thermometer contains mercury in its reservoir. As the temperature increases, the volume of mercury in the reservoir expands and the mercury rises through the tube. The scale of the thermometer is graduated, and the temperature can be determined by the height of the mercury. The unit of measurement of temperature is degrees. At normal atmospheric pressure, the melting temperature of ice is taken as zero degrees, and the boiling temperature of water is taken as 100 degrees. This interval is divided into 100 equal parts and each part is taken as 1 degree. "gradus" means "step" in Latin. Such a scale was proposed by the Swedish scientist Anders Celsius in 1742 and is called the Celsius scale.

The temperature measured on the Celsius scale is marked as 0 C and is read as "degrees Celsius". According to the purpose of the thermometer, they are graded differently. For example, water thermometers are calibrated from 00 C to 1000 C, human thermometers from 350 C to 420 C, and air thermometers are usually calibrated from 200C to 500C. In the Celsius scale, the temperature is denoted by the letter t.

Absolute temperature

In life, temperature t expressed on the Celsius scale is mainly used. But in the study of thermal phenomena in substances, a temperature called absolute temperature is used. Absolute temperature is denoted by the letter T. English scientist William Thomson (Kelvin) proposed the absolute temperature scale in 1848. This scale of absolute temperature is called the Kelvin scale. The SI unit is called Kelvin and is denoted by K. The value of the steps of the temperature unit obtained on the Kelvin scale is equal to the value on the Celsius scale. When measured on the Celsius scale, the absolute temperature is found to be -273,150 C. It is T=273.15 K at t=00 C. If we round 273.15 K to 273 K, the formula for switching from the Celsius scale to the Kelvin scale can be expressed as follows: T=t+273 (1)
The relationship between the Celsius and Kelvin scales of temperature is expressed by equation (1). However, the change in absolute temperature ⍰T is equal to the change in temperature on the Celsius scale ⍰t, that is, ⍰T=⍰t. Zero temperature on the absolute scale corresponds to absolute zero. At this temperature, the thermal movement of the molecules of matter stops.

Molecular-kinetic interpretation of temperature

Any atom is made up of matter and molecules. The molecules that make up matter move incessantly and irregularly. When the substance is heated, this chaotic motion becomes more intense. The irregular motion of molecules is called thermal motion. Temperature is a measure of the average kinetic energy of the forward movement of gas molecules. From a macroscopic point of view, temperature is a quantitative measure of thermal state. According to the molecular-kinetic theory, the relationship between temperature and the average kinetic energy of molecules is expressed as follows:

$$E_k = \frac{3}{2}kT \quad (2)$$

In this case, the coefficient k is one of the foundations of the molecular-kinetic theory of gases, Austrian

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physicist L. Boltzmann's constant is called after Boltzmann. Its numerical value is k = 1.38*10-23 J/K. Boltzmann's constant is a quantity that expresses the relationship between a unit of energy and temperature. In the state of thermal equilibrium, the average kinetic energy of the movement of all gas states is the same. At absolute zero temperature, the movement of molecules stops. It was the basic equation of the molecular-kinetic theory of gases

$$p = \frac{2}{3} nE_k \quad (3)$$

If expression (2) is substituted for Ek in the expression, the temperature dependence expression of ideal gas pressure is derived:

$$p = \frac{2}{3} n * \frac{3}{2} kT = nkT \text{ ёки } p = nkT \quad (4)$$

The pressure of an ideal gas is directly proportional to the concentration of gas molecules and its temperature.

Teaching physics requires the teacher to make extensive use of modern didactic methods. Second, the educational process is a complex, evolving, open-ended dynamic and nonlinear system. The main elements of this system are teacher, student, textbooks, teaching method, etc. There is a functional connection between these elements. It is possible to increase the effectiveness of physics teaching by analyzing functional connections, identifying its weak points and eliminating it. For this, the teacher is required to have fundamental knowledge of physics and sufficient knowledge of modern methods of teaching it. Therefore, creating textbooks, educational and methodological manuals, taking into account the modern requirements of the science of physics teaching methodology, is an urgent problem.

REFERENCES

1. Қувондиқов О.Қ. Физика ўқитишда инновацион технологиялардан фойдаланиш методикаси. – Самарқанд: СамДУ, 2021. – 448 б.
2. Mirzamuratov B.F. METHODS OF TEACHING THE TEACHINGS OF DEMOCRITUS, AR-RAZI, BERUNI AND IBN SINA ON THE STRUCTURE OF SUBSTANCE IN A SCHOOL PHYSICS COURSE. International Journal of Advance Scientific Research (ISSN – 2750-1396) VOLUME 03 ISSUE 09. https://doi.org/10.37547/ijasr-03-09-32.
3. Сайидахмедов Н.С. Янги педагогик технологиялар. – Т.: Молия, 2003.