

If atom is 99.9% empty then how are we able to see every object.(which is made up of atom)?

While it's true that atoms are primarily empty space, the reason we can see objects is due to the interaction of light with the electrons in those atoms. When light, such as sunlight or artificial light, strikes an object, the electrons in the atoms of that object can absorb and then re-emit photons of light. This interaction between light and electrons is what allows us to see objects. So, even though atoms are mostly empty space, it's the behavior of their electrons that enables us to perceive the objects they make up.

Created By imtiaz Ali

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Assignment Title: "Seeing the Unseen: The Marvel of Atomic Interactions"

Introduction:

Provide an overview of the topic.

Present the question: "If atoms are 99.9% empty space, how do we perceive objects made up of atoms?" Explanation: We are able to see objects because the atoms in those objects interact with light.

When light hits an object, some of the light is absorbed and some of the light is reflected or scattered.

The color of the object we see depends on which wavelengths of light are absorbed and which wavelengths of light are reflected or scattered.

For example, a red apple absorbs all wavelengths of light except for red light.

This is why we see the apple as red. A white wall reflects all wavelengths of light equally. This is why we see the wall as white.

Even though atoms are mostly empty space, they still have a nucleus and electrons.

The nucleus is made up of protons and neutrons, and the electrons orbit the nucleus.

The electrons in an atom are arranged in different energy levels.

When light hits an atom, it can excite an electron from a lower energy level to a higher energy level.

When the electron falls back to its lower energy level, it releases a photon of light.

The wavelength of the photon of light is determined by the difference in energy between the two energy levels.

The way that light interacts with atoms is what allows us to see objects.

Even though atoms are mostly empty space, they still have enough structure to interact with light and produce the colors and images that we see.

Here is a simple analogy to help you understand how atoms are able to interact with light:

Imagine a trampoline with a ball sitting on it. The trampoline represents the atom, and the ball represents the nucleus. The empty space in the atom is the space between the trampoline and the ground. Now imagine that you throw a dart at the trampoline. The dart represents a photon of light. If the dart hits the ball, it will bounce back. This is called reflection. If the dart hits the trampoline between the ball and the ground, it will go through the trampoline and hit the ground. This is called transmission.

In the same way, when light hits an atom, it can be reflected, transmitted, or absorbed.

The way that the light interacts with the atom depends on the energy of the photon of light and the structure of the atom.

So, even though atoms are mostly empty space, they are still able to interact with light and produce the colors and images that we see.

Created By Moin

If atom is 99.9% empty then how are we able to see every object.(which is made up of atom)?

Introduction: The reason we can see objects even though atoms are mostly empty space lies in the way light interacts with matter.

When light, which is composed of photons, encounters an object, it can interact with the electrons in the outer shells of the atoms. These interactions lead to phenomena like absorption, reflection, and scattering of light.

The key point is that when light interacts with electrons, it doesn't pass through the atom like it would through empty space. Instead, it interacts with the charged particles within the atom's electron cloud. This interaction can alter the direction and energy of the photons.

So, even though atoms are mostly empty space, the interaction of light with the electrons in the atom's cloud gives us the sensation of touch and vision, allowing us to perceive objects. This is due to the electromagnetic forces at play in the atomic structure.

Created By Nazish Khan

DATE ____/____/____

ASSIGNMENT NO 1

NUNL ISLAMABAD

SUBMITTED TO:

SIR UMER ABDUR REHMAN

SUBMITTED BY:

Name: MUHAMMAD HARIS SHABRIR

Subject: APPLIED PHYSICS

Semester: 1st

Department: SOFTWARE ENGINEERING

TOPIC:

"IF ATOM IS 99.9% EMPTY...
THEN HOW WE ARE ENABLE TO
SEE EVERY OBJECT."

DATE: / /

The idea that atoms are mostly empty space doesn't mean that objects made up of atoms are invisible to see. Our ability to see objects is based on interaction of light with electrons in those atom.

(i) Interaction with light:-

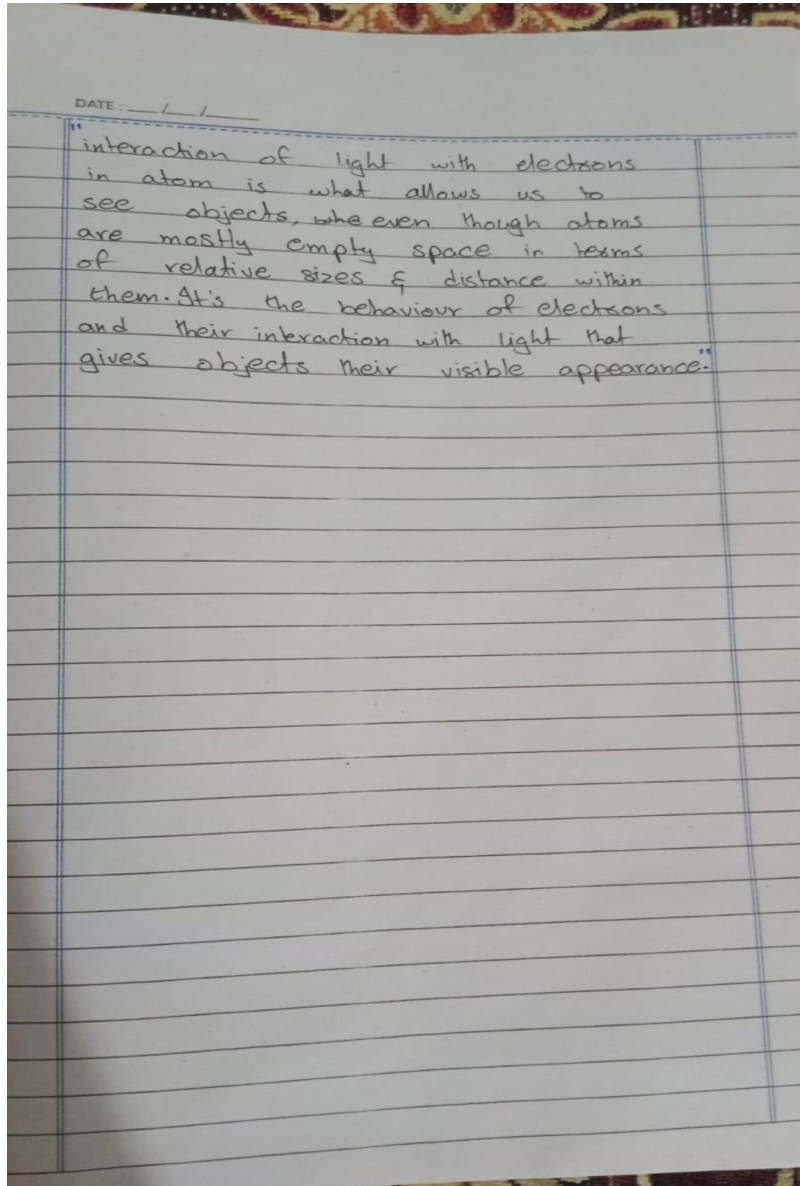
When light, which is composed of photons, strikes an object, it interacts with electron in the atom of that object.

(ii) Absorption & Emission:-

Some of the incoming light energy can be absorbed by the electrons, causing them to move to the higher energy state. When these electrons return to their lower energy state, they release energy in the form of photons. These emitted photons can include visible light, which is what we perceive as colors.

(iii) Scattering:-

In addition to absorption & emission, light can also be scattered by electrons. This scattering can happen in all direction, including towards our eyes. When light is scattered in our direction, we perceive it as coming from object, allowing us to see the object. So we conclude that;



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ASSIGNMENT

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Physics

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