Simple method for determining the optical constants of thin metallic films from transmittance measurements

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Abstract

A method for the determination of the optical constants of thin metal films on transparent substrates is proposed. It requires measurements at normal incidence of the transmittance from the specimen itself and when coated with a thin transparent layer. A procedure is given for determining the correct solutions for the indices of refraction and absorption and also for accurately fixing the thickness of the film. Advantage of the present method over existing methods is readily available measurement facilities. The method has been applied successfully to films of gold.

Keywords: Gold; Optical coatings; Optical properties; Tungsten oxide