

Abstract Submitted
for the MAR11 Meeting of
The American Physical Society

Correlation effect investigations on the Magneto-optical Kerr Spectra of Co-based Heusler alloys from first principles¹ MIYOUNG KIM, Division of Energy System Research, Ajou University, HANJO LIM, JAE IL LEE, Dept of Physics, Inha University — Here, we report our *ab-initio* calculational results on the electronic structures and magneto-optical (MO) properties of the ferromagnetic Co_2MnX full Heusler alloys. Employing the +U corrections for the transition metal 3d bands in addition to the local density approximation (LDA), we investigate the correlation effect on the MO spectra in polar geometry as well as the detailed electronic structures using FLAPW [1] method. Results show that the correlation effect results in a blue-shift of the peak positions and large enhancement of the low energy MO spectra, which are attributed to the increased t_{2g} - e_g splitting of spin minority Co and Mn d -bands indicating the suppression of diagonal elements of optical conductivity at energy region of 1~2 eV where the interband transitions are forbidden.

[1] E. Wimmer, K. Krakauer, M. Wienert, and A.J. Freeman, Phys.Rev B 24, 864 (1981).

¹This work is supported by Korean Research Foundation Grant by MOEHRD (KRF 2007-412-J04001) and also by Basic Science Research Program through the National Research Foundation of Korea (NRF-2010-0005387).

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Date submitted: 23 Dec 2010

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