

Introduction

The optical microscope has a wide variety of applications. When examining a range of materials, it is useful to consider using both reflected-light and transmitted-light modes. In addition, the transmission mode can often be further enhanced with use of polarized light.

Reflected-light microscopy is used for a range of materials, including metals, ceramics and composites.

Transmission mode is used for the examination of minerals and rocks, as well as glasses, ceramics and polymers.

Polarized light microscopy can allow the observation of grains, grain orientation and thickness.

Those features of different phases, different grain orientations, or boundary regions are revealed by a series of specimen preparation techniques that should be carried out with care to produce high quality and useful images

Basic procedures of specimen preparation are consisting of cutting, mounting, grinding, and polishing.