

Abstract Submitted
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Optical spectral weight changes accompanying ferromagnetic transition in EuB₆ E. J. CHOI, University of Seoul, JUNGHO KIM, University of Toronto, C. C. HOMES, Brookhaven National Laboratory, B. K. CHO, K-JIST, YOUNG-JUNE KIM, University of Toronto, UNIVERSITY OF SEOUL TEAM, UNIVERSITY OF TORONTO COLLABORATION, BROOKHAVEN NATIONAL LABORATORY COLLABORATION, K-JIST COLLABORATION — EuB₆ have drawn much attention for the last decade due to their interesting electrical and magnetic properties. As a prerequisite to the understanding of these unconventional phenomena, the band structure of EuB₆ was extensively studied both theoretically and experimentally. However, there is no consensus of opinion on the electronic ground state. We present temperature dependent optical reflectivity and spectroscopic ellipsometry measurements on ferromagnetic EuB₆ taken over a wide spectral range 0.002-5.5 eV. In addition to a large blue shift of the plasma frequency below T_c=15.5 K, two prominent changes in the interband region are observed: a systematic decrease of the interband spectral weight below 3.3 eV and the splitting of 4 eV peak with a decrease in T. We can explain the observed optical spectral weight changes within the semi-metal picture of EuB₆.

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