

Abstract Submitted  
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**Thickness and Temperature Dependence of the Dielectric Function of  $\text{Bi}_2\text{Se}_3$** <sup>1</sup> XIAOYU WANG, FRANK PEIRIS, Department of Physics, Kenyon College, Gambier, Ohio 43022, USA, MARIA HILSE, ROMAN ENGELHERBERT, Department of Materials Science and Engineering, Pennsylvania State University, State College, Pennsylvania 16802, USA, DEPARTMENT OF PHYSICS, KENYON COLLEGE, GAMBIER, OHIO 43022, USA COLLABORATION, DEPARTMENT OF MATERIALS SCIENCE AND ENGINEERING, PENNSYLVANIA STATE UNIVERSITY, STATE COLLEGE, PENNS COLLABORATION — We have determined the dielectric functions of a series of  $\text{Bi}_2\text{Se}_3$  films grown on sapphire substrates. Temperature dependent in-situ ellipsometry spectra were obtained for several samples with varying thicknesses ranging from 5 nm to 60 nm. After the dielectric functions were modeled using the in-situ spectra, they were represented by Kramers-Kronig consistent oscillators. We observe that the dielectric function of  $\text{Bi}_2\text{Se}_3$  has a slight thickness dependence and that it also varies with temperature. Specifically, the oscillators red-shift as temperature increases, which was modeled using a Bose-Einstein distribution.

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