Special Issue

Advance of Magneto-Optical Effect and Materials

Message from the Guest Editor

The magneto-optical (MO) effect occurs when a magnetic field or permanent magnetization influences light interacting with materials. Recently, MO effects have been used for optoelectronic purposes and structural investigations because this effect is obtained from transitions between electronic levels of materials. The MO effect that causes the rotation of light polarization (Faraday rotation) is called the Faraday effect. The MO effect that causes magnetically induced birefringence is called the Cotton–Mouton effect. The MO effect in reflection is called the magneto-optical Kerr effect (MOKE). It has been shown that the elements of dielectric permittivity are essential for interpreting the magneto-optical behavior of materials. A number of techniques are available for measuring magneto-optical effects, including polarization techniques or the Faraday cell technique, and spectrometric techniques. Some experimental setups used are the longitudinal Kerr magnetometer, etc. The Faraday effect, magneto-optic Kerr effect, Zeeman effect, and Cotton–Mouton effect of these materials can have important applications in many devices.

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