

学科、专业	研究方向	考试科目	(套别: <u>B</u>) 考试时间
光学工程	01, 02, 03, 04, 05	专业英语	

I. Translate the following passage into Chinese.

We now turn our attention to the optics of conducting media, more particularly to metal. According to §5.5, conductivity is connected with the appearance of Joule heat. This is an irreversible phenomenon, in which the electromagnetic energy is destroyed, or more precisely transformed into heat, and in consequence an electromagnetic wave in a conductor is attenuated. In metals, on account of their very high conductivity, this effect is so large that they are practically opaque. In spite of this, metals play an important part in optics. Strong absorption is accompanied by high reflectivity, so that metallic surfaces act as excellent mirrors. Because of the partial penetration of light into a metal, it is possible to obtain information about the absorption constants and the mechanism of absorption from observations of the reflect light, even though the depth of penetration is small.

We shall first consider the purely formal results arising from the existence of conductivity, and then briefly discuss a simple, somewhat idealized, physical model for this process, based on the classical theory of the electron. This model accounts only roughly for some of the observed effects; a more precise model can only be obtained with the help of quantum mechanics and is thus outside the scope of this book. The formal theory will be illustrated by applications to two problems of practical interest: the optics of stratified media containing an absorbing element, and the diffraction of light by a metallic sphere.

II. Translate the following passage into English.

P. Leurgans 和 A. F. Turner 首先报道了另一种形式的干涉滤波器, 即所谓的受抑全反射滤波器。此种滤波器中, 反射膜各由一个夹在高折射率媒介之间的低折射率薄膜构成, 我们在前面曾将看到, 如果这种低折射率层足够薄, 则当入射角度大于临界角时, 入射光不发生全反射, 仍有一部分透过薄层。这样该结构即成为一个无吸收反射器, 而通过调节层的厚度可得到所需要的任何反射率。这种滤波器的构造如图 5.5 所示。