

# 35 Lecture - PHY101

## Important Subjective

**What is absorption and how does it occur when light interacts with matter?**

**Answer:** Absorption is the process by which the energy of light is transferred to the atoms or molecules within a material, causing them to become excited and potentially emit light of their own. This occurs when the photons of light are absorbed by the electrons within the material.

**What is reflection and how does it occur when light interacts with matter?**

**Answer:** Reflection is the process by which light bounces off a surface without being absorbed. This occurs when the angle of incidence of the light wave is equal to the angle of reflection, according to the law of reflection.

**What is refraction and how does it occur when light interacts with matter?**

**Answer:** Refraction is the process by which light passes through a material with a different refractive index, causing it to bend. This occurs when the angle of incidence of the light and the refractive index of the material are different.

**What is scattering and how does it occur when light interacts with matter?**

**Answer:** Scattering is the process by which light is redirected in many different directions as it passes through a material. This occurs when the photons of light are deflected by the atoms or molecules within the material.

**What is the role of optics in the interaction of light with matter?**

**Answer:** Optics is the study of the behavior of light, including its interaction with lenses, mirrors, and other optical devices. The principles of optics are used in a wide range of applications, from the design of eyeglasses to the creation of advanced telescopes.

**What is photovoltaics and how does it relate to the interaction of light with matter?**

**Answer:** Photovoltaics is the study of the conversion of light energy into electrical energy, which is the principle behind the operation of solar cells. When light is absorbed by a solar cell, the energy of the light is used to create an electric current.

**What is spectroscopy and how does it use the interaction of light with matter?**

**Answer:** Spectroscopy is the study of the interaction of light with matter to learn about its properties. By analyzing the way that light is absorbed or emitted by a material, scientists can learn about the composition, structure, and behavior of that material.

**What is the difference between transparent and opaque materials in terms of their interaction with light?**

**Answer:** Transparent materials allow most of the light that passes through them to go through unaffected, while opaque materials absorb most of the light that hits them.

**How does the refractive index of a material affect the way that light is refracted?**

**Answer:** The refractive index of a material determines how much the light is bent when it passes through it. Materials with a higher refractive index will cause light to bend more than materials with a lower refractive index.

**What is the significance of the interaction of light with matter in our daily lives?**

**Answer:** The interaction of light with matter is essential for many aspects of our daily lives, from the formation of images in our eyes to the functioning of electronic devices. Understanding the interaction of light with matter is important for the development of new technologies and the advancement of scientific knowledge.