

Infrared study on the electronic structure of metallic pyrochlore Bi₂Ir₂O₇

Monday, 23 July 2012 20:00 (2 hours)

Y. S. Lee^{1,2}, S. J. Moon¹, Scott C. Riggs³, M. C. Shapiro³, I. R. Fisher³, and D. N. Basov

¹ University of California at San Diego, La Jolla, CA 92093

² Soongsil University, Seoul 156-743, Korea

³ Stanford University, Stanford, CA 94305

We investigated the electronic structure of a metallic pyrochlore Bi₂Ir₂O₇ by using infrared spectroscopy. Consistent with a metallic response in transport, the optical conductivity spectra of this compound exhibit a Drude component which is rather narrow. Two interband transitions are identified near 0.2 and 1.0 eV, which are assigned as the d-d transitions related to Jeff_{1/2} and Jeff_{3/2} bands, respectively. The temperature dependence in optical spectra is found to be weak. The electronic structure of Bi₂Ir₂O₇ is well-described with the significance of spin-orbit coupling in 5d oxides.

Primary author: LEE, Yunsang (UCSD/Soongsil University)

Presenter: LEE, Yunsang (UCSD/Soongsil University)

Session Classification: Poster Session 1

Track Classification: Transition Metal Oxides