



Contribution ID: 35

Type: **Oral**

Magneto and electro-optical study of Bismuth ferrite (BiFeO₃) thin films

Tuesday 29 November 2016 11:30 (15 minutes)

Multiferroic materials, which exhibit both electrical and magnetic ferroic orders, have attracted much attention due to its potential application in electronics. Normally, the relation of both phenomena have to be analysed by several instruments. Here, optical-Kerr-effect properties of bismuth ferrite (100) thin film has been investigated. The Kerr rotation of light reflected from the BiFeO₃ surface was measured through reading from the photodiode while the magnetic field and electric field was applied. Our results shows the electrical-polarization and magnetization of films. Moreover, an ultraviolet-induced enhancement of polarization can be detected, imply magneto and electro-optical measurement may be a powerful method in multiferroic materials research.

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Session Classification: Hornbill 1

Track Classification: Nano-characterization & instruments